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Confirmation Bias in Criminal Cases

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Abstract
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Confirmation bias is a tendency to selectively search for and emphasize information that is consistent with a preferred hypothesis, whereas opposing information is ignored or downgraded. This thesis examines the role of confirmation bias in criminal cases, primarily focusing on the Swedish legal setting. It also examines possible debiasing techniques.

Experimental studies with Swedish police officers, prosecutors and judges (*Study I-III*) and an archive study of appeals and petitions for new trials (*Study IV*) were conducted. The results suggest that confirmation bias is at play to varying degrees at different stages of the criminal procedure. Also, the explanations and possible ways to prevent the bias seem to vary for these different stages. In *Study I* police officers' more guilt presumptive questions to apprehended than non-apprehended suspects indicate a confirmation bias. This seems primarily driven by cognitive factors and reducing cognitive load is therefore a possible debiasing technique. In *Study II* prosecutors did not display confirmation bias before but only after the decision to press charges, as they then were less likely to consider additional investigation necessary and suggested more guilt confirming investigation. The driving forces need further examination. *Study III* suggests that pretrial detentions influence judges' perception of the evidence strength, making them more likely to convict, in cases where they themselves detained. This is indicative of a confirmation bias with social explanations, which, possibly, can be mitigated by changing decision maker between detention and main hearing. The confirmatory reasoning in *Study I-III* can be considered rational or irrational, following different types of rationality, like probabilistic or judicial rationality. In *Study IV*, statistical estimates based on empirical data from the Apellate Courts and the Supreme Court indicate that far from all wrongfully convicted who appeal or petition for a new trial are acquitted. A robustness analysis confirmed that these overall conclusions hold over a wide variety of assumptions regarding unknown parameters.

Also, the usage of empirical methods to study law and legal phenomena is discussed. The concept of Evidence-Based Law (EBL) is used to exemplify how empirical legal research may benefit both legal scholarship and law in a wider sense.

Keywords: legal decision making, bias, confirmation bias, criminal cases, criminal procedure, police, prosecutor, judge, legal system, empirical legal research, evidence based law, debiasing technique

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For my fellow dung beetles

List of Papers

This thesis is based on the following four studies, which are referred to in the text by their Roman numerals. The four studies comprise in total five papers.

I Lidén, M., Gräns, M., Juslin, P. (2018). The Presumption of Guilt in Suspect Interrogations: Apprehension as a Trigger of Confirmation Bias and Debiasing Techniques. *Law and Human Behavior, 42 (4), 336-354* (Published)

II Lidén, M., Gräns, M., Juslin, P. (2018). From Devil's Advocate to Crime Fighter: Confirmation Bias and Debiasing Techniques in Prosecutorial Decision Making. *Psychology, Crime & Law* (Submitted)

III Lidén, M., Gräns, M., Juslin, P. (2018). "Guilty, No Doubt": Detention Provoking Confirmation Bias in Judges' Guilt Assessments and Debiasing Techniques. *Psychology, Crime & Law* (Epub ahead of print)

IV Lidén, M., Gräns, M., Juslin, P. (2018). Self-Correction of Wrongful Convictions: Is there a "System-level" Confirmation Bias in the Swedish Legal System's Appeal Procedure for Criminal Cases? – Part I. *Law, Probability & Risk* (Epub ahead of print)

Lidén, M., Gräns, M., Juslin, P. (2018). Self-Correction of Wrongful Convictions: Is there a "System-level" Confirmation Bias in the Swedish Legal System's Appeal Procedure for Criminal Cases? – Part II. *Law, Probability & Risk* (Epub ahead of print)

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Chapter 1. Introduction

"The availability of diverse information in an environment does not guarantee that a person's views will be equally diverse."[1]

(William Hart and colleagues, 2009)

1.1 General

The notion that individuals cannot possibly process all information available in their environment is not only intuitive, but also supported by decades of primarily psychological research.[2] In many everyday situations such limitations in processing capacity are fully necessary for individuals not only to form decisions, but also to act in accordance with them. For instance, imagine a situation in which one woke up in the morning and would have to process all available information before deciding how to spend the day. If one were to seriously evaluate all possible options, there would be a clear risk of never leaving the home or even the bed. In this sense, limited information processing is time saving, rational and conducive to human life and action.

However, in the criminal procedure, the human information processing capacity comes into different light. In this context, it is directly related not only to legal demands of objectivity but also to the accuracy and legitimacy of criminal law and procedure in a wider sense. This does not necessarily mean that legal actors have to process all information available in the environment (which is rarely possible) to protect the procedure's legitimacy. Yet, the diversity of the available information has to be maintained and well represented in their search for and evaluation of crime-relevant information.

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[1] Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 555.

[2] For instance, research within cognitive psychology attempts to understand how individuals make sense of environments where extensive, complex and diverse information is available. For examples from the 1950's see Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information*, pp. 81-93, Newell, Shaw & Simon, *Elements of a Theory of Human Problem solving*, pp. 151-166 and Bruner, Goodnow & Austin, *A Study of Thinking*. For more recent examples see Miyake, Friedman, Emerson, Witzki, Howerter & Wager, *The Unity and Diversity of Executive Functions and Their Contributions to Complex "Frontal Lobe" Tasks: A Latent Variable Analysis*, pp. 49-100 and Newell & Shanks, *Take-the-Best or Look at the Rest? Factors Influencing "One-reason" Decision Making,* pp. 53-65.

Confirmation bias directly opposes the ability to process diverse information, as it limits both the search for and the evaluation of information so that the information is consistent with a preferred hypothesis. This behavior is a long recognized phenomenon that psychologists started studying experimentally in the 1960's. Today, the most widely accepted definition, which was provided by Raymond Nickerson in 1998, describes confirmation bias as: *"the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand."*[3] Simultaneously, the decision maker's search for counterarguments is not as effective and if contradicting information is considered, it is only assigned limited importance.[4] Furthermore, a crucial component of this one-sidedness in information processing is that it happens more or less subconsciously.[5]

Behavioral patterns associated with confirmation bias have also been observed and acknowledged in the Swedish criminal procedure, by both individual legal actors and the Government's reports in reopened cases. For instance, defense counsel Johan Eriksson points to the risk that the criminal investigators' fascination with their own theory regarding a crime may lead them to only search for evidence that confirms their theory and not to think of possible alternative investigative measures.[6] This is also an explanation as to why there has been an increase in investigations undertaken by the defense, even if such investigations are not an (intended) inherent component of the Swedish criminal procedure.[7]

A related but somewhat different type of one-sidedness noted by the Government in a reopened murder case is the downgrading or even disregard of evidence indicating an alternative perpetrator.[8] During the criminal

[3] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 175.
[4] *Ibid.*
[5] *Ibid.*
[6] Eriksson, *Handbok för försvarare*, pp. 127-128.
[7] *Ibid*., pp. 127-130. Eriksson furthermore emphasizes that one-sidedness in criminal inquiries results in that the defense counsel has to be quite creative in order to protect the client with zeal and care (as dictated by the defense counsel's formal role). This can mean for instance that the defense counsel has to request forensic statements regarding whether a plaintiff's injuries are also consistent with the client's version of the course of events or has to test him/herself whether a time frame presented by the prosecutor is correct. Such inquiries are however problematic for instance because the defense counsel cannot possibly know what the result of the inquiry will be (but has to protect the client's interests) and that some judges think that investigation should only be carried out within the frames of the criminal inquiry. See also Dagens Juridik, *"Jag försöker tänka som en polis – och hitta rimligt tvivel genom egna undersökningar"*. Published 20180323.
[8] This murder case, as well as seven other murder cases, were reopened after the convicted had withdrawn his confessions in relation to all eight murders. The criminal inquiries and proceedings in these murder cases are subject to a detailed review and analysis in the Swedish Government Official Reports, SOU 2015:52, *Rapport från Bergwallkommissionen.* See also Svea Court of Appeal's decision to grant a new trial Ö 3147-09, pp. 10-11.

investigation, a pair of glasses, supposedly belonging to the perpetrator,[9] were found at the crime scene and an expert statement was requested to examine whether the glasses could be the same glasses that the suspect (at this point someone else, other than the individual who was later convicted for the murder) was wearing in his passport photo. This question was answered positively.[10] Also, an optician certified that the glasses had the same reading strength.[11] However, no charges were initiated against this suspect.[12] Several years later, another person confessed to the murder, after which the police made an inquiry to the National Forensic Centre asking whether any other methods were available that could change the conclusion of the previous forensic statement.[13] This question was answered negatively.[14] Shortly thereafter, instead the police requested a statement from the technical unit within the Police Authority, which stated that no conclusions could be drawn regarding whether the glasses belonged to the first suspect.[15] Only this last affirmative statement was included in the inquiry report and presented at Court.[16] Also, the finding that DNA and blood traces at the crime scene neither originated from the victim nor the second suspect was disregarded.[17]

The more specific reasons for the described one-sidedness are uncertain, as will always be the case with real criminal cases. Consequently, case studies cannot provide more than anecdotal evidence of confirmation bias. To test whether the evidence for confirmation bias is not only anecdotal, but also empirical, it has to be examined using systematic empirical studies. Also, since it is unlikely (although desirable) that legal actors can combat bias in themselves, it is necessary to identify and potentially change decision structures etc. that increase the risk of confirmation bias.

A component of confirmation bias that raises several questions is its largely subconscious nature. It seems reasonable to ask what is the point of studying something that legal actors cannot control. In other words, even if legal actors display a confirmation bias, what can possibly be done about it? The subconsciousness of the bias is a challenge but even if the bias is more or less subconscious *when it occurs*, the risk of bias in certain situations is conscious or at least, awareness can be raised in this regard.

As implied by the above, this thesis uses psychological and legal psychological research in the context of criminal procedure. Hence, the thesis has a

[9] SOU 2015:52 p. 242. The victim's parents had stated that the glasses did not belong to the victim.
[10] *Ibid*,, p. 245.
[11] *Ibid.*
[12] *Ibid.* The suspect was deported after he had been convicted of another crime and served his sentence.
[13] *Ibid*., pp. 266-267.
[14] *Ibid.*
[15] *Ibid.*
[16] *Ibid.*
[17] *Ibid.*

pronounced interdisciplinary approach and the intended audiences are theorists as well as practitioners within both of these fields (or combinations of them). This means that concepts, terms etc. that are usually referred to either one of the disciplines and are presumably well-known to the individuals operating inside but not necessarily to those (wholly or partially) outside the discipline, will be explained in more detail than if the thesis had been unidisciplinary. Such closer descriptions will be provided for instance regarding the methods that are used in this thesis but not traditionally within legal scholarship as well as the content of criminal procedural law, which is not a traditional part of psychological science. To make room for such explanations, the footnotes have been used as complements to the more concise main text. Readers who want to get more in-depth and detailed information on certain topics are therefore referred to the footnotes.

1.2 Research Aims and Questions

The overall aims of this thesis are to study the *importance*, *prevalence* and *possible ways to mitigate* confirmation bias in criminal cases, primarily focusing on the Swedish criminal procedure. The *importance* of confirmation bias in this context is primarily understood as legal relevance, that is how confirmation bias relates to rules and principles guiding the Swedish criminal procedure. The *prevalence* of confirmation bias refers to the existence of this bias in Swedish legal actors, more specifically police officers, prosecutors and judges as well as within the Swedish legal system at large. The *possible ways to mitigate* the bias concern so-called debiasing techniques, that is, strategies that can be used to prevent or to reduce the bias and its consequences. As such, the more specific research questions are:

1. What is the legal relevance of confirmation bias? This question consists of two subquestions, namely, what is confirmation bias and how does it relate to rules and principles guiding the Swedish criminal procedure?
2. Do Swedish legal actors display confirmation bias?
3. Can confirmation bias also be recognized at a "system-level", that is, as a characteristic of the legal system (not just of the individuals operating inside it)?
4. What are possible ways to mitigate confirmation bias? This question is directed both at prevention of confirmation bias in the individual legal actors and at evaluating the effectiveness of the available posttrial remedies against wrongful convictions.

The first question with the two subquestions will be analyzed and discussed in Chapters 3 and 4. The questions of prevalence and ways to mitigate the bias (the second, third and fourth questions) are inherently empirical questions that are addressed in four different empirical studies. The first three

studies (*Study I-III*) all examine the prevalence of confirmation bias in Swedish legal actors as well as possible ways to prevent this bias. These studies concern decision making situations that are related to one another but also to a hypothesis about a suspect's guilt, as manifested in The Code of Judicial Procedure 24 ch. 1-3, 6-7 §§.[18] As such, *Study I* examines whether a police officer's decision to apprehend a suspect triggers confirmation bias during the suspect interrogation. The study also tests two strategies to reduce confirmation bias: (1) changing decision maker between the apprehension and the interrogation and (2) reducing cognitive load for the interrogating police officer. *Study II* examines the role of confirmation bias in prosecutorial decisions before, during and after the prosecution. It also evaluates whether confirmation bias is reduced by changing decision maker between the arrest and the prosecution. *Study III* examines whether judges' decisions to detain suspects awaiting trial trigger confirmation bias in their guilt assessments. It also tests two strategies to mitigate confirmation bias: (1) to have different judges decide about detention and guilt and (2) to reduce cognitive load by structuring the evaluation of evidence. The fourth study (*Study IV Part I and II)* addresses the question of whether confirmation bias can also be recognized at a "system-level". In this study, confirmation bias is conceptualized as an inability to self-correct, that is, an inability to acquit wrongfully convicted who appeal or petition for a new trial. As such, the study also addresses the question of how effective the available posttrial remedies against wrongful convictions are.

It is quite clear from the outlined research questions, particularly those in *Study I-III*, that the thesis not only focuses on legal actors' decisions themselves, but also on the process preceeding those decisions. Thus, the research questions are closely tied to the legal philosophical discussion about legal decision making as a process of thinking rather than the decisions as results of that thinking process. The theoretical discussion of whether legal scholarship should focus mainly on the process of thinking rather than the result of thinking is therefore of vital importance for this thesis. These questions will be analyzed and discussed in more detail in Chapter 2.

Provided the nature of the research questions, the thesis also coincides with the framework of *Law and Cognition* which offers empirically grounded perspectives on historical and contemporary jurisprudential questions in relation to several different legal areas, not only criminal law.[19] In turn, this

[18] According to these provisions, a police officer may decide to apprehend a suspect provided that there are reasons for an arrest. Furthermore, a prosecutor may arrest a suspect provided that there are reasons for a detention. Lastly, and only implicitly in the law, a judge may detain a suspect if it is expected that the suspect will be convicted. Hence, the apprehension, arrest and detention are preliminary in relation to one another and all closely related to a conviction. For more on this see Bylund, *Tvångsmedel I*, pp. 88 and 181.

[19] See for instance Burns, *Judges, 'Common Sense' and Judicial Cognition*, pp. 319-351, Guastini, *A Realistic View on Law and Legal Cognition*, pp. 1-9 and Kahan, *Laws of Cogni-*

framework also raises questions of crucial importance on a more general and theoretical level, that is, the usage of empirical methods when studying law and legal phenomena. Recent developments imply that quantitative empirical research methods like those employed in this thesis are gaining ground within legal scholarship.[20] In what way can legal scholarship benefit from using empirical, or even experimental methods? What type of knowledge can be gained from using such methods? Since usage of experimental methods in legal scholarship is still very unusual and perhaps completely new to both legal scholars and practitioners, this thesis aims to both introduce such methods within legal scholarship and to illustrate how they can enhance knowledge on legal issues, not just for studying the specific questions of interest here, but also on a more general and systemic level. The methodological framework of the thesis will be explored in more detail in Chapter 2.

1.3 Demarcations

The demarcation to criminal cases is mainly due to that confirmation bias is directly related to cornerstones of the criminal procedure, that is, objectivity demands and other legal demands such as the presumption of innocence. Thus, the international research has focused primarily on confirmation bias in criminal cases. However, confirmation bias may have devastating consequenses also in other legal areas, which is why those topics deserve more attention in future research. Furthermore, this thesis studies primarily issues of fact, for instance how a judges' perception of the evidence in a case changes as a result of confirmation bias. However, since issues of fact and issues of law are closely intertwined,[21] issues of law are also included to a certain extent.

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tion and The Cognition of Law, pp. 56-60. At the core of this framework is the view that legal actors, like all other humans, have cognitive limitations and that these limitations manifest themselves in how legal actors form their decisions. Burns explains how cognitive limitations can shape for instance judges' application of different forms of common knowledge requirements, like *'reasonable man'* or *'obvious risk'* in tort law, the extent of self-control of the ordinary person when provoked in criminal law and the '*best interest of the child'* in family law, see Burns, *Judges, 'Common Sense' and Judicial Cognition*, pp. 319-320. However, law and cognition is not only about cognitive limitations but also how legal actors may be influenced by the context in which decisions are made. For instance, Benforado discusses how experiments illustrating effects of physical factors such as warmth, physical cleanliness and disgust can have important implications for decision making in the Court room setting, see Benforado, *The Body of the Mind: Embodied Cognition, Law and Justice*, pp. 1185-1216.

[20] See for instance Epstein & Martin, *Quantitative Approaches to Empirical Legal Research*, pp. 901-924 and Knobe, *Philosophers are Doing Something Different Now: Quantitative Data*, pp. 36-38.

[21] See for instance Lindell, *Matters of Fact and Matters of Law: a Study of Borderlines, Differences and Relationships between Fact and Law*, p. 19. This is the English titel of Lindell's thesis *Sakfrågor och rättsfrågor: en studie av gränser, skillnader och förhållanden mellan faktum och rätt*, which is written in Swedish.

The choice to focus on police officers, prosecutors and judges, but not defense counsels in the empirical studies is motivated by a presumption that defense counsels function as counterweights to any one-sidedness in the other legal actors. This presumption is certainly in line with the defense counsels' formal roles, but in practice, the presumption is not necessarily true. This could be due to other factors than confirmation bias, such as an insufficiently prepared defense or insufficient resources to protect the client's interest in the way intended. However, it is of course possible that confirmation bias is also present in defense counsels' reasoning. For instance, a client's confession may lead the counsel to subconsciously perceive of evidence consistent with the confession as more important than other evidence. Such a confirmation bias is not necessarily problematic with reference to the counsel's formal role (since it might be in the client's interest to be convicted), but it can be problematic for instance when the validity of the confession is in question. In such situations the problem also has a more systematic character since an intended counterweight does not in fact take on that role.

1.4 Thesis Outline

In the following, the methodological framework is introduced (Chapter 2). This chapter explains how the research questions relate to the general legal philosophical discussion about legal decision making and how the characteristics of the research questions have influenced the method choices. Also, methodological assumptions in legal as well as empirical sciences are discussed. Then, the employed methods are described and the concept of Evidence-Based Law (EBL) is introduced. Thereafter, the term confirmation bias is examined both through a description of what it is and possible explanations of why the bias occurs (Chapter 3). This entails a review of confirmation bias as a general phenomenon but also in context-specific situations, focusing on criminal cases. The review has its basis in international psychological as well as legal psychological research. Subsequently, the importance of confirmation bias is discussed with reference to the rules and principles guiding the Swedish criminal procedure (Chapter 4). The discussion is followed by the four empirical studies that have been carried out within the frames of this thesis (Chapter 5). The studies examine the prevalence of confirmation bias as well as possible ways to mitigate the bias in situations that are common in the Swedish criminal procedure and with samples of Swedish legal actors, that is, police officers, prosecutors and judges (*Study I-III*). Also, the notion of confirmation bias as a trait of the Swedish legal system is introduced and discussed in *Study IV (Part I and II)*. All of the four studies are summarized in Chapter 5 and also available as full papers (*Papers I-V*). To sum up, the relevant law, psychological research and empiricism are linked, discussed and conclusions are presented (Chapter 6).

Chapter 2. Methodological Framework

"(...) all methods are languages through which we [scientists] make sense of the world. All languages open a world of understandings in some way, but close off understandings in other ways. No language can open all understandings; no method can claim preeminence."[22]

(Slife, 1998)

2.1 Introduction

The conception of methods as languages is compelling. It is compelling because it conveys that the method has not once and for all been predetermined but instead, the method choice depends on which journey the researcher intends to undertake.[23] When choosing, the researcher is aware that

[22] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 21. This is Slife's description of a position which has become known as *methodological pluralism*, that is, a view that qualitative methods which have been influenced by postmodern assumptions (lived experience, radical holism and contextuality) can be effectively combined with quantitative methods of modernism. For more on this see for instance Slife & Williams, *What's Behind the Research?: Discovering Hidden Assumptions in the Behavioral Sciences* and Faulconer & Williams, *Temporality in Human Action: An Alternative to Positivism and Historicism*, pp. 1179-1188.

[23] The notions that the method(s) should be chosen on the basis of the research aims and questions and that no method is generally better or worse than the other (methodological pluralism) are, apart from Slife, also shared by for instance the legal scholar Smits, *The Mind and Method of the Legal Academic*, pp. 119. Smits adds that this does not necessarily mean that research questions and methods have to be rigidly designated. In the view of the author of this thesis, there is no general contradiction between determining the method based on the research questions and flexibility or creativity in legal research. This is partly because the research questions are only really formulated after a flexible and creative process, which sometimes can constitute a relatively large part of the research project in terms of time, and partly because preliminary findings etc. may result in that the research questions are adjusted or extended and that other similar or dissimilar methods are chosen to adress those questions. Thus, the research can still develop and accomodate ideas that are thought of only at a later stage in time. To formulate preliminary research questions may however be advantageous to the progress of the research, even for legal researchers. This is similar to the thinking of Smits who argues that formulating a research question can be a usefool tool as a first demarcation of the research theme but this does not exclude creativity, coincidental 'discoveries' or other forms of 'informed messing around' or 'unguided play' (p. 19) which there should also be room for in research. He examplifies with Feldbrugge's work *The Law's Beginning*, which at the outset was lacking a clear-cut theme as Feldbrugge's intitial interest was in doing "some-

there is not a single method that is best in every possible situation but given the planned journey some method choices, just like language choices, are more strategical than others. This raises the question; how does a researcher know which method is the most appropriate? It seems clear that this question should not be answered with reference to the final destination, since little is known about it at the beginning of the journey. Instead, the journey; the research questions, are more important. What does the researcher hope to learn about? Yet, the answer to this question provides little guidance unless combined and matched with information of what can be learnt using different methods. This means that the researcher not only has to be able to formulate relevant research questions but must also know what different methods have to offer in order to make an informed method choice. Depending on the context of their use, each method has its own set of advantages and disadvantages.[24] Thus, the more specific advantages and disadvantages might vary with the research questions at hand. However, the researcher can conclude what are the specific advantages and disadvantages of using a certain method for a certain research question if he or she knows about the assumptions made within different methodological frameworks. For some methods, such assumptions are more outspoken and acknowledged than for others.

The purpose of this chapter is to explicate how the research questions of interest relate to the method choices and furthermore to outline the employed methods, especially those not traditionally employed within legal scholarship. However, the more specific procedures etc. used in the empirical studies are reported in those studies (*Papers I-V* and the summary in Chapter 5) and not here. The chapter starts with a discussion of how the research questions relate to views and theories about legal decision making

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thing" with "early law". The research question only became clear after the research was done as it was in constant development during the research. According to Smits such research questions can only be a justification afterwards of what the creative researcher did (pp. 117-118). In such or similar situations it is of course doubtful if the research questions, or even preliminary versions of them, can guide the method choice at all, which, from the perspective of an empirical researcher may appear problematic. This is however dependent on whether the research aims, to the extent an aim is spelled out, are in fact to answer a question or just identify possible questions of interest. The debate about the aims and methods of legal scholarship is not new and Smits even describes legal research as having an 'identity crisis' (p. 118) since not only do outsiders accuse legal scholarship of being unacademic (although neither Smits nor the author of this thesis agrees with this notion) but also legal scholars themselves no longer seem to know which discipline they practice. Smits refers to some examples of authors who have claimed that legal research is "non-academic", for instance, Lundstedt, *Die Unwissenschaftlichkeit der Rechtswissenschaft* (Smits translation: *The Non-Academic Character of the Legal Discipline)* who argued that since legal academics deal with justice and justice is not an observable phenomenon, it is not real science, and Mulder, *Ik Beschuldig de Rechtsgeleerde Faculteit van Onwetenschappelijkheid* (Smits translation: *I Accuse the Faculty of Law of Being Non-Academic)*.

[24] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 21.

in Jurisprudence, which have also acknowledged the necessity to use empirical methods to study such questions (2.2). This highlights the characteristics of the research questions, which are then discussed in relation to the assumptions made in different methodological frameworks (2.3). The discussion leads up to a description of the methods employed in this thesis (2.4). Thereafter, the concept of *Evidence-Based Law* (EBL) is introduced and discussed (2.5).

2.2 Legal Decision Making and Methods in Legal Scholarship

The research questions in this thesis, particularly those about whether confirmation bias is present in legal actors' decision making as well as possible ways to mitigate such a bias, put focus not only on the legal decisions as such, but more so on the processes preceeding those decisions, that is, the *making* of legal decisions. Thus, the focus is on legal decision making as an active cognitive process, and the decision maker as an active creator of the decision, rather than the legal decisions as an output of such processes.

The notion that there is more to legal decision making than simply the decisions in themselves is not new but has in fact been acknowledged by several scholars and theories in Jurisprudence.[25] These ideas are connected to views on what the tasks of legal scholarship are, what law is as well as what are appropriate methods for studying legal decision making. Below, historical as well as contemporary examples are explained and discussed.

2.2.1 The Context of Discovery and The Context of Justification

Although it is somewhat uncertain who was first to express the idea, John Herschel (1830) and Hans Reichenbach (1938), were the two scholars that most successfully labelled and explained *the context of discovery* and *the context of justification*, the so-called *context distinction*.[26] There has been abundant discussion about how the distinction should be made and what its philosophical significance is.[27] Most commonly, the distinction is interpreted as a distinction between the process of conceiving a theory and the validation of that theory, that is, the determination of the theory's epistemic sup-

[25] For a detailed historical review and discussion of such ideas, the reader is referred to Gräns, *Decisio Juris*, pp. 155-205.
[26] Herschel, *A Preliminary Discourse on the Study of Natural Philosophy*, Reichenbach, *Experience and Prediction: an Analysis of the Foundations and Structure of Knowledge*, Reichenbach, *On Probability and Induction*.
[27] See for instance Kordig, *Discovery and Justification*, Gutting, *The Logic of Invention*, Zahar, *Logic of Discovery or Psychology of Invention?*, Hoyningen-Huene, *Context of Discovery and Context of Justification* and Hoyningen-Huene, *On the Varieties of the Distinction between the Context of Discovery and the Context of Justification*.

port.[28] Reichenbach himself was a philosopher and mathematician and the theory has been influential for philosophers, logicians, mathematicians etc.[29]

Also legal scholars have embraced the theory.[30] The more specific meaning of the theory in the legal setting is outlined by for instance Bruce Anderson (1996) who describes the process of discovery as how a judge actually reaches a tentative decision and the process of justification as how a judge publicly justifies a decision.[31] According to Anderson, legal scholars are primarily or even exclusively concerned with analyzing how judicial decisions are justified, which also means that they stress the logical, rational, "objective" nature of the process of legal justification.[32] He goes on to say that some of these scientists also assert that the legal justification, not the process of discovery, is the proper subject matter of legal scientific study.[33] Since they (the scientists) perceive of the discovery process as psychological, not legal, the process of discovery cannot, even should not, be analyzed by legal scholars.[34] It is instead a matter that should be left to psychologists.[35] To exemplify, Anderson refers to William Twining according to whom understanding the factors that actually influence judicial decision making *"...require an answer based on acceptable psychological theory (...). The question is essentially a psychological one."*[36] However, Twining also adds, in between the two sentences cited by Anderson, that: *"It does not follow from this that psychologists are necessarily better equipped than lawyers to pursue this kind of enquiry, for it requires, inter alia, intimate knowledge of judicial procedures and ways of work, of the legal frame of reference (...).*[37]

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[28] Schikore, *"Scientific Discovery",* The Stanford Encyclopedia of Philosophy.
[29] See for instance Magnani, Carnielli & Pizzi, *Model-Based Reasoning in Science and Technology and* Schaffner, *Discovery and Explanation in Biology and Medicine.*
[30] See for instance Anderson, *"Discovery" in Legal Decision-Making*, pp. 1-2, Gräns, *Decisio Juris*, p. 19, MacCormick, *Legal Reasoning and Legal Theory*, Bankowski, *The Jury and Rationality*, p.13, Gigerenzer, *Adaptive thinking. Rationality in the Real World*, pp. 3-4 and Gigerenzer & Selten, *Rethinking Rationality*, p. 1.
[31] Anderson, *"Discovery" in Legal Decision-Making*, pp. 1-2. As Anderson points out, various terms have been used to express the distinction between the process of discovery and the process of justification. For instance: the context of discovery and the context of justification, discovery and justification, the psychological process/context of explanation and the context of justification, the process of decision and the logic of justification, motive and reason, the psychology of judicial decision making and the justification of a decision, the process of heuresis of decisions and the process of justification.
[32] This view is also conveyed by Wasserstrom, *The Judicial Decision: Toward a Theory of Legal Justification*, MacCormick, *Legal Reasoning and Legal Theory*, Alexy, *A Theory of Legal Argumentation: The Theory of Rational Discourse as Theory of Legal Justification,* Bengoetxea, *The Legal Reasoning of The European Court of Justice.*
[33] Anderson, *"Discovery" in Legal Decision-Making,* p. 33.
[34] *Ibid*.
[35] *Ibid*.
[36] *Ibid.*, citing William Twining in *Karl Llewelyn and The Realist Movement*, p. 230.
[37] Here Twining adds: *"and the kinds of phenomena that Llewellyn lists as major steadying factors in The Common Law Tradition.",* see Twining, *Karl Llewellyn and The Realist Movement*, p. 230.

It may well be easier for a lawyer to acquire the necessary psychological equipment than for a psychologist to acquire an adequate foundation in law."[38] Furthemore, Anderson refers to Jerzy Wroblewski who states that if one could understand the real psychological processes of decision making, the administration of justice could be improved by finding ways to make psychological processes more uniform.[39] Anderson himself points out that there are restrictions as to the range of data that can be studied in this regard and that this is due to limitations in the methods that, up until then, had been used to study the discovery context, for instance by what Anderson refers to as self reports[40] and imaginary cases.[41]

Minna Gräns (2013) shares the view that legal scholarship predominantely or exclusively is concerned with the context of justification, even though the context of discovery clearly is relevant for understanding legal decision making.[42] She furthermore adds that empirical research in cognitive psychology strongly suggests that these two processes are not separated as the theory implies.[43] On the contrary, intuitive (usually referred to the discovery process) and analytical (usually referred to the justification process) thinking are dependent on one another since the human brain processes information in cognitive connectionist networks where associations are made between different pieces of information, even though they are not necessarily related logically speaking.[44] A consequence of this inseparability is that legal scholarship should also be concerned with the discovery context.[45]

Both Anderson's and Gräns's views suggest that legal theorists have largely disregarded the discovery process and they thereby point to a blindspot in the inquiry of legal scholarship. The causes of this blindspot can be

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[38] Twining, *Karl Llewellyn and The Realist Movement*, p. 230

[39] Anderson, *"Discovery" in Legal Decision-Making,* p. 33, footnote 3, citing Jerzy Wroblewski in *The Judicial Application of Law*, p. 16.

[40] Here Anderson refers to Judge Hutcheson who wrote self-reports regarding his own judging and described the judging process in terms of brooding about the case, that is, having a hunch and then searching for the legal rules and principles that would support his hunch, see Anderson, *"Discovery" in Legal Decision-Making*, p. 29 and Hutcheson, *The Judgment Intuitive: The Function of the "Hunch" in Judicial Decision*, pp. 274-288. This definition of self-report deviates from the usual definition, as self-report in the empirical sciences entails asking others, that is, participants, (not the researcher) to self-report.

[41] The idea of imaginary cases comes from Duncan Kennedy, *Freedom and Constraint in Adjudication: A Critical Phenomenology*, pp. 518-562. Kennedy described the process of legal reasoning from the point of view of a judge in a case where, initially, the judge's preferred outcome seems to conflict with the outcome stipulated by the law. Kennedy referred to this as *"how-I-want-to-come-out"* versus *"the law"*. He placed himself in the position of such a judge in a specific imaginary situation and imagined how he would consider the case in order to reach a decision. This methodology has obvious limitations as it appears to be driven only or largely by the researcher's own experience or conceptions of how judges' reason.

[42] Gräns, *Decisio Juris*, p. 19.

[43] *Ibid*. See also Kahneman, *Thinking, Fast and Slow*.

[44] Gräns, *Decisio Juris*, p. 19.

[45] *Ibid*., pp. 18-19.

discussed. Anderson's incomplete quotation of Twining suggests that legal theorists dismiss the discovery process as a study object since it is not legally relevant at all, and therefore not even properly conceptualized as a blindspot. This is however contested, not only by what Twining actually wrote (see the full quotation above), but also that legal scholars have in fact tried to understand the discovery process.[46] The notion, regardless of whether it is real or just imagined, of the discovery process as legally irrelevant also seems airy-fairy since several legal rules and principles, such as the presumption of innocence, dictate how legal actors should behave in the process of forming their decisions, not just how they should justify their decisions. If interpreted as only directed at the justification process, the presumption of innocence and other similar principles would be more or less hollow. It therefore seems farfetched that legal scholars have (largely) refrained from studying the discovery process because they perceive of it as legally irrelevant. Another explanation for why legal scholars have not studied the discovery process, even if they perceive of it as legally relevant, is that it usually does not interest them. Clearly, if a researcher is exclusively interested in what the established law, in terms of legal norms, is, the process preceeding a Court judgment is not necessarily relevant at all. In such cases, the value instead lies in a written justification of a Court judgment and reading the judgment would therefore suffice.

Yet, in situations where researchers aim to do more or something other than finding out what the established law (in terms of legal norms) is, the provided explanation of disinterest is obviously incorrect. In these situations, a more plausible explanation is that traditional legal scientific methods simply lack established vocabulary for studying or even speaking about the discovery process. Thus, in order to make sense of this part of the legal world, legal scholars have occasionally borrowed vocabulary from other scientific areas[47] but have not yet incorporated and adjusted the vocabulary to its own research. Thus, although the discovery process is of legal relevance and interest, it risks falling outside of the legal scientific radar. This implies that legal scholarship could gain important new knowledge by learning new languages or at least borrow and better incorporate vocabulary from other languages. Such new language skills could also mean that legal scholars will start asking questions they have not previously asked. Thus, it is not only the

[46] Apart from the already mentioned self-reports and imaginary cases, there are other examples of methods that legal researchers have used. Anderson provides examples like "idealized judging" and "imaginary judges", see Anderson, *"Discovery" in Legal Decision-Making,* pp. 29-30. However, these methods have similar limitations as they also rely heavily on the researcher's own ideas about how judges reason etc.

[47] For examples from the Swedish legal setting see Ställvik, *Domarrollen: Rättsregler, Yrkeskultur och Ideal* who conducted interviews with Swedish judges and Kronkvist, *Om Sanningen Skall Fram: Polisförhör med Misstänkta för Grova Brott*, who interviewed Swedish police officers.

research questions which should guide the choice of method, but it is also very likely that, in practice, the available methods influence which questions are being formulated. A method may therefore *"open a world of understandings"*[48] not only because it enables the study of certain questions but also because it may make researchers attend to parts of the world that have not previously attracted their attention at all, or only very occasionally. This could also mean that some questions are treated with less suspicion by the legal scientific community than what has been the case historically.[49]

2.2.2 The American Legal Realists Research on the Operation of Thinking

In the 1920-30's, the American Legal Realists John Dewey and Jerome Frank expressed ideas that are similar to the context distinction since they thought that legal decision making consists of all thought operations from the point in time when a judge takes part of information about a case until the verdict has been presented in writing.[50] They were also clear that the process preceeding the decision, which they referred to as *the operation of thinking* had to be distinguished from *the result of thinking*, regarding which only the reasoning in a verdict provides information.[51]

Acknowledging the difference between these two operations also resulted in that Dewey and Frank realized the need for using other, more empirically oriented methods to study judges' thought processes. For instance, Frank used his own experience as a judge but also studied other judges' descriptions of their thinking and experience.[52] Although this methodogy has clear limitations[53] for studying thought processes, especially of the subconscious kind, Frank did step outside of the sources traditionally used in legal research.

Both Dewey and Frank believed that judges' thought processes were very similar to the human thought processes that had been described by psy-

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[48] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 21.

[49] For instance in relation to the American legal realists John Dewey's and Jerome Frank's research.

[50] Gräns, *Decisio Juris*, p. 164.

[51] Dewey, *Logical Method and Law*, p. 17, Frank, *Law and the Modern Mind*, pp. 100-104.

[52] See Gräns, *Decisio Juris,* p. 165 footnote 367 and Frank, *Law and the Modern Mind*, pp. 144-147,153, 236-239 and Frank, *Say it with music*, pp. 927-937. Frank referred to Oliver Wendell Holmes, Learned Hand, Joseph J. Hutchinson, Irving Lehman and Benjamin Cardozo.

[53] According to Frank, the judges had realistic pictures of their own thinking as they were aware of that their decision making was not always consistent with the advocated formal deductive logic but that there could also be subjective influences. Although insight of such a risk is positive it does not also mean that judges were aware of *when* or *how* such subjective influences affected their reasoning.

chologists since the beginning of the 20th century.[54] Initially, Dewey and Frank also expressed ideas that conceptually are very similar to confirmation bias but in a milder, less problematic, form. For instance, according to Frank, a judge first establishes a preliminary conclusion and thereafter tries to find legal premises that support this conclusion. If the judge does not find arguments sound enough, the conclusion will be abandoned and the judge will start anew with another preliminary conclusion.[55] This resembles the confirmatory reasoning referred to as confirmation bias in the sense that it also starts with a preliminary conclusion, instead of examining the premises, but it also differs from it because the decision maker Frank describes in fact abandons the preliminary conclusion if the legal support is insufficient. However, Frank's theory was described by Llewellyn as *"Conclusion first. Rationalization to follow"*[56] which suggests not only a reversed decision structure but also a greater similarity with confirmation bias than what Frank expressed.

In a similar vein, and with even a greater similarity to confirmation bias, Frank also described that judges' assessments regarding issues of fact, that is, which facts shall form the foundation of the decision, are closely related to the judges' ideas of which legal solutions are fair, that is, issues of law.[57] Thus, issues of fact are integrated parts of issues of law. The difficulty of distinguishing issues of fact and law in real decision making situations has later been confirmed by Bengt Lindell (1987) in his thesis on procedural law.[58] According to Frank, the link between issues of fact and law are the judge's hunch,[59] that is, an *"intutitive sense of what is right or wrong in the particular case"*[60] which directs the judge's reasoning in the sense that the judge uses legal rules, principles, concepts etc. so that the solution the judge desires can be justified.[61] Also, triggering the hunches, were hunch produc-

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[54] Gräns, *Decisio Juris*, pp. 166-167.
[55] *Ibid*., p. 167 and Frank, *Law and the Modern Mind,* pp. 100-102.
[56] Cited by Gräns, *Decisio Juris*, p. 167, Llewelyn, *Jurisprudence: Realism in Theory and Practice*, p. 102 and Llewelyn, Frank's *"Law and The Modern Mind"*.
[57] Frank, *Law and the Modern Mind*, pp. 110-116, Frank, *Modern and Ancient Legal Pragmatism*, pp. 207-257.
[58] Lindell, *Matters of Fact and Matters of Law: a Study of Borderlines, Differences and Relationships Between Fact and Law*, p. 19.
[59] This term was first used by Joseph C. Hutcheson in 1929 but with a slightly different meaning, especially considering his definition of hunch producers. For more on this see Gräns, *Decisio Juris*, pp. 169-172 and Hutcheson, *The Judgment Intuitive: the Function of the "Hunch" in Judicial Decisions*, pp. 274-288.
[60] Frank, *Law and the Modern Mind*, pp. 103-104 and Hutcheson, *The Judgment Intuitive: the Function of the "Hunch" in Judicial Decisions*, pp. 279, 285-286.
[61] According to Frank, the judge *"stresses (to himself as well as to those who will read his opinion) those facts which are relevant to his conclusion – in other words, he unconsciously selects those facts which, in combination with the rules of which he considers to be pertinent, will make 'logical' his decision. A judge, eager to give a decision which will square with his sense of what is fair, but unwilling to break with the traditional rules, will often view the evidence in such a way that the 'facts' reported by him, combined with those traditional rules,*

ers, that is: *"(...) stimuli which make a judge feel that he should try to justify one conclusion rather than the other"*[62] Frank explicitly asked the question of what these hunch producers could be and mentioned that legal rules and principles are one such stimuli.[63] However, he also mentioned other possible hunch producers that had more of a hidden character, namely the judge's personal political, economical and moral opinions as well as emotions.[64] Frank was also clear that such elements are not expressed in verdicts and therefore remain hidden. Thus, in his normative theory, he even suggested that such elements should be explicit in the verdicts because otherwise they remain hidden and undetectable, for instance to researchers. Frank furthermore pointed out that those hidden elements could become much too influential on legal decision making.[65]

What Frank referred to as hunch producers could equally well be referred to as triggers of confirmation bias. In both cases, a (sometimes completely legally irrelevant) factor sets off a way of reasoning which only aims to confirm a hunch/hypotheses. Since such factors are not expressed in verdicts and judges are usually unaware of them, studying them requires other methods than reading verdicts or interviewing judges.

2.2.3 The Dualistic Ontology of Law

In 1984, Hannu Tapani Klami presented the so-called dualistic ontology of law, which essentially holds that law is not only a set of norms but these norms also have a necessary connection to behavior.[66] This dualism is not a

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will justify the result which he announces." See Frank, *Law and the Modern Mind*, pp. 134-135.

[62] *Ibid*., p. 104.

[63] Through the identification of legal rules, principles etc. as so-called hunch producers, Frank's ideas regarding hunching differ from Hutcheson's ideas since according to Hutcheson, judges first ponder on which is the best solution in their subjective opinion and only thereafter use legal sources to justify the hunch. Frank on the other hand saw the legal sources as hunch producers which therefore could be reasons for the reasoning taking on a certain direction already from the beginning (not just to justify a solution in the end). As Gräns explains, Hutcheson's view on hunch producers inevitably leads to rule skepticism as the legal rules etc. are portrayed as only means to justify a hunch (not hunch producers in themselves), see Gräns, *Decisio Juris*, p. 172.

[64] Frank, *Law and the Modern Mind*, pp. 105-106, 173-175.

[65] *Ibid*.

[66] Klami, *The Dualism of Law*, p. 471 and Klami, *Three Essays on the Theory of Legal Norms*, p. 11. This view overlaps another view expressed by for instance Winter, namely that law is not a detached external authority that exists above or apart from us, Winter, *A Clearing in the Forest*, p. 193 and Preface xv. Winter also describes the *"cultural process of law-creation"* (p. 193) and that even if the scope of a rule is thought to be determined (and judges or other legal decision makers therefore cannot advert to policy), the rule merely hedges in the decision maker who has to produce an output. This happens through a culturally motivated process but at the same time the output has to, not only make sense, but also make sense as law (pp. 190-193). This resembles Klami's description of the complicated and contextual relationship between norms and behavior. In the view of the author of this thesis, law and

simple conjunction of norms and behavior since the connection between the two is both complicated and contextual, a dialectic connection in which norms and behaviors presuppose each other.[67] Apart from reinforcing that law cannot be fully understood only with reference to the norms,[68] Klami also points out that the dialectic connection between norms and behaviors corresponds to the dialectic between the law's ontology, epistemology and methodology.[69] Thus, the question of the law's ontology; what is law or even legally relevant,[70] is connected to the law's epistemology; what knowledge about law is, as well as the law's, or more specifically legal research, methodology; how knowledge about the law is obtained.[71] As Klami points out, the ontology conditions the epistemology and epistemology conditions methodology.[72] However, it does not end there, as the argument can be pursued in the opposite direction as well. Thus, the available methods have a distinct impact on the epistemological premises that are, in turn relevant for the question of what law is.[73]

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behavior are inevitably intertwined e.g. for the reasons described by Winter. This does not mean that behavior is part of law in a normative sense, since such a general statement would mean that also biases, prejudice etc. is of normative value. However, in order to understand how legal decisions are formed, that is, asking the question "what is in a legal decision?" knowledge of the behavior influencing this process is necessary and in this sense behavior is a component of law (legal decision making) in a descriptive sense.

[67] Klami, *Three essays on the theory of legal norms*, p. 11 and Baier & Svensson*, Om Normer*, p. 50.

[68] This view is shared by several other scholars who frame their ideas differently. See for instance Aarnio, *On Legal Reasoning*, p. 49. According to Aarnio, legal decision making is an intertwinement between different language games and there is a family resemblance between these games with their peculiar rules e.g. the logical-syllogistic, inductive, analogical and openly axiological models of justification. There are no general rules governing the choice between these games and suggestions of normative theories of decision making are not followed in concrete argumentation in practice. However, there are justification rules of a weakly normative character, saying that one must reason in a certain manner if one wants to get a certain justification accepted by a certain audience. For other examples see Wróblewski, *Meaning and Truth in Judicial Decision Making* and Summers, *Two Types of Substantive Reasoning*.

[69] Klami, *Three Essays on the Theory of Legal Norms*, p. 11.

[70] *Ibid*.

[71] For closer definitions of ontology, epistemology and methodology see Wróblewski, *Ontology, Epistemology and Methodology of Law* and Proctor & Capaldi, *Why Science Matters*, pp. 167-169.

[72] Klami, *The Dualism of Law*, p. 471 and Klami, *Three Essays on the Theory of Legal Norms*, pp. 10-19.

[73] *Ibid*. Later, in 1986, Klami explained that he admited a more differentiated ontology than earlier, because the epistemological and methodological peculiarities should be taken into consideration. He stated that in law this also includes justification, when the behavior of a certain reference group is given a normative interpretation. This justification has a partly analogous function with different types of verifications, for instance in physics, chemistry and biology. Normativity thus exists in different versions. Therefore, the rule-element and the behavior element can be differently accentuated in different situations.

Klami's description of the dialectic between ontology, epistemology and methodology is similar to the view that the research questions influence the employed methods but also the reciprocal action between them, that is, knowledge of available methods can also influence the research questions. The reciprocity becomes clear in Steven Winter's (2001) observation that understanding the mind facilitates understanding of the products of the mind and since law is a *"product of the mind"*[74], law should be amenable to analysis informed by the tools of cognitive theory. He furthermore points out that the promise of cognitive theory lies precisely in its ability to make explicit the unconscious and cognitive operations that structure and constitute judgment[75], a view shared by Klami.[76]

Thus, the research questions in this thesis have very close ties to ideas that have been expressed by scholars in Jurisprudence for quite a long time. These ideas have predominantly concerned judges' decision making, whereas this thesis also examines police officers' and prosecutors' decision making. As such, the thesis proposes a modified methodology that is appropriate for studying not only judges and the output of decision making but also the way the decision maker processes the information resulting in his or her decision, even when such processes are more or less subconscious. Using the simile between languages and methods presented at the beginning of this chapter, the thesis both proposes and uses appropriate new vocabulary for studying processes underlying legal decisions. This vocabulary stems from vocabulary already available in the empirical sciences. In the following, these considerations are explained in a discussion regarding assumptions in legal scientific methods as well as in empirical scientific methods.

2.3 Methodological Assumptions

Assumptions are here defined as premises that are so entrenched and taken for granted in a certain context that they are rarely acknowledged as premises at all. In the context of scientific methodology, assumptions are related to the limitations associated with different methods. Using Slife's words: "*…method is not a neutral tool of inquiry but a biased metatheory about how theories and "findings" are to be adjudicated."*[77] This means, that if a researcher wants to make an informed decision about which method is the most appropriate tool for the job, the researcher has to be aware of the as-

[74] Winter, *A Clearing in the Forest*, preface xii.
[75] *Ibid*.
[76] Klami points out that approaches such as experimenting has promoted the understanding of behavior and the distinction between different levels of explanation of legal decision making, see Klami, *Three Essays on the Theory of Legal Norms*, p. 31.
[77] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 2.

sumptions associated with different methods.[78] In some scientific fields, these assumptions are actually quite outspoken, and explicitly referred to as limitations, wheras in other fields, the assumptions are rarely discussed.[79]

2.3.1 Assumptions in Legal Scholarship

Below is a discussion of what conceivable assumptions are at play in methods used in legal scholarship, and this discussion is primarily aimed at legal case analysis, followed by assumptions in empirical methods.

2.3.1.1 The Assumption of Transparency

The assumption of transparency here connotes the premise that written verdicts are transparent in relation to judges' decision making, that is, the reasons stated in the verdicts are also the reasons upon which judges in fact formed their decisions.[80] In situations where the researcher is interested not only in what the established law (in terms of legal norms) is, but the closer reasons for the Court's judgement, this assumption can become misleading. This is because written verdicts usually only contain *legally acceptable reasons* stemming from the legal sources, the evidence in the case etc., since these are the formal bases upon which legal decisions should be made. A recent verdict concerning assault from Solna District Court[81] and the extensive media coverage regarding the verdict,[82] illustrates that when the Courts deviate from this and instead refer to *legally unacceptable reasons*, this strongly contradicts expectations on a written verdict. In the verdict, the Court explicitly stated that: *"It is not uncommon that women make false allegations of being assaulted and threatened and in this way pretend that they need a protected accommodation in order to get an apartment"*[83] and

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[78] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 4.

[79] This is also the reason for Slife's article title *"Raising the Consciousness of Researchers"*. In the article, he emphasizes the need to establish research assumptions as a general theme, since these assumptions have *"the power not only to bias the results of our investigations, but also to bias our theories before they are even subjected to scientific test."* (p. 3).

[80] One could argue that such an assumption is reasonable provided that judges are expected to report their considerations in the reasoning, see the Swedish Government Official Reports, SOU 1926:32 p. 255, SOU 1938:44 pp. 377-380, NJA II 1943 p. 455. However, little is known regarding to what extent such expectations are fulfilled in practice. When it comes to subconscious biases, it is self-evident that the judges are not necessarily aware of the reasons for their decision making. Therefore, they cannot possibly report them.

[81] Solna District Court, B 3551-15.

[82] See for instance Aftonbladet, *Solna tingsrätt stänger av två nämndemän,* https://www.aftonbladet.se/nyheter/a/yvKnmJ/solna-tingsratt-stanger-av-tva-namndeman L. Persson in *Hör Leif GW kommentera kritiserade domen i Solna tingsrätt*, https://www.svt.se/nyheter/lokalt/stockholm/hor-leif-gw-kommentera-kritiserad-dom-i-solnatingsratt

[83] Solna District Court, B 3551-15, p. 4. Own translation of: *"Det är inte ovanligt att kvinnor felaktigt hävdar att de blivit misshandlade och hotade och på så sätt låtsas att de är i behov av ett skyddat boende för att få en lägenhet."*

that this was probably what had happened in this case. Furthermore, the Court stated that the defendant came from a good family, but the plaintiff did not[84] and subsequently acquitted the defendant.

It is possible that verdicts containing legally acceptable reasons in reality provide a perfect camouflage for legally unacceptable reasons.[85] This might imply a view that there are often or always legally unacceptable reasons lurking in the dark underneath the legally acceptable reasons which judges only use to make a verdict appear legitimate. However, it is not my intention to suggest that this is the case in reality.[86] The intention is instead to convey that legally unacceptable reasons *can* be at play, to different extents, and that this can influence judges' legally acceptable reasoning. Importantly, this influence can be entirely subconscious. Thus, when assuming that the verdict is transparent, legal scholars risk missing any legally unacceptable reasons and their interplay with the legally acceptable reasons.

2.3.1.2 The Assumption of Consciousness

Another assumption, which is closely related to the assumption of transparency, is that legal actors would always be aware of the reasons for their decisions, here referred to as the assumption of consciousness. To be able to be transparent with the reasons for decision making, legal actors of course also have to be aware of these reasons. Vice versa, even if legal actors were aware of the reasons, they might not be transparent with them. To take this assumption to its problematic peak, a judge who has a confirmation bias is likely to provide very good arguments for his or her view and possibly even present the evidence etc. in a way that makes it seem as if there is really only one possible outcome; the one that he or she prefers. The judge's conviction that a certain outcome is correct will probably be contagious, as the provided arguments seem sound. Yet, neither the judge, nor the reader of the verdict is aware that the reasoning is in fact one-sided and biased. Provided the subconscious nature of confirmation bias and other related biases, the judge will not notice what is happening and neither will the legal scholar reading the verdict. Thus, a legal scholar might very well conclude that the verdict is formed upon on an objective basis, because it certainly seems that way just reading the verdict.

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[84] Solna District Court, B 3551-15, p. 5.

[85] Although a highly qualitative argumentation might seem to, atleast, indicate a balanced weighing of the evidence, it can also be a manifestation of the decision maker's conscious or subconscious will to convince others that his or her decision is correct. A highly skilled argumenter with a predetermined conclusion is likely to be very convincing. Judges are probably good at justifying their decisions, whatever their decisions are.

[86] In line with Gräns argument relating to Hutcheson's portrayal of legal rules only as means to justify a hunch, such a view would result in, or is atleast on the boarderline to rule skepticism, a view that is not proposed to be true in this thesis. For Gräns's argument, see *Decisio Juris*, p. 172.

In sum, the assumptions of transparency and consciousness make methods in legal scholarship insufficient for studying confirmation bias in legal actors' decision making. The next chapter discusses how and to what extent methods used in empirical sciences, primarily experiments, can provide necessary vocabulary but also are limited by assumptions.

2.3.2 Assumptions in Empirical Sciences

2.3.2.1 The Assumption of Causation and Effect

The modern experiment has connections to early philosophers' ideas about what constitute cause, effect and a causal relationship. As Francis Bacon (1581-1626) pointed out already in 1620: *"(...) not only must we observe nature in the raw, but that we must also 'twist the lions tail', that is, manipulate our world in order to learn its secrets."*[87] In experimental sciences, researchers twist the lion's tail by using manipulations, that is, they deliberately let something vary and study the effect of the variation. Through that deliberate manipulation, researchers want to understand whether a putative cause produced the effect, as explained by for instance David Hume (1711-1776)[88] and John Stuart Mill (1806-1873).[89] Also, various methods such as randomization to experimental and control conditions are used to exclude that extraneous, irrelevant, variables affect the results.

However, the ways in which researchers present and handle experimental results seem to assume that experiments can identify universal and inevitable causes, despite that most causes are more accurately described as so-called INUS-conditions.[90] That is, cause usually means contributing cause for an event, as emphasized by John Leslie Mackie (1917-1981) in 1965.[91] According to Mackie, P is an INUS condition for Q if: P is an *insufficient* but *non-*

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[87] Bacon, cited in Hacking, *Representing and Intervening: Introductory Topics in the Philosophy of Natural Sciences*, p. 149.

[88] David Hume pointed out that a cause precedes the effect in time and the cause and effect are closely related in time and space, see Hume, *A Treatise of Human Nature* and Hume, *An Enquiry Concerning Human Understanding*. Furthermore, Hume believed that there is a correlation between cause and effect. Every time the cause is observed, so is the effect. In this sense, the cause necessitates the effect because repeated observations shows that a particular event is followed by another.

[89] According to John Stuart Mill, the cause precedes the effect, is related to the effect and importantly, there is no other plausible alternative explanation for the effect than the cause. Mill's definition corresponds to crucial elements of an experiment, where researchers manipulate an independent variable and observe the outcome in the dependant variable afterwards. This is done in order to find out how the variation (variance) in the independent variable and the dependant variable are related. See for instance Mill, *A System of Logic: Ratiocinative and Inductive*.

[90] Mackie, *Causes and Conditions*, pp. 245-264.

[91] *Ibid*.

redundant part of a *unnecessary* but *sufficient* condition for Q.[92] For instance, a team of researchers headed by Dr. Judah Folkman reported in the late 1990's that a new drug called Endostatin shrank tumors by limiting their blood supply.[93] Other respected researchers could not replicate the effect even when using drugs shipped to them from Folkman's lab. Scientists eventually replicated the results after they had travelled to Folkman's lab to learn how to properly manufacture, transport, store and handle the drug and how to inject it in the right location at the right depth and angle. Endostatin was an INUS-condition since it was an insufficient cause by itself and its effectiveness required it to be embedded in a larger set of conditions that were not even fully understood by the original investigators.[94]

Although experiments have a unique strength in describing the consequences of deliberately varying a variable, it does less well in clarifying the mechanisms through which and the conditions under which causal relationships hold.[95] The former alternative is referred to as *causal description* and the latter as *causal explanation*.[96] Causal explanations try to break down general but imprecise (molar) causes into their smaller (molecular) compo-

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[92] Mackie, *Causes and Conditions*, pp. 245-264. For example, a cigarette is an INUS condition for a forest fire. The cigarette is insufficient because it cannot start a fire without other conditions but it is non-redundant because the match adds something fire-promoting that is uniquely different from the other factors in the constellation. Furthermore, the cigarette is unnecessary because, in general, other sets of conditions can also start forest fires (e.g. a camp fire and dry leaves or a lightning strike that hits burnable material etc.) but in the specific case, the cigarette is part of a sufficient condition to start a fire in combination with the full constellation of factors.

[93] Folkman, *Fighting Cancer by Attacking its Blood Supply*, pp. 150-154 and Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 4.

[94] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 5. One observer labelled these contingencies the *"in-our-hands"* phenomenon, meaning *"even we don't know which details are important, so it might take you some time to work it out."*, see Rowe, *What is all the hullabaloo about endostatin?,* p. 732. Usually, many factors together are required for an effect to occur, but researchers rarely know all of them and how they relate to each other. This is a reason why causal relationships are not deterministic but only increase the probability that an effect will occur. Also, it explains why a given causal relationship will occur under some conditions but not universally across time, space, human populations or other kinds of treatments and outcomes that are more or less related to those studied. To different degrees, all causal relationships are context dependent, which means that the generalization of experimental effects is always at issue, see Eells, *Probabilistic Causality* and Holland, *Probabilistic Causation Without Probability*.

[95] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 9.

[96] *Ibid*., pp. 9-12. For instance, most children very quickly learn the descriptive causal relationship between flicking a light switch and obtaining illumination in a room. However, few children, or even adults, can fully explain *why* that light goes on. To do so, they would have to clarify the complete process through which the cause exerts its effect, e.g. explain the electrical transmission in terms of power source, conductor, the wire in the bulb and other "driving forces" of the independent variable.

nents.[97] For instance, a researcher who studies the effect of a criminal record on judges' decisions about the defandant's guilt, might very well identify a causal relationship between presenting a criminal record and observing more convictions. However, the researcher cannot explain *why* judges more frequently convict. In order to do so, the decision making process would have to be broken down and studied in smaller molecular components. These molecular components could be for instance measurements of the judges' perceptions of the defendant; are defendants with a criminal record perceived as less trustworthy, more aggressive etc. compared to defendants that do not have criminal records? Although such measurements are molecular in relation to the effect of the criminal record, they are also molar in relation to other even more specific questions such as why defendants with criminal record are perceived as less trustworthy, more aggressive etc.

Apart from the limited ability to fully understand causes, researchers' understanding of the effect of a certain cause is also constrained. This is because only reasonable approximations of a physically impossible counterfactual can be created.[98] In experiments, the so-called *counterfactual model* is used to create counterfactuals, that is, something that is contrary to fact.[99] In the above-described experiment, the reseacher observes what did happen when judges were presented with the criminal record. The counterfactual is knowledge of what would have happened if no criminal record was presented. Thus, an effect is the difference between what did happen (experimental group) and what would have happened if no criminal record had been presented (control group). Since it is impossible for the same judges to simultaneously both be presented and not be presented with the criminal record, cause-probing research creates approximations to the impossible counterfactual.[100] In doing so researchers use randomization, that is, the judges are randomly divided into the two groups by for instance coin tosses or use of a table of random numbers.[101] Neither the researcher nor the judges control who is in which group. Randomization of participants to the so-called experimental and control conditions (criminal record and no criminal record), is assumed to create two groups that are statistically similar to each other on the average.[102] Hence, any outcome differences that are observed between those groups at the end of a study are likely to be due to a treatment, not to

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[97] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, pp. 9-12.
[98] *Ibid*., p. 5.
[99] Lewis, *Causation*, p. 556. This model goes back at least to the 18th century philosopher David Hume.
[100] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 5.
[101] *Ibid*., p. 13.
[102] *Ibid*.

differences between the groups that already existed at the start of the study.[103]

It might seem reasonable to object to this logic, since randomly allocating the judges to the different groups could create a variety of distributions. Perhaps all conviction-prone judges ended up in the experimental group and the effect of their conviction-proneness might be confused with the effect of the criminal record. Judges with higher conviction-proneness might have convicted more frequently even if they were not presented with the criminal record. However, the term probabilistic is crucial here because random assignment ensures that every judge in the experimental group is *equally likely* as every judge in the control group to be conviction-prone, or just have gone through a divorce, just lost a parent or has a headache.[104] Random assignment does not prevent these alternative causes from occuring or isolate the judges from the occurence of such events. Judges in randomized experiments still get divorced and still get headaches, like other people. Random assignment simply ensures that such events are no more likely to happen to experimental judges than to control judges. The only systematic difference between conditions is the criminal record. Thus, random assignment facilitates causal inferences by making samples randomly similar to each other. In addition, not all experimental designs use such between subjects analysis but instead within subjects analysis, that is, comparing the same individual to himself or herself in different situations, which allows safer conclusions.

Despite the experimental assumptions related to cause and effect, no other scientific method matches the characteristic of causal relationships so well.[105] Hence, experiments are well-suited for studying causal relationships since it is possible to (1) manipulate the presumed cause and observe an outcome afterwards, (2) see whether variation in the cause is related to variation in the effect, and (3) by using various methods during the experiment the plausibility of other explanations for the effect is reduced.[106]

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[103] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 5.
[104] *Ibid*., p. 249.
[105] *Ibid*., pp. 6-7.
[106] *Ibid*. This division comes from Mill's definition of a causal relationship that includes (1) the cause precedes the effect, (2) the cause was related to the effect and (3) we can find no plausible alternative explanation for the effect other than the cause.

2.3.2.2 The Assumption of Practical Relevance

"If psychologists are so smart, why are they so confused?
Why is statistics carried out like compulsive hand washing?"[107]

(Gerd Gigerenzer, 2004)

A common component of empirical methods is statistical analysis and statistics has always had critics. A major part of the criticism has concerned the mindlessness with which statistics is sometimes used, automatically and unreflective of which questions can actually be answered using statistics. It has also been described as a way of providing undeserved dignity to research, since statistical results are sometimes considered and presented as if they were unambiguous and robust reflections of a reality "out there".[108] Gigerenzer goes even further in his image of statistics as compulsive behavior, something that a person simply cannot stop doing, even if it the behavior makes no sense at all. This mindlessness is here referred to as the assumption of practical relevance. The problems of such an assumption are discussed in the following with reference to factors that may limit the practical relevance of statistical findings.

Rather than being true reflections of a reality "out there" statistical results provide information about how unlikely the data are under the assumption that the null hypothesis is true. In all statistics, hypotheses are tested following a certain logic stemming from a so-called sampling distribution, a concept which is explained below using a dice example from Borg and Westerlund.[109]

Paul and Peter are two friends that are to begin a game of dices when Paul asks Peter for permission to use his own dice. *"How odd.."* argues Peter silently, *"why would Paul go through the trouble of bringing his own dice…could it be..?"* and suddenly the possibility strikes him, *"has Paul brought his own dice in order to cheat?"*. Peter is offended and upset at first, his heart is beating fast and his hands are shaking, but he forces himself to calm down. *"I better keep a cool head, how does hypothesis testing work*

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[107] Gigerenzer, *Mindless statistics*, p. 590.
[108] See for instance Alvesson & Sköldberg, *Tolkning och reflektion – vetenskapsfilosofi och kvalitativ metod,* p. 19. According to Alvesson and Sköldberg, qualitative methods usually do a better job than quantitative methods at portraying plurality in terms of possible interpretations etc. but, provided that one can avoid falling into the trap of portraying quantitative research findings as unambiguous and robust reflections of a reality "out there" (p. 19), there is no reason to be radically "anti-quantitative" (p. 19).
[109] Borg & Westerlund, *Statistik för beteendevetare*, pp. 177-180.

again?". Peter starts by formulating an alternative hypothesis, which is usually referred to as H_1.

H_1: Paul has brought a "cheating dice".

Peter then formulates the opposite of the alternative hypothesis, the so-called null hypothesis, usually referred to as H_0.

H_0: Paul has brought a normal dice.

"If H_0 is true", Peter argues, *"which results would one obtain when tossing Paul's dice? Which results would one get for instance when tossing Paul's dice twice and calculating the average of the two tosses?". "Well, it could be that the first toss gives a 1 and the second toss also gives a 1. In that case, the average is 1. It could also be that the first toss gives a 1 and the second toss gives a 2. Then, the average is 1.50. Another possibility is that the first toss is a 2 and the second toss is a 1, which also gives an average of 1.50."* Peter continues to think through all the possible outcomes up until when both tosses give a 6, which produces an average of 6. In order to get a better overview, he draws a bar chart, a sampling distribution, with all the 36 possible outcomes, see *Figure 1*.

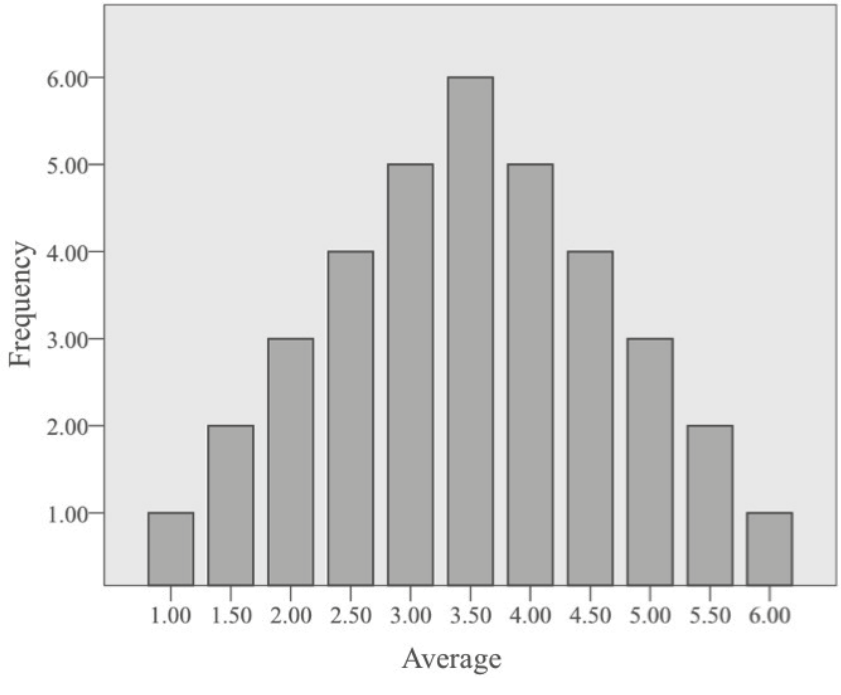

Figure 1. Possible averages from two tosses with a normal balanced dice.

"It is possible that you can use your own dice", Peter says to Paul, *"but first I would like to borrow it for a moment."* Reluctantly, Paul gives Peter the dice. Without wasting any time, Peter tosses the dice twice and both times it gives a 6. Peter calculates the average to be 6 and then looks for the average 6 in his bar chart. To his horror, he sees that the average 6 is very unusual, if it was a normal dice that Paul had brought with him. As a matter of fact, one would only obtain an average of 6 in 1 out of 36 cases, if one tosses a normal dice twice. The probability of obtaining an average this high by chance when tossing a normal dice twice is only $1/36 \approx 0{,}028$, that is, about 2,8 %. *"That probability is very low..",* Peter argues, and decides to reject the null hypothesis. Peter believes that he has obtained support for the alternative hypothesis and therefore accuses Paul of trying to cheat.

In the same way that Peter decides to reject the null hypothesis because of its low probability, researchers using statistics reject null hypotheses (something not being the case) due to low probabilities. Usually, a *p*-value, that is, a critical value that decides whether the researcher should reject or keep the null hypothesis, of 0.05 (5 %) is used.[110] This means, that the probability of obtaining the result by chance, if the null hypothesis is true, is less than 5 %. The researcher himself or herself decides just how unusual a result has to be before he or she starts believing that the result cannot have been obtained by chance.[111]

Furthermore, also limiting generalizability of statistical results is that significance is no indicator of practical relevance.[112] It is simply not adequate to ask whether there is an effect but it is also relevant and necessary to ask how much of an effect there is, that is, the effect size.[113] Just how strong a relationship has to be in order to be practically relevant cannot be generally established. In the context of criminal cases, it seems reasonable to argue that even quite weak relationships are important. Even if judges who have been informed about a suspect's criminal record only convict one more defendant

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[110] Borg & Westerlund, *Statistik för beteendevetare*, p. 186. In literature that is skeptical of statistics, *p*-values have been likened to mosquitoes (annoying and impossible to swat away), the emperor's new clothes (fraught with obvious problems that everyone ignores) and the tool of a *"sterile intellectual rake"* who ravishes science but leaves it with no progeny, Lambdin, *Significance tests as sorcery: Science is empirical – significance tests are not,* pp. 67-90. Gigerenzer refers to the procedure whereby the null hypothesis is either kept or rejected as *"the null ritual"*, Gigerenzer, *Mindless statistics*, p. 590.

[111] The *p*-value is never 0 and this means that there is always some risk (although in some cases it is very small) that a result, which is interpreted as support for the alternative hypothesis, has in fact been obtained by chance. Clearly, if Paul had modified the dice's numbers so that it also included for instance a 7, this would have been assigned 0 probability under the null hypothesis.

[112] Nuzzo, *Statistical Errors, P values, the 'gold standard' of statistical validity, are not as reliable as many scientists assume*, pp. 151-152.

[113] An effect size is a measure of the magnitude of a relationship, see Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inferences*, p. 507.

on average, that difference seems relevant, since it may have great implications to individuals' lifes.

Yet another factor that decreases practical relevance is that there is a limit to the number of hypotheses that experiments can test, and hypotheses that are not tested can potentially provide better explanations, an issue sometimes referred to as *underdetermination*.[114] Clearly, logical compatibility between a hypothesis and data does not necessarily mean that the hypothesis is true. Therefore, it seems reasonable to require that the hypothesis explains the data better than other propositions, which is sometimes referred to as *inference to the best explanation (IBE).*[115]

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[114] Thus, perhaps it is equally likely that some other hypothesis or several hypotheses in combination better explains the result. A given body of data can in fact be compatible with an infinite number of theories and therefore be explained in many ways, see Proctor & Capaldi, *Why Science Matters: Understanding the Methods of Psychological Research*, p. 122-125. Therefore, a scientist's choice of theory will never be uniquely determined by his or her data, see Okasha, *Philosophy of Science*, p. 130. Proponents of the thesis of underdetermination, such as Slife and Williams, argue that the failure of a set of facts to logically contradict some theoretical proposition is sufficient for imbuing that proposition with acceptability, see Slife & Williams, *What´s behind the research? Discovering hidden assumptions in behavioral sciences*. However, logical compatibility between a proposition and data does not necessarily mean that the proposition is true. For instance, it is logically possible that the world is inhabited by green men from another planet who are in our presence when we are not looking at them and disappear when we look at them. Yet, few people would accept this proposition, even if it is possible logically speaking, see Proctor & Capaldi, *Why Science Matters: Understanding the Methods of Psychological Research*, pp. 123-124. Winter also describes how empirical evidence is theory dependent and that postmodernists might even argue that *"everything is a matter of interpretation",* see Winter, *A clearing in the forest*, Preface xvi. However, he also emphasizes that although the contingency of knowledge may be an ineluctable human truth, it does not follow that we can have no useful knowledge or that every view is as good as every other. He adds that the lack of objective foundations for our knowledge does not translate into radical skepticism unless agreeing with (here citing Martha Nussbaum): *"metaphysical realism as the only form of truth worth having"* see Winter, *A clearing in the forest,* Preface xvi and Nussbaum, *Love's knowledge: essays on philosophy and literature*, p. 247. Nussbaum defines metaphysical realism as *"the view that we have truth only when we have a completely unmediated and non-interpretative access to the structure of reality as it is in itself",* p. 247.

[115] Thus, mere consistency between a hypothesis and data is insufficient. The additional requirement is that the proposition better explains the data than other propositions. Some argue that experimental researchers attempt to come to a conclusion as to which of the theories best satisfy the evidence at hand (IBE), see for instance Harman, *The inference to the best explanation*, pp. 88-95. This logic in some ways resembles the logic behind the standard of proof *beyond all reasonable doubt*. Similar to how judges (should) reason about other possible explanations of the presented evidence during a criminal trial, experimental researchers take measures to, as far as possible, exclude alternative explanations. The ability to exclude alternative explanations is always limited by the human understanding and ability to generate and validly evaluate alternative explanations. However, in experiments unlike criminal cases, alternative explanations are evaluated using specific measurements, for instance pre – or postmeasures of different individual factors that might influence the result, which can then be correlated with the effect of the main variable of interest.

2.4 Employed Methods

To address the research questions in methodologically appropriate ways, the present thesis combines the legal dogmatic method with empirical methods, including experimental and archive studies. Whereas the legal dogmatic method entails qualitative analyses, the employed empirical methods consist primarily of quantitative analyses.

There is no general consensus on what the legal dogmatic method is[116] but its purpose is often described as coming to understand what the valid law, *de lege lata*, is. Legal scholars are therefore to describe, systematize and interpret the established law.[117] To a certain extent legal scholars are also to critically evaluate what the law ought to be, *de lege ferenda*, according to some alignments.[118] This quest usually entails qualitative analyses of legal sources, that is, the law, legal practice, the legislative history and, to a certain extent, legal doctrine.[119] On a general level, this description is accurate for how the

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[116] See for instance Peczenik, *Rätten och förnuftet: en lärobok i allmän rättslära*, p. 15, Asp, *Om relationalistisk metod eller spridda anteckningar i jämförande rättsvetenskap*, p. 48. Svensson argues that there is no single but instead multiple methods that are used in legal scholarship and that an alternative connotation of these methods is *de lege interpretata,* that is, law as it has been or is interpreted, see Svensson, *De lege interpretata – om behovet av metodologisk reflektion*, pp. 211.

[117] Olsen, *Rättsvetenskapliga perspektiv*, p. 111, Dalberg-Larsen & Evald, *Rettens ansigter – en grundbog i almindelig retslaere*, p. 127. Other authors only mention systematization and interpretation, see for instance Bruun & Wilhelmsson, *Rätten, moralen och det juridiska paradigmet*, p. 712, Mähonen & Määttä, *Nya tendenser inom rättsekonomin*, p. 223. Yet other authors describe the task of legal scholarship as determining the established law through authoritarian statements, Peczenik, *Vad är rätt? Om demokrati, rättssäkerhet, etik och juridisk argumentation,* pp. 260 and 314, Bengtsson, *Om rättsvetenskapen som rättskälla*, p. 21 and Hydén, *Rättssociologi som rättsvetenskap*, p. 58 or to as accurately as possible answer the judge's questions about the content of the law, Ekelöf, *Är den juridiska doktrinen en teknik eller vetenskap*, p. 116, Strömholm, *Rätt, rättskällor och rättstillämpning:en lärobok i allmän rättslära*, p. 358, Lindblom, *Rättegångssalens väggar – om domstolsprocessen i tid och rum,* p. 6, Ross, *Om ret og retferdighed*, p. 47 and 53, Sandgren, *Om empiri och rättsvetenskap*, p. 730.

[118] See for instance the *constructive legal scholarship* (own translation of *konstruktiv rättsvetenskap*) in Andersson, *Constructive deconstruction. A Test of Postmodern Legal Reasoning: The example of Third Party Losses on the Borderline between Tort Law and Contract Law in Anglo-Swedish Studies in Law,* p. 365 and Ratner & Slaughter, *Symposium on Method in International Law, Appraising the Methods of International Law: A Prospectus for Readers*, p. 294.

[119] Although it is relatively clear which are the legal sources legal scholars most often examine, there is no specific predetermined procedure for how the sources are to be examined. This is clearly illustrated in that the legal scholar Petter Asp described his method only by reference to the following quotation by Willy Kyrklund: *"Everyone thinks on the basis of the own ability and in accordance with the own mentality"* (own translation of: *"Envar tänker efter sin förmåga och i enlighet med sitt kynne."),* see Asp, *EU & Straffrätten, Studier rörande den europeiska integrationens betydelse för den svenska straffrätten,* p. 25. In another context, Asp explains that the legal scholar's role in some ways are similar (but in other ways different) from that of a judge who is trying to solve a certain legal issue, see Asp, *Om relationalistisk metod eller spridda anteckningar i jämförande rättsvetenskap*, pp. 48-49. He points out that they are different primarily because traditional legal method, encompassing

legal dogmatic method is used in the present thesis, although the more specific usage varies somewhat between the different chapters and in some chapters it is not present at all. In Chapter 3 (Confirmation Bias), legal cases are used to exemplify possible manifestations of confirmation bias. In Chapter 4, all of the mentioned legal sources are outlined and analyzed to determine the relevance of confirmation bias from the perspective of Swedish Criminal Procedural law. Chapter 5 entails virtually no components of the legal dogmatic method whereas Chapter 6 uses the legal sources to outline the legal implications of the findings.

As pointed out previously in Chapter 2, the legal dogmatic method is insufficient for studying decision making processes leading up to legal decisions, as they are expressed in for instance verdicts. However, when combining legal dogmatic method and empirical methods it is possible to gain important new knowledge.[120] The empirical methods used in this thesis entail

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traditional legal sources, can only be used for a very limited part of the legal scholar's work. The legal scholar, according to Asp, also uses *"silent"* and *"implicit"* (pp. 48-49) knowledge. Even though there is no predetermined procedure in legal research, a few alternatives have been provided by other scholars than Asp. For instance, Andersson discusses how postmodern and discourse theoretical tools can be used for legal case analysis, see Andersson, *Postmoderna och diskursteoretiska verktyg inom rätten*, p. 361. This can entail e.g. close readings of legal cases in order to reconstruct a frame within which the legal problem is being discussed and thereby make visible details, distinctions, arguments etc. Furthermore, Samuelsson points out that interpretation is fundamental to legal thinkning and that law has its own hermeneutics, that is, the space in which lawyers, including legal researchers, reflect regarding their own reflections, see Samuelsson, *Hermeneutik*, p. 376. Kleineman agrees that interpretation is a crucial component of legal research and furthermore adds that the question of greatest interest in this regard is the question of what the legal issue really is, see Kleineman, *Rättsdogmatisk metod*, p. 30. Wahlgren argues that it is crucial to maintain openness in the assessment of what legal research method is. If there are other methods than the traditional (presumably meaning interpretation of legal sources etc.) that allow quicker, more uniform and objective methods, then such methods shall be used. See also Wahlgren, *Automatiserade juridiska beslut*, pp. 398-399.

[120] Apart from allowing the study of relatively unusual research questions, Smits also points out that methodologies from different disciplines can be fruitful to each other, without them necessarily following the exact same developments. For instance, in legal research, acknowledging and incorporating different ways of thinking from empirical sciences can improve transparency, as regards research questions, methods etc. in legal research. This can be of great value as it is a fair expectation for a critic or a reader of academic work to expect full disclosure of the method used, see Smits, *The Mind and Method of the Legal Academic*, pp. 6-7 and 119-120. Thus, he argues that the core question is neither whether legal research can profit from the insights of other disciplines nor how other disciplines can help the academic study of law to become more 'scientific'. Instead, the core question is how the legal approach itself can better meet the expectations that one may have of an academic discipline. In the view of the author of this thesis, transparency, although important to both traditional empirical disciplines and legal research, may have different purposes within these fields. For the empirical disciplines it seems primarily motivated by an interest of allowing evaluations of the validity of the findings and to promote replicability whereas in legal research it can instead, although with a clear overlap, be a way of explaining how alternative explanations, conceptualizations, interpretations or counterarguments have been dealt with in the research, how the researcher has maintained his or her independence from professional, financial or private interests etc. However, as Smits points out, all of these interests are relevant reasons

three components: 1) a review of existing empirical research on confirmation bias (Chapter 3), 2) three experimental studies addressing confirmation bias in Swedish police officers' (*Study I*), prosecutors' (*Study II*) and judges' (*Study III*) decision making and 3) an archive study where appeals and petitions for new trials addressed to the Courts of Appeal and The Supreme Court between 2010 and 2014 are subject to quantitative analysis (*Study IV Part I and II*). The experimental and archive studies are summarized in Chapter 5.

The review of existing empirical research on confirmation bias entails studies carried out by researchers within cognitive-, motivational-, emotional-, social- and organizational psychology. These studies examine a variety of settings but the setting of primary interest is of course criminal cases. Often, these studies concern foreign legal systems, most commonly the American or British since this is where the majority of research has been conducted. Since these legal systems in some regards are quite distinct from the Swedish legal system, the findings may not be directly applicable in the Swedish setting. However, the studies that have examined the Swedish setting do imply that the findings are generalizable, even if more research is still needed. Thus, the international research highlights potential risk and protective factors that, on good grounds,[121] can be expected to be found in the Swedish setting as well.

The three experimental studies complement the review of empirical research as they use the identified risk and protective factors and test their applicability in three decision making situations that are common in the Swedish criminal procedure. These decision making situations are police officer's arrest and subsequent interrogation of suspects (*Study I*), prosecutors' arrest and prosecution of suspects (*Study II*) and judges' detention of suspects awaiting trial and the subsequent decisions about guilt (*Study III*). *Study I* consists of a series of three experiments, Experiment 1 with 60 Swedish police officers and Experiment 2 and 3 with student samples ($N = 60$ in each experiment). *Study II* encompasses two experiments, Experiment 1 with 40 Swedish prosecutors and Experiment 2 with 60 students. In *Study III*, two experiments were carried out, Experiment 1 with 64 Swedish judges and Experiment 2 with 80 students.

Whereas the experimental studies highlight how confirmation bias can be manifested and mitigated in individual agents in the judicial system, the archive study tests the notion that confirmation bias may also arise at the "system-level" as an inability to self-correct, that is, an inability to acquit wrongfully convicted who appeal or petition for a new trial. To assess the

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for being transparent, if one instead thinks of empirical legal scholarship as one part of legal scholarship, *Ibid*., pp. 28-32.

[121] Partly because the existing research in the Swedish setting supports this notion and partly because of the presumably universal cognitive mechanisms underlying confirmation bias. For more on this see Shillcock, *The Concrete Universal and Cognitive Science*, pp. 63-80.

self-correctional ability, a very low error rate of of wrongful convictions in the District Courts in 2010-2014 was tentatively assumed. A review of appeals (Part I) and petitions for new trials (Part II) in the Courts of Appeal and the Supreme Court between 2010 and 2014 was carried out to quantitatively evaluate to what extent these legal remedies can be expected to change wrongful convictions into acquittals. This evaluation is done in six levels starting with the estimated total number of wrongfully convicted individuals in the District Courts and ending with the total number of wrongfully convicted that were acquitted after being granted new trials.

2.5 Evidence-Based Law (EBL)?

As a researcher begins to grasp different languages he or she may occasionally notice that the same word, literally, has different meanings in different languages. One such word whose meaning differs between methods used in legal scholarship and the empirical sciences is *evidence*. In legal scholarship, evidence is most commonly used to connote the proof for or against something, for instance DNA-evidence or witness testimony indicating a suspect's guilt. However, when evidence is used in the empirical sciences it refers to the empirical support available for a certain hypothesis, for instance that treating a patient who has certain symptoms with a certain medicine will relieve the patient's symptoms. This empirical support is found, not primarily in the physician's own observations of whether the patient is improving or not,[122] but in existing research that systematically evaluates the effectiveness of the medicine for treatment of certain symptoms. This basis for decision making within health care, to which there is currently no equivalent in law, is referred to as Evidence-Based Medicine (EBM). This raises the question, could legal scholarship implement this other meaning of evidence and would there be any benefits to that? In other words, is there a point to think of Evidence-Based Law (EBL)?[123] It seems clear that the answer to this question is yes, not only because law produces many empirical questions but also because it today largely lacks empirical methods to answer such questions.[124]

The concept and potential benefit of EBL is best explained by breaking it down into smaller components, here referred to as *Evidence-Based Legislation*, *Evidence-Based Legal Practice and Evidence-Based Legal Counseling*. An example relating to *Evidence-Based Legislation* is found in *Study III* in

[122] However, so-called *proven experience* (beprövad erfarenhet in Swedish) is acknowledged as a basis for medical decision making within Evidence-Based Medicine (EBM), see for instance Ohlin, *Svårt att definiera beprövad erfarenhet*, pp. 198-199.
[123] See also George, *An Empirical Study of Empirical Legal Scholarship* and Rachlinski, *Evidence-Based Law*, pp. 901-924.
[124] See Rachlinski, *Evidence-Based Law*, pp. 901-924 who points out that legal issues always have produced empirical questions and that the recognition of the need to use empirical research to answer legal questions dates back to at least the time of the legal realists.

this thesis. This study originates from the European Court of Human Rights (ECHR) verdict in *Hauschildt v. Denmark*[125] and from the Swedish legislators's discussion regarding whether the case prompted any change in The Code of Judicial Procedure. In the Hauschildt case, the ECHR stated that Hauschildts' right to a fair trial had been breached since the Danish judge who on repeated occassions detained Hauschildt awaiting trial also decided about his guilt. There is currently no prohibition in the Swedish Code of Judicial Procedure against judges both detaining and deciding about guilt. The legislator argued:

> *"For the ECHR:s verdict in the Hauschildt case it was decisive that the high standard of proof concerning the suspect's guilt that was applicable for detention resulted in that there was only a marginal difference between assessing the question of detention and the question of whether the suspect should be convicted. The judge's impartiality could therefore be questioned on good grounds. The ECHR stated that the circumstance that a judge has made decisions about the suspect, including decisions about detention, before the main hearing, does not in itself justify concerns about the judge's impartiality. In the promemoria it is concluded that as far as the Swedish provisions are concerned, it is unlikely that the same problem will arise because the difference between probable cause, the standard of proof for detention, and beyond reasonable doubt, the standard of proof for a conviction, is larger than the difference between the corresponding standards in Danish law. All bodies considering the legislation, except one, share this opinion."*[126]

Study III tests this notion experimentally, following the same logic described in the dice example. This means that the experiment uses the following alternative (H_1) and null (H_0) hypotheses:

H_1: Judges that have previously detained a suspect are more likely than other judges to convict.

H_0: Judges that have previously detained a suspect are equally likely as other judges to convict.

The experimental design described in *Study III* is then used to evaluate whether the null hypothesis should be kept, a finding which would be in line with the legislator's argument, or instead, if the null hypothesis should be

[125] *Hauschildt v Denmark*, judgment of 24 May 1989,10486/83.
[126] Own translation from The Swedish Government Bill, Prop. 1992/93:25 p. 16. The only body which did not share the opinion was the Faculty Board at the Faculty of Law, Uppsala University.

rejected as the results support the alternative hypothesis, in contradiction of the legislator's argument.

When it comes to *Evidence-Based Legal Practice* there are already existing examples, such as the police's use of The Swedish National Police Board's recommendations[127] for how to conduct suspect line ups in a valid way. Although it is largely unknown to what extent these recommendations are abided by in practice, the recommendations are nonetheless based on empirical evidence about for instance how witnesses remember an event and are influenced by external as well as internal factors when faced with a suspect line up. Clearly, it is conceivable that other empirical research, based on psychology or other scientific areas, can form the basis for other best practice guidelines for legal practice. This could be for instance how suspect interrogations should be carried out to avoid bias, a topic dealt with in *Study I*.

As regards *Evidence-Based Legal Counseling* there are many possibilities for instance in terms of statistical models predicting Court outcomes. Using statistical analyses such as regression models, for examples see *Study II, III* and *IV*, it is possible to predict the odds of different outcomes, based on archive data. Such predictions seem particularly relevant in the legal context as Court rulings are supposed to be predictable in relation to previous case law.

[127] The National Police Board, *RPS Rapport 2005:2 Vittneskonfrontation*.

Chapter 3. Confirmation Bias

3.1 Introduction

The purpose of this chapter is to provide a framework that describes what confirmation bias is and possible explanations as to why it occurs. This framework has its basis in empirical psychological research examining confirmation bias as a general phenomenon but also in context-specific situations. Since the context of primary interest in this thesis is criminal cases, the cited research comes from the interdisciplinary research field of legal psychology. The chapter is divided into two main parts; description of confirmation bias (3.2) and explanation of confirmation bias (3.3).

The description of confirmation bias (3.2) is initiated by a brief historical outlook and a summary of major research trends since the 1960's (3.2.1-3.2.2). Then, the definition of confirmation bias used in this thesis is introduced. This definition stems from the definition provided by Raymond Nickerson in 1998 (3.2.3) with some additions and clarifications made in later research (3.2.3.1). Thereafter, confirmation bias is put into context (3.2.4) with examples regarding witch hunt (3.2.4.1), medicine (3.2.4.2) and science (3.2.4.3). Then, the thesis main focus, the legal context (3.2.4.4) and more specifically criminal cases (3.2.4.4.1) is introduced. Research regarding how confirmation bias may manifest itself in criminal cases is outlined following the chronology of criminal inquiry and proceedings (3.2.4.4.1). However, research that relates specifically to the topics of the empirical studies will only be addressed in the full papers (*Papers I-V*). After the importance of confirmation bias in criminal cases has been laid out, the chapter moves on to a discussion of why confirmation bias is a description rather than an explanation (3.2.5). This is followed by an examination of how confirmation bias relates to and can be demarcated from other cognitive biases and tendencies (3.2.5.1).

The explanation of confirmation bias (3.3) consists of perspectives provided by cognitive psychology (3.3.1), emotion and motivation psychology (3.3.2) as well as social and organizational psychology (3.3.3). This is followed by a discussion regarding the rationality or irrationality of confirmation bias in criminal cases (3.3.4).

3.2 Description of Confirmation Bias

3.2.1 Confirmation Bias – A Long-Recognized Phenomenon

"The human understanding when it has once adopted an opinion (...) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects; in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate (...)"[128]

(Francis Bacon, 1620)

"When men wish to construct or support a theory, how they torture facts into their service!"[129]

(Charles Mackay, 1852)

"Confirmation bias is perhaps the best known and most widely accepted notion of inferential error to come out of the literature on human reasoning"[130]

(Evans, 1989)

"If one were to attempt to identify a single problematic aspect of human reasoning that deserves attention above all others, the confirmation bias would have to be among the candidates for consideration."[131]

(Raymond S. Nickerson, 1998)

Although the term confirmation bias only began to gain acceptance in the 1960's,[132] the behavior which the term refers to was recognized already during the beginning of the 17th century. Hence, the human inclination to not only form hypotheses but also tenaciously hold on to them, even in the face of contradictory evidence, is a long-recognized phenomenon.[133] The more specific and today most commonly accepted definition of confirmation bias

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[128] Bacon, *Novum organum*, p. 36.
[129] Mackay, *Extraordinary popular delusions and the madness of crowds*, p. 552.
[130] Evans, *Bias in human reasoning: Causes and consequences*, p. 41.
[131] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, p. 175.
[132] See Wason, *On the failure to eliminate hypotheses in a conceptual task*, pp. 129-140 and Popper, *The logic of scientific discovery*.
[133] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, pp. 175-176.

was provided by Nickerson in 1998. In short, Nickerson defines confirmation bias as: "*the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand."*[134] At the same time, opposing information is either ignored or interpreted in ways that do not threaten the predetermined conclusion.[135] This definition stems from research since the 1960's that is outlined below.

3.2.2 Major Research Trends Since the 1960's

Beginning with the work of Peter Cathcart Wason in the 1960's, a wealth of data has been collected, primarily in controlled psychological laboratory experiments, suggesting that people are prone to confirmation bias.

In his today famous "2-4-6 task", Wason (1960) instructed 29 psychology students that the numbers 2, 4 and 6 adhered to a rule and their task was to discover which that rule was by writing down series of three numbers to test whether the rule they had in mind was correct.[136] They received feedback from the experimenter after each series and their goal was to discover the rule by generating as few series as possible. Simply enough, the rule was "three numbers in ascending order". Wason noted that most of the participants generated series of numbers that potentially could confirm their hypotheses of what the rule was. For instance, participants whose hypothesis was that the second number was twice the first and the third number was three times the first tended to generate sets of numbers consistent with that hypothesis (e.g. 3-6-9 or 100-200-300). Also, some of the participants repeatedly stated the same rules using different series of numbers, hoping that it was not the rule but the series of numbers that was incorrect, thus displaying wishful thinking. Only very few participants (21 %) got the rule right from the beginning and what characterized these participants' reasoning was that they used an exclusion method whereby they generated several series of numbers that were inconsistent with the rule and therefore potentially could falsify their hypotheses (e.g. 1-47-16 or 6-4-2), before providing their answer. According to Wason, the majority's confirmation strategy illustrated that they had difficulties with abandoning their hypotheses.

Wason's conclusions have been criticized and the criticism is largely based on the fact that when participants formulate a rule to be tested against the experimenter's rule, they do not know if it will be confirmed or not,[137]

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[134] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 175.
[135] *Ibid*., pp. 175-176.
[136] Wason, *On the failure to eliminate hypotheses in a conceptual task*, pp. 129-140.
[137] Thus, confirmation has to be distinguished from positivity. A positive test means that the produced numbers are an instance of your hypothesis. However, this is only confirmatory if you believe your hypothesis to be correct. Consider negative tests in which the produced numbers do not conform your hypothesis. In that case, discovering that your set of numbers does not conform to the rule actually confirms the hypothesis. For more on this see Wetherick, *Eliminative and enumerative behavior in a conceptual task*, pp. 246-249.

which means that the strategy is not necessarily biased. A triplet might have been chosen to confirm a certain hypothesis or to eliminate a possible hypothesis and without knowing what people have in mind when making these selections, it is impossible to tell whether they are attempting to eliminate possible rules from further consideration or not. This criticism describes the basis for what later on was recognized as a rational *positive test strategy*.[138] However, at this point in time, the major focus was not on the potential gain or rationality but instead on the problems and irrationality with such a way of reasoning. This focus on irrational problematic aspects is exemplified by Karl Popper's (1968) well-known argument that achieving confirmation through hypothesis testing is impossible since even if all the evidence so far supports a hypothesis, future evidence may disprove it.[139] Hence, in Popper's opinion, falsification or more specifically failed attempts to falsify a hypothesis is what separates science from unscientific activities like religion and pseudo-science.

During the time period 1968-1980 the research area grew quite rapidly, primarily as a result of Herbert Simon's research on so-called bounded rationality, which Simon conducted already in the 1950's and for which he was awarded the Nobel Prize in 1978.[140] Using Simon's research as a foundation, Tversky and Kahneman (1974) conducted the famous and also Nobel Prize winning (2003) research on heuristics and biases.[141] This research suggested that people are often cognitively unable or disinclined to engage in the often complex information processes that are implied by normative models of decision making.[142] Because of limits in time, knowledge and computational resources, people instead have to rely on simpler judgmental or de-

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[138] The term positive test strategy was first used in 1987 by Klayman & Ha, *Confirmation, Disconfirmation, and Information in Hypothesis Testing*, pp. 211-228.
[139] Popper, *The logic of scientific discovery*.
[140] Simon first used the term bounded rationality in 1957 in his book *Models of Man: Social and Rational*. See also Simon, *Social and Rational-Mathematical Essays on Rational Human Behavior in a Social Setting*. Simon explained that when humans make decisions they do not have access to all relevant information and even if they did, they would not be able to use all of the information due to constraints in the environment, attention or memory etc. Instead, humans use heuristics and one such heuristic is the "satisficing" heuristic (from the words satisfactory and sufficing) which means that humans evaluate one decision alternative at the time and choose the first alternative that meets their minimum requirements. Thus, the heuristic does not entail any guarantee that a decisions maker chooses the best alternative. According to Schwartz and colleagues, some people are satisficers whereas others are maximisers, that is, perfectionists that always strive to make optimal decisions, see Schwartz, Ward, Monterosso, Lyubomirsky, White & Lehman, *Maximising versus satisficing: Happiness is a matter of choice*, pp. 1178-1197. Later, in 1976, Simon also specified his conception of rationality and one of the most important steps in this direction was the concept of procedural rationality, see Simon, *From substantive to procedural rationality*, pp. 129-148. See also Barros, *Herbert A. Simon and the concept of rationality: Boundaries and procedures*, pp. 455-472 that discusses both bounded rationality and procedural rationality.
[141] Tversky & Kahneman, *Judgment under uncertainty: Heuristics and biases*, pp. 1124-1131.
[142] For instance Bayes theorem.

cisional heuristics. These heuristics are easy to apply and allow fairly accurate performance, but they come at a prize: in some situations they produce systematic and serious judgment fallacies or biases. One of these biases from heuristic processing has been proposed to be the confirmation bias. As such, Tversky and Kahneman's as well as Simon's research attracted much attention to the more general subject of bias in decision making but did not address confirmation bias in any more detail.

Other researchers did immerse in studies of confirmation bias. Apart from that Wason and his colleague Johnson-Laird continued with experiments using tasks similar to the 2-4-6 task,[143] several other researchers tested the durability of the previous findings in a set of experiments, with different, more elaborate and realistic designs. These findings largely supported and further nuanced the picture of individuals as seekers of primarily confirming information.[144] For instance, in 1977, Mynatt, Doherty and Tweney, used a computer-controlled environment to simulate real scientific testing and found strong evidence of confirmation bias.[145] In 1979, Doherty, Mynatt, Tweney and Schiavo carried out a similar study but this time with a task addressing human reasoning in a more general sense than scientific testing.[146] Also these participants sought information about their favored hypothesis rather than an alternative and furthermore, they searched for diagnostically useless information, that is, information consistent with both hypotheses, and interpreted it as support for their hypothesis. Doherty and colleagues referred to this as a tendency towards pseudodiagnosticity, that is, a tendency to focus exclusively on the case in which a hypothesis is assumed to be true.[147] Another example of research, carried out in 1980, is Koriat, Lichtenstein and Fischoffs' two experiments addressing the origins of over-

[143] Wason, *Reasoning about a rule*, Wason & Johnson-Laird, *Psychology of Reasoning: Structure and Content.*

[144] See Wason, *Reasoning about a rule*, pp. 273-281, Wason & Johnson-Laird, *Psychology of Reasoning: Structure and Content*, Johnson-Laird, Legrenzi & Legrenzi, *Reasoning and a sense of reality*, pp. 395-400, Miller, *Project Grammaramma* and Mitroff, *The subjective side of science*.

[145] Participants formulated hypotheses about the laws governing the motion of particles by firing as many particles as they wished. After having formulated their hypothesis, participants were shown 10 pairs of photographs of screens and asked to choose the one member of each pair on which they would like to fire additional particles to obtain more evidence concerning their hypothesis. Their choices would either allow confirmation regarding hypotheses or testing of alternative hypotheses. As participants failed to choose photographs that allowed testing of alternative hypotheses, the results were considered strong evidence for confirmation bias.

[146] Doherty, Mynatt, Tweney & Schiavo, *Pseudodiagnosticity*, pp. 111-121. They asked their participants to determine from which of two islands an archeological finding originated by comparing certain characteristics of the finding and characteristics of the two islands. After providing their answers, participants were once again asked to search for more information.

[147] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, p. 177

confidence.[148] They found that overconfidence arose because participants favored positive rather than negative evidence[149] and tended to disregard evidence inconsistent with the chosen answer.[150]

However, also starting in the 1980s was a more critical examination of the generalizability and implications of the results found using Wason's 2-4-6 task and similar studies. As such, several experiments highlight that when just slightly changing the specific characteristics of the task (such as changing the triples of numbers, using descending instead of ascending numbers, asking participants to discover two rules instead of one or to engage in disconfirmatory testing), participants' responses also changed, sometimes to the better and sometimes to the worse.[151] When the task was adapted to better simulate real life decision making, performance improved in one study[152] but not in another study.[153]

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[148] Koriat, Lichtenstein & Fischhoff, *Reasons for Confidence*, pp. 107-118. The origins of overconfidence were examined in relation to an answer participants chose before (Experiment 1) or after (Experiment 2) listing reasons supporting and contradicting the answer. This research came as a response to previous studies which indicated that people are poorly calibrated in their confidence and accuracy judgements, that is, people are more confident than they are correct. A basis for these studies was that an individual is well calibrated if, over the long run, the individual's proportion of correct answers equals the probability assigned. If, an individual is on average 75 % certain and 75 % correct he is well calibrated. If he instead is 75 % certain but only 50 % correct he is overconfident and therefore miscalibrated. The main issue addressed by Koriat and colleague in their experiments was why such miscalibration (overconfidence) occurs.

[149] Support for this was found in the first experiment where participants produced more reasons for than reasons against an answer and the reasons for were rated as stronger reasons.

[150] This conclusion came from the results in the second experiment, in which asking subjects to write a supporting reason did not affect their calibration, presumably because they were already thinking of these reasons, whereas asking them to write a contradicting reason did. Writing contradicting reasons improved the realism of participants' confidence assessments.

[151] See for instance Cherubini, Castelvecchio & Cherubini, *Generation of hypotheses in Wason's 2-4-6 task: An information theory approach*, pp. 309-332. In this study, participants who got triples like 9-14-15 tended to produce much more general hypotheses than when using 2-4-6, indicating that the triple 2-4-6 might produce misleading results. In another study, 54 % of the participants receiving the triple 2-4-6 solved the task whereas only 16 % of the participants receiving the triple 6-4-2 solved it, see Rossi, Caverni & Girotto, *Hypothesis testing in a rule discovery problem: When a focused procedure is effective*, pp. 263-267. Rossi and colleagues argued that this was due to that participants presented with the triple 2-4-6 experienced much more negative evidence by producing triples not conforming to the rule and this negative evidence forced them to revise their hypotheses, which promoted rule discovery. See also Tweney, Doherty, Worner, Pliske, Mynatt & Gross, *Strategies for rule discovery in an inference task*, pp. 109-123 and Gale & Ball, *Exploring the determinants of dual goal facilitation in a rule discovery task*, pp. 294-315. In these studies, performance greatly improved when participants were asked to discover two rules, for instance 1) any three numbers in ascending order and 2) all other sets of numbers. In yet another study, Poletiek, *Paradoxes of falsification*, pp. 447-462, it was found that instructions to disconfirm produced more negative tests.

[152] Vallée-Tourangeau & Payton, *Graphical representation fosters discovery in the 2-4-6 task*, pp. 625-640. In this study, task performance was improved when participants were provided with diagrammatic representations of each set of numbers they generated, presuma-

Possibly, the more critical examination of research employing Wason's method is a reason why other methods for studying confirmation bias gained more attention. This is illustrated by two meta-analyses from 1998 and 2009 that summarize studies using other methodologies to examine confirmation bias in memory and information search. The meta-analysis from 1998 by Eagly and colleagues comprised 70 studies on confirmation bias in memory.[154] The meta-analysis confirmed previous findings, namely that people have better memory for information that supports, confirms or reinforces their evaluations of social, political and personal issues than for information that undermines or challenges these attitudes, suggesting that attitudes influence memory.[155] In addition, it further nuanced this picture through the identification of moderator variables that explained heterogeneity in effect sizes across the studies.[156] For instance, the tendency to better remember attitude consistent information was stronger for highly value relevant issues, that is, issues linked to important personal values,[157] resulting in what some scholars referred to as *ego involvement*.[158] However, the effect of value relevance was weakened with inclusion of controversiality (that was studied on topics like abortion, the war in Vietnam etc.)[159] which resulted in

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bly because in real life people make use of external representations such as diagrams and graphs to assist them, whereas in the original version of the 2-4-6 task they could only make use of internal representations.

[153] Dunbar, *Concept discovery in a scientific domain*, pp. 397-434. In this study, participants were given the task of providing an explanation for the ways in which genes are controlled by other genes using a computer based molecular genetics laboratory and they were led to believe that the gene control was by activitation whereas it was actually by inhibition. Participants who simply tried to find data consistent with the activation hypothesis failed to solve the problem whereas the 20 % of participants who solved the problem set themselves the goal of explaining the discrepant findings.

[154] Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember,* pp. 64-89. The typical methodology in the studies examining effects on memory was to ask participants to indicate their attitudes on social, political or other issues and subsequently they received information consistent and inconsistent with their attitudes.

[155] This notion has endured since the beginning of experimental research in social psychology. It is as central to contemporary research on attitudes and social cognition as it was to the "new look" perspective of the late 1940s which held that psychological states such as schemas, values, affect and attitudes exert selective effects at all stages of information processing, see for instance Bruner & Goodman, *Value and need as organizing factors in perception*, pp. 33-44, Fiske & Taylor, *Social cognition*.

[156] Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 64-89. The overall effect size was small, Cohen's $d = .23$ but as explained in the meta-analysis, this varied a lot across the different studies.

[157] See for instance Johnson & Eagly, *The effects of involvement on persuasion: A meta-analysis*, pp. 290-314.

[158] See for instance Sherif & Hovland, *Social judgment. Assimilation and contrast effects in communication and attitude change*. Other examples of moderating variables are atittude structure and motivation to process attitude-relevant information, see Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 64-89.

[159] The meta-analysis acknowledges that controversiality and value relevance are overlapping criteria.

that people were better at remembering inconsistent information.[160] Possibly, this is due to defensive processing, that is, that people attend to inconsistent information in order to be able to counter argue it.[161] Contrary to Eagly and colleagues' expectations, the tendency was not larger but approximately the same for delayed and immediate memory recall.[162]

The meta-analysis from 2009 by Hart and colleagues also contributed to a more nuanced picture of confirmation bias as it not only confirmed findings in single studies that prior attitudes, beliefs, behaviors and decisions influence what subsequent information people search for[163] but also identified variables moderating this tendency.[164] Across these studies, high or moderate commitment (feeling attached) to a preexisting belief was associated with higher levels of confirmatory searches.[165] Such commitment can be a result of for instance freely choosing the view or having to (or anticipating having to) explain and justify the view publicly, like defending a belief in a written essay.[166] Also, higher levels were observed when challenging information was provided, particularly if the information was of high or moderate quality, as well as when the belief had high relevance to enduring values or the decision maker had low or moderate confidence in the attitude, behavior

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[160] Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 82-84.

[161] *Ibid*. This explanation was not empirically evaluated in the meta-analysis but rather a suggestion from the authors for future research. However, the explanation also has some support in previous research about so-called attitudinal bipolarity, that is, that people tend to be atleast familiar with arguments that oppose their attitudes, as implied by for instance Pratkanis studies, see Pratkanis, *Attitude Structure and Function*.
Also, controversial issues may of course attract much media attention, which increases exposure to both sides of the story.

[162] Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 82-84.

[163] The typical methodology in the 91 included studies was to assess attitudes and beliefs using self-report and behaviors and decisions were operationalized by a previous behavior/decision in the session. Then, participants were asked to choose from a list of consistent and inconsistent alternatives (as indicated by for instance the heading of a news paper article).

[164] Hart, Albaraccin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, pp. 555-588. The overall effect size was small, Cohen's $d = .36$. For earlier reviews see Freedman & Sears, *Selective exposure*, pp. 57-97, who analyzed 14 research reports and found little support. In subsequent reviews, Cotton, *Cognitive dissonance in selective exposure*, pp. 11-33, and Frey, *Recent research on selective exposure to information*, pp. 41-80, examined 29 and 34 research reports, respectively, and concluded that confirmatory searches exist under a variety of circumstances. However, the meta-analysis by Hart and colleagues appears as the currently most informative since it includes studies where selective exposure is assessed using novel methods.

[165] Hart, Albaraccin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, pp. 559.

[166] Other examples are that the decision maker has had to sacrifice for a view like dedicating much time or effort to making the decision.

etc.[167] The bias was not significantly influenced by whether the decision was reversible or not.[168]

In addition, beginning in 1987 and up until today, many researchers have emphasized that what has previously been described as an irrational confirmation bias might in fact be a completely rational positive test strategy.[169] This is because positive testing is often more likely than negative testing to lead to falsification of incorrect hypotheses.[170] Others have added that the question of rationality or irrationality should reasonably take into account in which environment an individual operates.[171] There are also developments that use Bayesian rationality both to explain why supposedly irrational behaviors can in fact be rational and to explicate what confirmation bias is, for instance manifested in a failure to update beliefs in accordance with the theorem.[172] It was also during this time period that Nickerson introduced his today widely accepted definition of confirmation bias, which is outlined and discussed in the next chapter.

3.2.3 Nickerson's Definition

The today available definition of confirmation bias that best reflects the major research trends and has also gained most acceptance is the one provided by Nickerson in 1998. Thus, Nickerson's definition will first be outlined and then complemented with reference to later research.

Nickerson's overall definition of confirmation bias is: *"the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand."*[173] Simultaneously, the decision maker's search for counterarguments is not as effective and if contradicting information is considered, it is only assigned limited importance.[174] To clarify this definition, Nickerson makes two important distinctions.[175] Firstly, he distinguishes between impartial objective reasoning and a way of reasoning which aims to justify a predetermined conclusion, that is, confirmation bias. Secondly, he distinguishes between conscious and deliberate case building

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[167] Hart, Albaraccin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information,* p. 557.
[168] *Ibid*.
[169] Klayman & Ha, *Confirmation, Disconfirmation, and Information in Hypothesis Testing*, pp. 211-228.
[170] Provided that the numbers of instances conforming to the hypothesis are approximately equal to those conforming the actual rule. For example, if the rule is "ascending by twos" then positive testing will often lead to hypothesis falsification and rule discovery.
[171] See for instance and Gigerenzer, *Rationality for Mortals* and Todd & Gigerenzer, *Ecological Rationality*.
[172] Fischhoff & Beyth-Marom, *Hypothesis evaluation from a Bayesian perspective*, pp. 239-260
[173] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 175.
[174] *Ibid*.
[175] *Ibid*., pp. 175-176.

processes and subconscious spontaneous case building processes where only the latter alternative falls within the definition of confirmation bias.

As regards the first distinction, Nickerson describes an impartial objective decision maker as someone who first searches for arguments and proof for and against possible conclusions, evaluates them and then draws the conclusion that seems to be dictated by the information.[176] This way of reasoning is clearly different from when a decision maker selectively searches for and evaluates arguments and proof in order to find support for a conclusion that has already been drawn. Thus, a crucial aspect is the point in time at which a decision maker makes up his or her mind about a decision alternative. A decision maker who has a confirmation bias has drawn his or her conclusion at a much earlier stage than an objective decision maker and also maintains that conclusion independently of subsequent relevant information. This raises the question about on which basis the decision maker (with a confirmation bias) forms the decision. The two previously cited meta-analyses provide a preliminary answer, namely that attitudes, beliefs, behaviors and previous decisions can influence what information is sought as well as which is remembered when reasoning about what decision to make.[177] However, as implied by Nickerson's definition, confirmation bias manifests itself in how a decision maker *reasons*, where some aspects are bolstered and others are downplayed in order to reach a desired (and predetermined) conclusion. This can be further explicated using the following example from the legal context. During Court deliberations there are of course legal frames dictating what reasoning is at all relevant but within those frames judges are free to reason in whichever direction they want.[178] Most likely, they will also reason in conventionally acceptable terms, such as the wording of a statute or the legislative history.[179] This can provide an effective disguise for a predetermined conclusion based on other, irrelevant, information, since the *reasons for reasoning* in that direction are not necessarily visible, neither for an outside observer nor for the decision maker himself or herself.

Nickerson's second distinction between conscious deliberate case building and subconscious spontaneous case building can be explained with reference to the roles of different legal actors.[180] An example of conscious and

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[176] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 175.

[177] Hart, Albaraccin, Eagly, Brechan, Lindberg & Merrill, *Feeling validated versus being correct: a meta-analysis of selective exposure to information*, pp. 555-588 and Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 64-89.

[178] In accordance with the principle of free evaluation of evidence laid down in The Code of Judicial Procedure 35 ch. 1 §.

[179] In this regard it can be noted that selective exposure to information seems to be higher in so-called high commitment conditions such as when one has to explain one's view publicly or when confronted with high quality challenging information, which can of course often be the case during for instance Court deliberations.

[180] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, pp. 175-176.

deliberate case building is what a defense attorney does in his or her closing statement in Court. In line with the defense attorney's role, he or she will attempt to protect the client's interests[181] which entails emphasizing the arguments and the evidence that are consistent with the client's interests and downplaying or completely disregarding the information that is inconsistent with the client's interests. This one-sided way of reasoning is most certainly a conscious strive for the defense attorney[182] since he or she is expected to reason subjectively in order to fulfill his or her formal role. However, the same case building process can happen subconsciously. Thus, confirmation bias connotes a less explicit one-sided process, an unwitting selectivity in the acquisition and use of information in order to adjust these so that they conform to a preferred hypothesis.[183] The subconscious nature of confirmation bias implies that decision makers, for instance legal actors like police officers, prosecutors and judges, who are expected to be objective and who might even perceive of themselves as objective, may in fact have a confirmation bias. Subconsciously they become defenders of a certain hypothesis, for instance that the suspect is guilty, and that is how and why confirmation bias in criminal cases is problematic. However, as Nickerson points out, the line between conscious and subconscious case building processes is difficult to draw in practice.[184] This view is complemented below with research relating to the question of whether it is possible to distinguish between conscious and subconscious decision processes, on more than a conceptual level.

3.2.3.1 Conscious and Subconscious Decision Making Processes

The idea that humans have conscious and subconscious cognition and that these can be distinguished by the level of brain activity[185] seems to be generally accepted. Although a few researchers see consciousness as a yes-no phenomenon,[186] the absolute majority believes that consciousness comes in

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[181] See for instance the Swedish Code of Judical Procedure 21 ch. 7 § and 1 § *Vägledande Regler om God Advokatsed*.

[182] Although defense attorneys, like all other humans, can also have a confirmation bias which they are unaware and which for instance influence their perception of the evidence in the case.

[183] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, p. 175.

[184] *Ibid*.

[185] In other words, consciousness depends on the amount of brain activity and becoming conscious of something means that its information has, as some researchers describe it "taken over brain activity", Kalat, *Biological Psychology*, p. 430. See also Cosmelli, David, Lachaux, Martinerie, Gamero, Renault & Varela, *Waves of consciousness: Ongoing cortical patterns during binocular rivalry*, pp. 128-140.

[186] This view is supported only by a minority of researchers. See for instance Sergent & Dehaene, *Is consciousness a gradual phenomenon?,* pp. 720-728, who in their study flashed blurry words on a screen for brief fractions of a second and asked people to identify each word and rate how conscious they were of the word on a scale from 0 to 100. Since participants almost always rated a word as either 0 or 100. Sergeant & Dehaene concluded that participants almost never were partly conscious of the words. If the premises for this conclu-

degrees.[187] However, the question of whether it is possible to distinguish conscious and subconscious decision processes is not as well researched but does have some theoretical as well as empirical basis that is relevant for assessment.

System 1 and *System 2* processes is a framework in cognitive and social psychological research which expresses the notion that conscious and subconscious decision processes can be distinguished, although not completely separated.[188] System 1 refers to fast, implicit, automatic and subconscious cognitive processes that are independent of an individual's working memory and intelligence and, according to some researchers, a system that humans have in common with other primates.[189] This is different from System 2 that encompass slow, explicit and conscious cognitive processes that are restricted by the individual's working memory capacity and intelligence.[190] System 2 is also associated with hypothetical thinking about for instance the future or alternative explanations.[191] System 1 and 2 form the basis for so-called *dual process theories*, for instance Kahneman and Fredricks' *dual process theory of probability judgment* describing how System 1 and 2 interact in the decision making process and more specifically in a decision maker with a confirmation bias.[192] Whereas System 1 generates an intuitive partial judgment, that judgment gains support from the analytical System 2, for instance by generating arguments for the judgment. However, the individual is not necessarily aware that the arguments have this purpose but instead experiences that he or she is reasoning back and forward on an issue and then ultimately ends up with a conclusion which, in fact, he or she had already reached. This suggests that both subconscious and conscious processes mutually support confirmatory reasoning, although most of the processing is subconscious.

Yet, dual process theories also suggest that it can work the other way around, since it is believed that partial System 1 judgments can be inhibited and replaced by a deliberative reflective assessment, if the individual consciously makes an effort to produce counterarguments.[193] Thus whether and

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sion are accepted, which seems quite uncertain, it suggests that consciousness is a threshold (yes/no) phenomenon.

[187] The majority of researchers seem to support this view. See for instance Pessiglione, Schmidt, Draganski, Kalisch, Lau, Dolan & Frith, *How the brain translates money into force: A neuroimaging study of subliminal motivation*, pp. 904-906 and Williams, Morris, McGlone, Abbott & Mattingley, *Amygdala responses to fearful and happy facial expression udner conditions of binocular suppression*, pp. 2898-2904, whose studies illustrate that stimulus which participants report/show no conscious perception of still influence their behavior.

[188] Evans, *Dual-Processing Account of Reasoning, Judgment and Social Cognition*, pp. 255-278.

[189] *Ibid*.

[190] *Ibid*.

[191] *Ibid*.

[192] Kahneman & Frederick, *A model of heuristic judgment*, pp. 267-294.

[193] *Ibid*.

to what extent a decision maker displays a confirmation bias seems to be dependent on the closer interaction between subconscious (intuitive judgments) and conscious decision making processes (explicit reasoning supporting or disconfirming the intuitive judgment).

The empirical basis for the provided explanation of confirmation bias is insufficient for drawing safe conclusions. Overall, dual process theories gain partial support from some neuroscientific studies according to which there are two neurologically distinct systems for conscious and subconscious processes.[194] The so-called *X-system* coincides with System 1 processes and the *C-system* concurs with System 2 processes.[195] The X-system involves the amygdala, the basal ganglia and the lateral temporal lobe, parts of the brain associated with conditioning, associative learning and automatic implicit processes.[196] The C-system comprises the anterior cingulate cortex, the prefrontal cortex and the medial temporal lobe (including hippocampus), parts of the brain associated with explicit learning and inhibitory executive control.[197] However, these systems are not considered isolated units that are exclusively referrable to certain aspects of human cognition, emotion etc. On the contrary, it is acknowledged that certain behaviors only *correlate* with activity in certain brain areas and that the neural activation spreads across different brain regions that are associated with both conscious and subconscious elements that are involved in the decision making process.[198]

So far, the distinction between System 1 and 2, as well as the related dual process theories and neuroscientific studies may seem to indicate that the respective roles of conscious and subconscious reasoning processes in confirmation bias are relatively easy to separate, at least on a conceptual level. However, the descriptions of the systems etc. sometimes make the distinction come across as easier than it really is. Like many critics of the framework argue, System 1 and 2 are not synonomuos with subconscious and conscious processes but better conceptualized as systems that capture different ways of thinking which both may be more or less conscious or subcon-

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[194] Lieberman, *Reflexive and reflective judgment processes: a social cognitive neuroscience approach*, pp. 44-67.
[195] *Ibid*.
[196] *Ibid.*
[197] *Ibid*.
[198] See for instance a study by Lee, Devlin, Shakeshaft, Stewart, Brennan, Glensman, Pitcher, Crinion, Mechelli, Frackowiak, Green & Price, *Anatomical traces of vocabulary acquisition in the adolescent brain*, pp. 1184-1189, according to which the amount of gray matter in the inferior (lower) parietal lobe correlates significantly with adolescents' vocabulary. For more information about the methods used in this type of research see for instance Andreasen, *Brain imaging: Applications in psychiatry*, pp. 1381-1388 regarding Computerized Axial Tomography (CAT scan) and Warach, *Mapping brain pathophysiology and higher cortical function with magnetic resonance imagning*, pp. 221-235, regarding magnetic resonance imaging. Kalat, *Biological Psychology*, pp. 107-11, discusses the limits of such methods.

scious.[199] As such, confirmation bias may be independent of these two systems and can be at play in analytical reflecting argumentation (typically associated with System 2) just like intuitive judgments (System 1) or combinations of the two, even if a decision maker is more likely to be self-critical and therefore more likely to detect his or her confirmatory ways of reasoning, if the reasoning is dominated by System 2. Apart from this being in line with the more general notion of consciousness as something that comes in degrees rather than in dichotomous categories,[200], it also leaves room for another probably quite important component, that is, metacognition, which is about monitoring and controlling cognitive functioning with regard to quality and validity criteria.[201] For this to be effective, the monitoring of results also have to be utilized for subsequent behavioral control.[202] If not, biases may remain undetected and uncorrected.[203] When applying this perspective on confirmation bias, it implies that even if both conscious and subconscious elements can be at play in the reasoning patterns referred to as confirmation bias, humans are far from always aware that their search for, evaluation, interpretation etc. of information takes on a confirmatory pattern.[204] In other words, the *consequences* of reasoning in certain ways are not necessarily clear to decision makers.

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[199] The sometimes unreflected use of the System 1 and 2 framework has been criticised by for instance Keren and Schul who argue that the framework lacks conceptual clarity, is based on questionable methods and rely on inadequate empirical evidence, see Keren & Schul, *Two is not always better than one: A critical evaluation of two-system theories,* p. 534. Osman furthermore argues that evidence that is used as support for dual theories is also consistent with single-system accounts, Osman, *An evaluation of dual-process theories of reasoning,* pp. 988-1010. For a response to this and other criticism see Evans & Stanovich, *Dual-Process Theories of Higher Cognition: Advancing the Debate*, pp. 223-241. Evans and Stanovichs' discuss a theoretical approach where rapid autonomous processes (Type 1) are assumed to yield default responses unless intervened on by distinctive higher order reasoning processes (Type 2). They argue that the difference is that Type 2 processes support hypothetical thinking and load heavily on working memory.

[200] See for instance Pessiglione, Schmidt, Draganski, Kalisch, Lau, Dolan & Frith, *How the brain translates money into force: A neuroimaging study of subliminal motivation*, pp. 904-906 and Williams, Morris, McGlone, Abbott & Mattingley, *Amygdala responses to fearful and happy facial expression under conditions of binocular suppression*, pp. 2898-2904, whose studies illustrate that stimulus which participants report/show no conscious perception of still influence their behavior.

[201] See for instance Nelson, *Consciousness and metacognition*, pp. 102-116, Thompson, Prowse Turner & Pennycook, *Intuition, reason and metacognition*, pp. 107-140.

[202] Fiedler, *Meta-Cognitive Myopia and the Dilemmas of Inductive-Statistical Inference*, p. 3.

[203] *Ibid*.

[204] *Ibid.*, pp. 1-55. This is also related to the notion of a *metacognitive myopia* (MM), which has traditionally been defined as the phenomena that people are pretty accurate in utilizing even large amounts of stimulus information, whereas they are naïve and almost blind regarding the history and validity of the stimulus data. This uncritical reliance on the information given is the most conspicuous when the task context makes it crystal-clear that the stimulus data should not be trusted. It is also offered, by for instance Klaus Fiedler, as an alternative account of many biases in judgment and decision making, which have been traditionally explained in terms of capacity constraints, limited reasoning ability, motivational forces, or

What seems to be a common denominator for the outlined theories and research is that decision makers are not necessarily aware of why they reason in certain ways or what the consequences of their reasoning is, even if the reasoning process in itself is conscious. In juxtaposition, this would imply that intuitive judgments can hijack the analytical deliberative reasoning process, without the decision maker being aware of it. According to Evans, this points to an illusion in humans that they have much more control over their own behavior than what they actually do.[205] As such, decision makers with argumentative skills, like many legal actors, will often be able to provide proper and acceptable reasons for their conclusions and at the same time be unaware of why the reasoning took on a certain direction and/or what the consequences of the reasoning are. Yet, according to Kahneman and Frederick a quick intuitive judgment that is biased may be corrected through the slower deliberated assessment that follows, if the individual's working memory capacity allows it.[206] Although individual differences in susceptibility to confirmation bias have been observed,[207] the more specific reasons for the differences are still unclear. In fact, it seems that individuals overall are poor in detecting confirmation bias in themselves, whereas the ability to detect it in others is better.[208] Thus, the existing research does not contradict Nickerson's idea that confirmation bias is a largely subconscious process but neither is there a sufficient empirical basis for explaining exactly how subconscious and conscious processes interact to form a confirmation bias.

Even if subconscious and conscious decision making processes could be distinguished with perfect accuracy in empirical studies, deciding when legal actors' confirmatory reasoning is subconscious or conscious (or somewhere in between) would still be very difficult. It could be argued that legal actors who are expected to reason objectively, do not, atleast not commonly, consciously deviate from those standards. Although such deliberate one-sidedness probably occurs, it seems reasonable to assume that most legal actors want to live up to professional standards. Thus, if they realized that their reasoning was biased, they would act differently. Such an assumption clearly gives legal actors the benefit of doubt[209] but is not necessarily correct. Since what falls within or outside of legal actors' consciousness, or to what

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severely biased environmental input. See also Fiedler, Hofferbert & Wöllert, *Metacognitive Myopia in Hidden-Profile Tasks: The Failure to Control for Repetition Biases*, pp. 1-13.

[205] Evans, *Dual-Processing Account of Reasoning, Judgment and Social Cognition*, p. 270.

[206] Kahneman & Frederick, *A model of heuristic judgment*, pp. 267-294.

[207] See for instance Rassin, *Individual differences in the susceptibility to confirmation bias*, pp. 87-93.

[208] Pronin, Gilovich & Ross, *Objectivity in the eye of the beholder: Divergent perceptions of bias in self versus others*, pp. 781-799.

[209] Since the opposite assumption would be that confirmatory reasoning is wholly or partially conscious, which in turn involves a claim that legal actors consciously set aside their obligations to be objective.

degree, is rarely conveyed to an outside observer, it is only possible to speculate with regard to for instance the circumstances in the case, which is usually quite problematic.[210]

To illustrate, in 2007 the Parliamentary Ombudsmen criticized the Police Authority because a police officer who had carried out a photo line up with a witness that could not identify the suspect had omitted the result from the prelimary report and had not told the prosecutor.[211] The stated reason for this was that the line up did not result in the identification of any possible perpetrator.[212] Was this a subconscious or conscious omission of guilt inconsistent information? One interpretation is that the police officer simply did not perceive of the result as relevant to the investigation and therefore excluded it,[213] which could indicate that the confirmatory reasoning was more or less subconscious. Another possible interpretation is that the police officer consciously kept silent about the result in order to not undermine the hypothesis that the suspect was guilty. There is no sound methodology that allows safe conclusions regarding this question, when the behavior is studied in retrospect (see more about this in Chapter 2). Thus, observations of police inquires or legal case analysis, although relevant for examplifying possible real life manifestations of confirmation bias, has clear methodological limitations.[214] In the empirical studies this uncertainty is addressed for instance by asking participating legal actors to state what they thought the purpose of the study was. As indicated by the results, even legal actors who realize that the purpose is to study biases in decision making do not significantly deviate in their answers compared to other participants (see *Study I-III*). This suggests that confirmatory reasoning, at least that displayed in the experiments, did occur on a subconscious level.

3.2.4 Confirmation Bias in Context

Nickerson was clear that confirmation bias can appear "in many guises"[215], that is, it can manifest itself in many different contexts and at different stages of human information processing. These ideas are confirmed by context

[210] This also highlights why legal case analysis is insufficient for understanding subconscious thought processes.
[211] See The Parliamentary Ombudsmen, JO 2009/10 p. 11.
[212] *Ibid*., p. 2.
[213] If the police officer thought of the result as relevant, it should have been included in the preliminary investigation, in accordance with the Swedish Code of Judicial Procedure 23 ch. 21§. Defense counsel Eriksson, *Handbok för försvarare*, pp. 124-125, points out that failure to include material in the preliminary report is not necessarily conscious but instead has to do with difficulties for police officers to put themselves in the position of the defense and imagine what could be relevant for them. This is an explanation that overlaps confirmation bias.
[214] From a legal point of view, an analysis of whether a behavior was conscious or subconscious is sometimes not relevant at all, since the question is not necessarily what an individual thought, or did not think, but rather what the individual had a duty to do.
[215] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, p. 175.

and stage specific research. To illustrate, a few examples of confirmation bias in historical as well as contemporary contexts will be provided. This leads up to the legal context[216] and more specifically how confirmation bias can manifest itself at the different stages of criminal inquiry and proceedings.

3.2.4.1 Witch hunt

In Western Europe, between the 16th and 19th centuries, tens of thousands of individuals, mostly women, were declared witches who collaborated with Satan and as a consequence, they were executed.[217] According to some researchers, this so-called witch hunt is a brutal example of how confirmation bias can have extreme consequences on a societal level.[218] During this time period, it was more or less a commonly held convention that witchcraft not only existed but was also the source of all kinds of evil and problems that could not be explained in other ways.[219] This commonly held belief manifested itself in that many European Courts had special regulations for the evidence and the standards of proof when the allegations concerned sorcery.[220] In Sweden, children's stories about having been abducted by witches were considered sufficient for executing or burning them to death and many accused women were coerced to confess their "crimes" by relatives or judges.[221] Furthermore, sometimes a specific test was used in order to determine whether someone was a witch.[222] There was just one issue with this test, namely that the alleged woman had no practical possibility to prove her innocence. The test consisted of the woman being thrown into water with her hands tied behind her back.[223] If the woman was floating, she was considered a witch who had been saved by Satan and as such, she had to be sentenced to death.[224] If instead, the woman drowned, she was considered innocent.[225] Yet, being declared innocent while already dead was of course not of any practical significance to the accused woman. As such, this test was not

[216] Although some of the examples in the other contexts have implications or relevance for the legal context and/or legal scholarship.
[217] Tegler Jerselius, *Den stora häxdansen*, pp. 13-17.
[218] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 191. See also Söderberg, *Svartalf och sotpacka*, pp. 45-48 and Tegler Jerselius, *Den stora häxdansen*, pp. 15-17. Clearly, it is impossible to prove that confirmation bias was the only or even one of many explanations for witch hunt but documented behaviors from this time period do resemble confirmation bias to a large extent.
[219] Söderberg, *Svartalf och sotpacka*, pp. 45-48, Tegler Jerselius, *Den stora häxdansen*, pp. 15-17.
[220] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 191.
[221] Gadelius, *Häxor och häxprocesser,* pp. 124-125.
[222] Cabell, *Witchfinder General*, p. 42, Gadelius, *Tro och öfvertro i gångna tider*, pp. 19-22.
[223] *Ibid*.
[224] *Ibid.*
[225] *Ibid*.

designed to discover information that could falsify the allegations and save the accused, but only to get the accusations confirmed. Even if the women had been presumed innocent, which was clearly not the case, the test did not provide any real chance of coming to such a conclusion. This illustrates how the method for testing hypotheses can be biased towards a certain conclusion, and such a bias can be subtler than in this example.[226]

Similar confirmatory tendencies were found in the French Courts that dealt with accusations of sorcery. According to the French judge Bodinus, trials regarding sorcery could not be conducted in the same way as trials regarding other crimes since proving someone guilty of sorcery was very difficult and not one out of a million witches could be convicted, had the normal rules applied.[227] This resulted in a reversed burden of proof whereby an acquittal required that the prosecutor's malice was "clearer than the sun"[228]. This suggests that the French Courts were barely responsive to potentially contradicting information, partly due to the reversed burden of proof (as well as the seemingly very high standard of proof "clearer than the sun") and partly because it seems there were no other conceivable reasons for someone's innocence (such as her not being a witch at all) other than the prosecutor's malice.

3.2.4.2 Medicine

Within the field of medicine, there are both historical and contemporary manifestations of confirmation bias. For instance, an important insight reached by medical scientists in the beginning of the 19th century was that individuals can recover from diseases both with and without treatment.[229] The reason why it took scientists so long to reach this insight was probably that they primarily focused on the positive results, that is, results indicating that a treatment was working. At the same time, negative results were largely disregarded and the scientists failed to test whether patients would improve without treatment too.[230] In this way, practically any treatment that had once or a few times generated positive results gained trust and was used extensively, even though the observed cases of positive results might equally well have been due to other factors, such as the individual's own resilience.[231]

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[226] Of course it can be questioned whether the people using such tests were conscious, subconscious or "semiconscious" in relation to this bias. As such, the respective roles of malice, confirmation bias or possibly naivety etc. are unknown.
[227] Mackay, *Extraordinary popular delusions and the madness of crowds*, p. 528.
[228] *Ibid*.
[229] Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, p. 192.
[230] *Ibid*.
[231] This also explains the function of so-called control groups that do not receive any treatment and are then compared to experimental groups that did receive a treatmeant under evaluation.

Although today it is well known that humans are naturally resilient, and the resilience can vary between individuals, the abovementioned example still has implications for so-called pseudomedicine,[232] that is, naturopathic drugs and health/whole food where both salesmen and users only refer to studies confirming that the products are effective.[233] Negative results are downplayed or not mentioned at all.[234] This is confirmatory reasoning in itself but it is likely to also be present in consumers of these products since it is well-known that expectations influence perceptions.[235] Thus, the consumer is likely to selectively attend to information that confirms that the product is working ("Yes, I do feel more alert") and also interprets information in that way ("I feel so cheerful today, it must be because of my new diet"). Yet another example of confirmation bias in the medical field comes from studies showing that physicians and psychiatrists who are aware of a patient's medical diagnosis tend to make more diagnosis-consistent interpretations of information regarding the patient, as compared to physicians and psychiatrists who are unaware of the patient's diagnosis.[236]

3.2.4.3 Science

"These theories appeared to be able to explain practically everything. (...) Once your eyes were thus opened you saw confirming instances everywhere: the world was full of verifications of the theory. Whatever happened always confirmed it."[237]

(Karl Popper, 1963)

Popper's view that a theory which cannot (potentially) be falsified is unscientific,[238] has a very close relationship to the issue of confirmation bias in

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[232] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, p. 192.
[233] *Ibid*.
[234] Just like with the witch hunt example, it is unknown to what extent such behavior is conscious or subconscious.
[235] See for instance Kelley, *The warm-cold variable in first impressions of persons*, pp. 431-439 and Handley, Fowler, Rasinski, Helfer & Geers, *Beliefs about expectations moderate the influence of expectations of pain perception*, pp. 52-58.
[236] Eadie, Sroka, Wright & Merati, *Does knowledge of medical diagnosis bias auditory-perceptual judgments of dysphonia?* pp. 420-429 and Mendel, Traut-Mattausch, Jonas, Leucht, Kane, Maino, Kissling & Hamann, *Confirmation bias: why psychiatrists stick to wrong preliminary diagnoses*, pp. 2651-2659.
[237] Popper, *Conjectures and refutations*, pp. 34-35. The theories that Popper had in mind were Marxism, Freudian psychoanalysis and Adler's version of psychoanalysis, theories which he believed were impossible to falsify and therefore not scientific. For more on this see Proctor & Capaldi, *Why Science Matters: Understanding the Methods of Psychological Research*, pp. 28.29.
[238] Proctor & Capaldi, *Why Science Matters; Understanding the Methods of Psychological Research*, p. 28.

science. In scientific research, confirmation bias can express itself through the way in which researchers deal with results confirming or disconfirming a theory or hypotheses. One example is the American physicist Robert Milikan who in 1923 received the Nobel Prize for his work with determining the charge of electrons.[239] Out of Milikan's 107 studies, only 58 were published and all the published studies supported his hypothesis. However, the remaining 59 studies that disconfirmed his hypothesis were never published.[240] This so-called *file drawer problem*[241] means that null findings remain unpublished, either because the researcher does not attempt to get them published or because the journals show no interest in publishing null findings.[242] This means that the picture of the available research in a certain area becomes cropped and misguiding as only the positive results are conveyed.

Occasionally, when null or contradicting findings are published, confirmation bias can manifest itself in an excessively conservative attitude towards the results, where the findings are explained with reference to for instance methodological flaws.[243] Of course, scientists have good reasons to avoid prematurely accepting inconsistent findings that might be spurious and methodological flaws can of course be a valid explanation of such findings. However, it is unlikely to be a valid explanation if the inconsistent findings are repeatedly replicated. In a study conducted by Fugelsang, Stein, Green and Dunbar regarding scientists' responses to falsifying evidence, the scientists responded to 88 % of the hypothesis inconsistent findings by blaming it on methodological problems.[244] After the inconsistent findings had been replicated, 61 % of the scientists responded by changing some theoretical assumptions. This is probably an appropriate response[245] but it is unknown whether these findings can be generalized to all scientists.

An alternative manifestation of confirmation bias in this regard is that a theory is adjusted to accommodate the findings without changing the theory.[246] In this way, a potentially flawed theory is insufficiently challenged and instead adapted to accommodate the originally inconsistent findings. Such insufficient skepticism can also appear in relation to a method.[247] A historical example of this is found in Alexander Graham Bell's research on the development of the telephone, in which he continued to focus on undulating current and electromagnets even after he and other researchers had obtained

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[239] Milikan, *The autobiography of Robert Milikan*.
[240] Henrion & Fischoff, *Assessing uncertainty in physical constants*, p. 796.
[241] See for instance Rosenthal, *The 'file drawer problem' and tolerance for null results,* pp. 638-641.
[242] *Ibid*. See also Rothstein, Sutton & Borenstein, *Publication bias in meta-analysis*, pp. 1-7.
[243] Nickerson*, Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, pp. 195-196.
[244] Fugelsang, Stein, Green & Dunbar, *Theory and data interactions of the scientific mind: Evidence from the molecular and the cognitive laboratory*, pp. 86-95.
[245] But of course depending on how many replications there were etc.
[246] Nickerson, *Confirmation Bias: A Ubiquitos Phenomenon in Many Guises*, pp. 195-196.
[247] *Ibid*., p. 196.

good results with liquid devices, which were used to produce the first intelligible telephone call to Bell from his assistant Watson in 1876.[248] Another example is that by using a trusted method, researchers have systematically underestimated the margin of error for the speed of light and the g-force.[249] Hence, this illustrates how confirmation bias can influence metacognitive judgements of the validity and reliability of an employed method.[250]

3.2.4.4 The Legal Context

Confirmation bias and other related biases have been studied to different extents in several legal fields like damages,[251] bankruptcy law,[252] a variety of civil law cases,[253] migration law,[254] environmental law[255] and arbitrator's decision making in gender discrimination cases.[256] However, the majority of research has concerned criminal cases, which is also the focus of this thesis. This research is described and discussed below, following the chronology of criminal proceedings, that is, starting with criminal investigations and subsequently, the Court proceedings. Since the four empirical studies also cite research regarding confirmation bias in police officers', prosecutors' and judges' decision making, the research outlined below concerns other aspects or aspects that are only shortly mentioned in the articles. Thus, this chapter largely leaves out the topics for the empirical studies, that is, confirmation bias in police interrogations with suspects *(Study I),* in prosecutorial decisions to arrest and prosecute *(Study II),* judges' decisions about detention and guilt *(Study III)* and confirmation bias as a feature of the appeal procedure *(Study IV Part I* and *II)*. Instead the chapter provides more in-depth

[248] Gorman, *Hypothesis testing*, pp. 217-238 and Eysenck & Keane, *Cognitive Psychology*, p. 538.
[249] Henrion & Fischoff, *Assessing uncertainty in physical constants*, pp. 791-798.
[250] Metacognition refers to an individual's beliefs and knowledge about his or her own cognitive processes and strategies, Eysenck & Keane, *Cognitive Psychology*, p. 477. Experimental researchers' confirmatory behaviors caused Gergen to go so far as to describe experiments as "misguiding post hoc justificatory devices", see Gergen, *Toward a postmodern psychology*, p. 24.
[251] Rachlinski, Wistrich & Guthrie, *Can Judges Make Reliable Numeric Judgments? Distorted Damages and Skewed Sentences*, pp. 696-739.
[252] Rachlinski, Guthrie & Wistrich, *Inside the Bankruptcy Judge's Mind*, pp. 1227-1265 and Rachlinski, Guthrie & Wistrich, *Heuristics and Biases in Bankruptcy Judges*, pp. 167-186.
[253] Wistrich & Rachlinksi, *Implicit Bias in Judicial Decisions Making – How if Affects Judgment and What Judges Can Do About It*, *pp. 1-44.*
[254] Wistrich, Rachlinski & Guthrie, *Heart versus Head: Do Judges Follow the Law or Follow Their Feelings?* pp. 856-911. For another study within the field of migration law, which does not specifically address bias, but instead asylum officials preconceived ideas about what information truthful asylum seekers can provide about their countries of origin, see van Veldhuizen, Horselenberg, Landström, Granhag & van Koppen, *Interviewing asylum seekers: A vignette study on the questions asked to assess credibility of claims about origin and persecution*, pp. 3-22.
[255] Wistrich, Rachlinski & Guthrie, *Heart versus Head: Do Judges Follow the Law or Follow Their Feelings?,* pp. 856-911.
[256] Helm, Wistrich & Rachlinski, *Are Arbitrators Human?* pp. 666-692.

examination of studies, often with reference to exemples of their potential practical relevance.

3.2.4.4.1 Criminal Cases

Research on confirmation bias focuses on primarily three stages of human information processing and it varies to what degree and in which ways legal actors are involved in these stages of processing in criminal cases.[257] The three stages are 1) *exposure and selection*, that is, how humans primarily search for hypothesis confirming information,[258] 2) *interpretation*, that is, how humans interpret information in hypothesis confirming ways and disregard possible alternative interpretations,[259] and 3) *memory*, that is, how humans tend to remember information consistent with their hypotheses better than other information.[260]

During the criminal investigation, police officers and prosecutors are to a great extent involved in the first stage, exposure and selection, as the inquiry primarily involves a search for information but, in order to decide which information is relevant they also have to interpret, that is, evaluate and remember the information. For prosecutors the interpretation element is quite pronounced for instance when deciding whether there are sufficient reasons to prosecute a suspect, for what crime etc. When the evidence is presented in Court, the judges' core task is of course to interpret (evaluate) the evidence, which necessarily requires that they remember it during the deliberation. However, judges will to a certain extent select information, since capacity limits makes it impossible for them to attend to all presented information equally.

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[257] Although all three kinds of information processing is atleast to some extent required to at all understand criminal evidence.

[258] Confirmation bias at exposure and selection of information has been estimated meta-analytically, see Hart, Albaraccin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, pp. 559-584. Studies concerning confirmation bias at exposure to information have generally employed a procedure where participants chose e.g. articles to read from a list with alternatives that are either compatible or incompatible with their prior attitudes, beliefs or behaviors, including decisions. Typically, inferences about the prevalence of confirmation bias have been based on the number of compatible and incompatible choices. Overall, participants in the analyzed studies were almost two times more likely to select compatible alternatives than alternatives that were incompatible with their pre-existing attitudes, beliefs and behaviors (*Odds ratio* = 1.92). The magnitude of the bias was moderate ($d = 0.36$). This moderate effect size is probably because of responsiveness to motivations that can exert opposing influences on selection preferences (accuracy and defense motivations).

[259] Confirmation bias when interpreting information has not yet been meta-analyzed but the occurence is supported by several studies regarding different contexts.

[260] Confirmation bias in memory has been meta-analyzed, see Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 64-89. The overall effect size of confirmation bias in memory ($d = 0.23$) was smaller than that in exposure and selection of information ($d = 0.36$).

3.2.4.4.1.1 Criminal Investigations

3.2.4.4.1.1.1 The General Focus of the Inquiry

Suspect Driven Investigations

Wagenaar, van Koppen and Crombag's analysis of 35 Dutch criminal cases, published in 1994, provides a clear example of how confirmation bias may manifest itself in the search for information during criminal investigations. The analyzed cases were dubious in the sense that they contained legal or logical problems and that they were later reversed by the Court of Appeals because of a different evaluation of the evidence or the defense attorney remained strongly convinced of her client's innocence.[261] Some of the cases were acknowledged wrongful convictions.[262]

Wagenaar and colleagues looked for common denominators in the cases. They found one such denominator; a suspect had been identified at an early stage of the investigation and from there on the police's working hypothesis, that the suspect was guilty, dictated the investigation so that its only aim was to find hypothesis confirming information, a so-called *suspect-driven investigation*.[263] This is the opposite of what the researchers refer to as *offence-driven investigation* where the available information guides the formation of the case's narrative.[264] Clearly, a suspect driven investigation carries with it a significant risk that alternative crime hypotheses such as another perpetrator or that no crime has been committed at all, are insufficiently investigated.[265] This also means that the accuracy of the investigation is more or less haphazard, as it depends on the quality of the original suspicions. From their findings, Wagenaar and colleagues concluded that Dutch legal actors do not always follow the sort of logic dictated by legal standards but are instead guided by premature hypotheses about a suspect's guilt.[266]

Although adding important insights and impetus for future research, Wagenaar and colleagues' study has some important limitations. Overall, 35 Dutch criminal cases are neither quantitatively or qualitatively representative for investigative work in general, which is acknowledged by the researchers

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[261] Wagenaar, van Koppen & Crombag, *Anchored narratives, the psychology of criminal evidence*, p. 11.
[262] *Ibid*. The reason why not only acknowledged cases of wrongful convictions were included, was, according to Wagenaar and colleagues, that even cases where the defendant may be guilty can be dubious since the available evidence does not logically exclude the innocence of the defendant.
[263] *Ibid*., pp. 84-88.
[264] *Ibid*.
[265] *Ibid*.
[266] They also emphasized the Bayesian model as a more realistic model for reasoning and decision making in criminal cases, since the diagnostic value of every piece of evidence is estimated with consideration of the prior odds of the defendant's guilt. They add that the Bayesian model is not completely satisfactory since anomalous cases are not accounted for.

themselves.[267] The issue of representativeness is also related to the criteria used for selection. Clearly, a case may be dubious even if it has not been reversed by an Appellate Court or a defense counsel is convinced that the convicted is innocent, for instance if the defendant falsely confessed the crime (and has not retracted the confession). Selectivity in investigative procedures can probably be much more subtle and difficult to discover. Even what the researchers refer to as safe convictions, that were not included in their sample, can be the result of and extensive selective information search and evaluation that make the convictions appear to be safe.

The more specific implications of this research for Swedish criminal cases are uncertain. The Swedish Code of Judicial Procedure 23 ch. 2 § dictates that during the preliminary investigation, inquiry shall be made concerning who may be reasonably suspected of the offence and whether sufficient reasons exists for his prosecution. Possibly, this encourages one-sided hypothesis testing, after a suspect has been identified, since investigators are likely to look primarily for whether there is evidence confirming that the suspect should be prosecuted.[268] Also, the occurrence and extent of suspect driven investigations is probably associated with which alternative hypotheses the police is expected to investigate. Some legal scholars claim that only conceivable and adjoining hypotheses about for instance a different perpetrator or a different crime have to be investigated, and even less so if for instance the suspect has confessed.[269]

Assymetrical Skepticism

In 2005, the Swedish researchers Ask and Granhag carried out experimental studies with Swedish police officers illustrating the evaluative component of confirmation bias.[270] The police officers were presented with a case vignette regarding a homicide, in which a female psychiatrist was found dead in an apartment where she had her office, and another woman, Eva, was encountered injured in the same apartment. Eva's husband was a client of the victim and according to the victim's assistant, Eva had expressed suspicion about a sexual relationship between the victim and the husband. Overall, the case vignette strongly indicated that Eva was the perpetrator.

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[267] Wagenaar, van Koppen & Crombag, *Anchored narratives, the psychology of criminal evidence*, p. 11. They also stress that the vast majority of criminal cases do not contain any legal or logical problems and that only including dubious cases may convey that there are more dubious cases than what is true for real life.

[268] Since this is the way most individuals test their hypothesis, looking at the results in for instance Wasons 2-4-6 task.

[269] Diesen, *Förundersökning*, pp. 197-198.

[270] Ask & Granhag, *Motivational bias in criminal investigators judgements of witness reliability*, pp. 561-591.

Police officers where then asked to rate the reliability, credibility, witnessing and recall conditions for a witness who stated she heard loud, upset voices from the apartment and since she was not used to hearing any fuss in the building, she felt uneasy. There were two versions of this witness testimony that were identical except for that in the incriminating version, the witness judged that the voices belonged to *two women*, whereas in the exonerating version, she thought they belonged to *a woman and a man*. Half of the police officers received the incriminating version whereas the other half received the exonerating version. They were also either placed in a low time pressure or high time pressure condition.

The police officers who received the exonerating version perceived the witness as significantly less reliable and credible and also thought the witnessing and recall conditions were less favorable, although the background and witnessing conditions were identical. This is referred to as *asymmetrical skepticism*, that is, whereas a decision maker uncritically approves of hypothesis consistent information, he or she critically scrutinizes hypothesis inconsistent information.[271] Furthermore, police officers in the high time pressure conditions were more confident that Eva was guilty.[272] Undoubtedly, assymetrical skepticism has a functional value for a decision maker who wants to reach a certain conclusion.[273] Similar research in the Dutch setting found similar results.[274] Other research indicates that ambiguous information is also subject to biased (hypothesis consistent) interpretations.[275]

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[271] Assymetrical skepticism has been documented in a range of settings, for instance in relation to information about significant others: Klein & Kunda, *Motivated person perception: Constructing justifications for desired beliefs*, pp. 145-168 and Stevens & Fiske, *Motivated impressions of a power holder: Accuracy under task dependency and misperception under evaluation dependency*, pp. 907-922, regarding people's physical health: Ditto & Lopez, *Motivated skepticism: Use of differential decision criteria for preferred and nonpreferred conclusions*, pp. 568-584, Taber & Lodge, *Motivated skepticism in the evaluation of political beliefs*, pp. 157-184 and Ditto, Munro, Apanovitch, Scepansky & Lockhart, *Spontaneous skepticism: The interplay of motivation and expectation in responses to favorable and unfavorable medical diagnoses*, pp. 1120-1132, and in relation to general beliefs and attitudes: Edwards & Smith, *A disconfirmation bias in the evaluation of arguments*, pp. 5-24 and Lord, Ross & Lepper, *Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence*, pp. 2098-2109.

[272] In the high time-pressure condition, investigators' confidence in the hypothesis that the suspects was guilty, expressed prior to reading the witness statement, explained 86% of the variance in the post-witness ratings of confidence. The corresponding percentage in the low time-pressure condition was only 38 %.

[273] This is an explanation provided by the motivated social cognition framework, see for instance Kruglanski, *A motivated gatekeeper of our minds: Need-for-closure effects on interpersonal and group processes*, pp. 465-496, Kruglanski, *Motivated social cognition: Principles of the interface*, pp. 493-520, Kunda, *The case for motivated reasoning*, pp. 480-498 and Pyszczynski & Greenberg, *Toward an integration of cognitive and motivational persepctives on social inference: A biased hypothesis-testing model*, pp. 297-340.

[274] Rassin, Eerland & Kuijpers, *Let's find the evidence: an analogue study of confirmation bias in criminal investigations,* pp. 231-246.

[275] Alison, Smith & Morgan, *Intepreting the accuracy of offender profiles*, pp. 185-195.

Although Ask & Granhag's studies only uses one brief case vignette regarding one type of crime, one suspect, one type of evidence and with limited external validity, there is no doubt that asymmetrical skepticism, if it occurs in real criminal investigations, may have far-reaching consequences. For instance, it means that the inquiry systematically disregards or downplays information that potentially could falsify, or at least cast serious doubts on a hypotheses regarding the likely perpetrator, even if such evidence appears right before the criminal investigators' eyes.[276] This may also influence the distribution of investigative resources, where a good deal of resources are spent looking for more preferred information and none or very little are spent on other information. Thus, asymmetrical skepticism and suspect driven investigations are closely intertwined.

The analysis of the Parliamentary Committee evaluating the criminal investigations and convictions of SB who confessed eight murders but was acquitted after retracting all his confessions, explicitly mentions such behaviors (although not using the same terminology):

> *"The investigative measures that were carried out after SB's confessions were to a large extent focused on searching for evidence that SB was the perpetrator (...). Although there were several circumstances in the inquiry that by themselves should have made the investigators doubt that his confessions were true, they did not result in a widened perspective. Instead, those circumstances often resulted in more investigative measures aimed at strengthening the notion that SB had committed the crimes."*[277]

3.2.4.4.1.1.2 Identifications and Interrogations

Line-up Identifications

When criminal investigators organize a line-up, the most common purpose is to test whether or not a witness can identify a suspect as the perpetrator.[278] Thus, a line up provides a clear example of how criminal investigators test their hypothesis regarding a suspect's guilt. The validity of this test is directly dependent on how it is carried out. Since research clearly illustrates a

[276] A critical standpoint might be that it is a fully rational reaction to be more skeptical towards inconsistent evidence simply because it contradicts other aspects of the case, see for instance Ask, Rebelius & Granhag, *The 'Elasticity' of Criminal Evidence: A Moderator of Investigator Bias*, p. 1254.

[277] Swedish Government Official Reports, *Bergwallkommissionen,* SOU 2015:52 pp. 591-592.

[278] See the Swedish National Police Board's recommendations for line-ups, Vittneskonfrontation, RPS Rapport 2005:2, p. 1.

confirmation bias in hypothesis testing,[279] it is reasonable to expect that when the line-up administrator knows about the suspect's identity, he or she will construct and conduct a line-up which is more likely to result in a positive identification of the suspect, than if the administrator had been blind to the suspect's identity. This risk has been acknowledged by several researchers.[280] Studies also confirm that an administrator's knowledge can result in that witnesses are more likely to identify the suspect, even in target-absent lineups (i.e. when the suspect is innocent).[281] However, the relationship and interplay between an administrator's confirmation bias and the many other potentially biasing, or mitigating, factors[282] in line-up identifications are still unclear.

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[279] See for instance Klayman & Ha, *Confirmation, disconfirmation, and information in hypothesis testing*, pp. 211-228 and Snyder, *When belief creates reality*, pp. 247-305.

[280] See for instance Greathouse & Kovera, *Instruction Bias and Lineup Presentation Moderate the Effects of Adminstrator Knowledge on Eyewitness Identification*, pp. 70-82 and Rodriguez, *The effect of line-up administrator blindness on the recording of eyewitness identification decisions*, pp. 69-79.

[281] See for instance Philips, McAuliff, Kovera & Cutler, *Double-blind photoarray administration as a safeguard against investigator bias*, pp. 940-951. During the lineup task the investigators presented two target-absent lineups to each witness, the administrator was informed of the suspect's identity for one of the lineups but not for the other. Adminstrator knowledge, the type of lineup presented, as well as the presence of an observer during the lineup task were also manipulated. Under certain circumstances, knowledge of the suspec's identity increased the rate of false alarms. Specifically, administrator knowledge influenced witnesses to choose an innocent suspect when a sequential lineup was administered and an experimenter-observer ws present during the lineup task but not in the other conditions. Furthermore, support for experimenter expectancy effects was found by Haw & Fisher, *Effects of administrator-witness contact on eyewitness identification accuracy*, pp. 1106-1112 who manipulated the level of contact between administrators and witnesses. In the high contact condition, administrators were permitted direct contact with the eyewitnesses when administering the lineup. In the low contact condition, witnesses were provided with instructions, photos and an identification form to complete individually; the administrator did not have direct contact with the witnesses and sat behind the witnesses out of their direct view. When high contact administrators presented target absent, simultaneous lineups. witnesses were more likely to identify the innocent suspect than in any other condition. Thus, effects of investigator knowledge were more likely to be seen in simultaneous rather than sequential lineups, in contrast to Philips and colleagues' study.

[282] There is a range of factors that potentially can bias the outcome of a line-up identification and thereby increase the probability that witnesses make false identifications, including improperly chosen foils, see for instance Lindsay, Wallbridge & Drennan, *Do clothes make the man? An exploration of the effect of lineup attire on eyewitness identification accuracy*, pp. 463-478, Lindsay & Wells, *What price justice? Exploring the relationship between lineup fairness and identification accuracy*, pp. 303-314 and Luus & Wells, *Eyewitness identification and the selection of distracters for lineups*, pp. 43-57, or biased instruction that suggest the culprit is in the lineup, see for instance Clark, *A re-examination of the effects of biased lineup instructions in eyewitness identifications*, pp. 575-604 and Steblay, *Social influence in eyewitness recall: A meta-analytic review of lineup instruction effects,* pp. 283-298, and simultaneous (as opposed to sequential) lineup presentation, see for instance Cutler & Penrod, *Improving the reliability of eyewitness identification: Lineup construction and presentation*, pp. 281-290 and Steblay, Dysart, Fulero, & Lindsay, *Eyewitness accuracy rates in sequential and simultaneous lineup presentations: A meta-analytic comparison*, pp. 459-473.

Despite this uncertainty, research available today suggests that line-up adminstrators' knowledge of the suspect's identity seems to influence witness choices, even when the adminstrators have pre-set instructions to provide the witness. An example is a study that was carried out by Canter and colleagues.[283] They recruited participants that would act as criminal investigators administering a line-up and also recruited ignorant witnesses.[284] Half of the participants administering the line-up were told who the suspect was and the other half was not. All administrators used the same scripted instructions and none of them explicitly and consciously told the witnesses who the suspect was. However, the suspect was more than twice as likely to be selected when the administrator knew the suspect's identity (25 %) compared to when the administrator did not know (10.83 %). This was probably because the administrators subconsciously conveyed information about the suspect's identity through their behavior, which enabled witnesses to draw conclusions about who the suspect was.

The effect of such *hypothesis leakage*[285] is likely to vary with the witness' susceptibility to leading information.[286] On a general level, there is no doubt that witness identifications are sensitive to external influences.[287] Also, the manifestations of an adminstrator's knowledge can be more or less subtle, such as verbal cues like: *"what about this picture over here?"* or *"have a careful look at number.."* which direct the focus towards a particular person in the line-up, or *"take another look and make sure he's the one",* encouraging a witness to reconsider or even reject their previous identification decision.[288] Thus, knowledgeable adminstrators may ask the witness questions about the lineup members that will confirm the adminstrators' hypothesis that the suspect is the culprit but not questions that will (or potentially could) disconfirm this hypothesis.[289] Nonverbal cues like various facial gestures (frowning, rolling the eyes, smiling etc.) or body movements (folding the arms, nodding the head, leaning toward or away from the witness etc.) may

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[283] Canter, Hammond & Youngs, *Cognitive bias in line–up identifications: The impact of administrator knowledge*, pp. 83–88.
[284] The witnesses were ignorant in the sense they had not seen the suspect or any of the fillers before, in order to avoid any memory effects.
[285]Greathouse & Kovera, *Instruction Bias and Lineup Presentation Moderate the Effects of Administrator Knowledge on Eyewitness Identification,* pp. 70-82.
[286] See for instance Murphy & Greene, *Perceptual Load Affects Eyewitness Accuracy and Susceptibility to Leading Questions*, pp. 1-10.
[287] Wells, Small, Penrod, Malpass, Fulero & Brimacombe, *Eyewitness identification procedures: recommendations for line-ups and photo-spreads*, pp. 1–39 and Wells, Malpass, Lindsay, Fisher, Turtle & Fulero, *From the lab to a police station: a successful application of eyewitness research*, pp. 581–598.
[288] Phillips, McAuliff, Kovera & Cutler, *Double-blind photo array administration as a safeguard against investigator bias,* pp. 940–951.
[289] Greathouse & Kovera, *Instruction Bias and Lineup Presentation Moderate the Effects of Adminstrator Knowledge on Eyewitness Identification*, pp. 70-82.

also be influential.[290] Hence, a line-up administrator's verbal and nonverbal behavior, which on the surface may seem harmless or even helpful and encouraging to the witness, may impact upon whether and who the witness chooses to identify.[291] Thus, a test aiming to objectively evaluate whether a guilt hypothesis is true, may in fact bias the witness due to the police's subconscious information transfer. As Krane and colleagues point out, this may occur regardless of the best intentions of the criminal investigator.[292] This is also the reason why the Swedish National Police Board recommends that the investigator who administers the line-up should be blind to the suspect's identity.[293] However, in practice this might be difficult, at least in small communities where most police officers are involved in the case in one sense or the other.

Other questions that have not been empirically evaluated is whether the administrator's knowledge can also influence their choices regarding presentation method (e.g. simultaneous vs. sequential)[294] and line-up composition, since line-ups in which the suspect deviates from the fillers for instance by way of physical appearance, are known to bias witnessess' identification choices.[295] This is the reason why, in line with the National Police Board's recommendations, all fillers shall fit the overall description of the perpetrator provided by the witness.[296] If not, there is a risk that the witness can conclude who the suspect is and make an identification based on that the suspect is the only one or one of the few who fits the description, not on the basis of

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[290] Phillips, McAuliff, Kovera & Cutler, *Double-blind photo array administration as a safeguard against investigator bias*, pp. 940–951.
[291] Clark, Marshall & Rosenthal, *Line-up administrator influences on eyewitness identification decisions*, pp. 63–75.
[292] Krane, Ford, Gilder, Inman, Jamieson, Koppl, Kornfield, Risinger, Rudin, Taylor & Thompson, *Sequential unmasking: a means of minimizing observer effects in forensic DNA interpretation*, pp. 1006–1007.
[293] The Swedish National Police Board's recommendations for line-ups, *Vittneskonfrontation*, RPS Rapport 2005:2, p. 20.
[294] The simultaneous presentation method seems to be associated with more wrongful identifications in target-absent line-ups. See for instance Steblay, Dysart, Fulero & Lindsay, *Eyewitness accuracy rates in sequential and simultaneous lineup presentations: A meta-anaytic comparison*, pp. 459-447, Steblay, Dysart & Wells, *Seventy-two tests of the sequential lineup superiority effect: A meta-analysis and policy discussion*, pp. 99-139, Sporer, Penrod, Read & Cutler, *Choosing, confidence, and accuracy: A meta-analysis of the confidence-accuracy relation in eyewitness identification studies,* pp. 315-327, Willmott & Sherretts, *Individual differences in eyewitness identification accuracy between sequential and simultaneous line-ups: consequences for police practice and jury decision*, pp. 228-239.
[295] See for instance Behrman & Richards, *Suspect/foil identification in actual crimes and in the laboratory: A reality monitoring analysis*, pp. 279-301, Horry, Memon, Wright & Milne, *Predictors of eyewitness identification decisions from video lineups in England: A field study*, pp. 257-265, Meissner & Brighman, *Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review*, pp. 3-35, Porter, Moss & Reisberg, *The Appearance-Change Instruction Does Not Improve Line-up Identification Accuracy*, pp. 151-160.
[296] Swedish National Police Board's recommendations for line-ups, *Vittneskonfrontation*, RPS Rapport 2005:2, p. 17. More specifically, the recommendations state that the fillers shall fit the witness' general description but can vary in other regards.

the witness' memory (from the crime scene etc.). Sometimes, the choice of fillers is so improperly made that, in practice, the witness will always identify the suspect as the perpetrator, just on the basis of the line-up composition. A murder case from Södertörn District Court, B 13157-13, cited below, illustrates this.

> *In the evening on the 15th of September 2013, ABA was shot dead close to a bus stop on Stamgatan in Östberga.*[297] *ABA had come their by car, parked his car and after getting out of the car he was approached by the perpetrator who killed him with five gunshots. SB was charged with complicity to murder because he had arranged a meeting with ABA on Stamgatan. According to the prosecutor, SB knew that ABA would get shot and arranged the meeting to facilitate the murder. To back this claim, the prosecutor referred to an identification from the witness MB who had told the police he saw two men meeting close to the crime scene just before the murder. According to MB the men said "they are there" and pointed in the direction of Stamgatan.*[298] *The man, who the prosecutor claimed was SB, was described by MB as having dark skin, descenting from the Middle East, balding and had stubble. Also, the man was 25-30 years old and heavily built, somewhat overweight.*
>
> *In the line-up identification the police used footage from a surveillance camera at Östbergatorget where 19 individuals including SB where visible.*[299] *Although expressing doubts, MB identified SB as one of the two men.*[300] *When MB was later asked in Court how many of the individuals in the footage fit the description he had provided, MB answered one or possibly two.*[301]

If the line-up had been perfectly balanced it would be expected to generate the same or similar numbers of identifications for each person in the line-up,[302] that is, approximately 5 % (1 out 19) for each person.[303] However, according to an expert opinion based on an empirical test of the line-up with naïve observers who all read MB's description of the man, 63 % (39 out of 62 participants) identified SB, thus clearly illustrating that it was unbal-

[297] Södertörn District Court, B 13157-13, p. 11.
[298] *Ibid*., p. 40.
[299] *Ibid*., p. 23.
[300] *Ibid*., p. 41. MB said he was uncertain of his memory and that the man in the footage looked alike one of the men he saw talking close to the crime scene.
[301] *Ibid*.
[302] This regards an identification by a non-witness, that is, someone who tries to identify the suspect without any knowledge of the crime or perpetrator, except for the witness's description.
[303] Completely balanced line-ups are of course difficult to achieve and therefore it is perhaps more appropriate to use a range in this regard.

anced.[304] The Court concluded that the identification had low, if any, evidentiary value and acquitted MB.[305] As recommended by the National Police Board,[306] the police should have carried out such a test prior to showing the line-up to MB. Failing to do so could be an indication of insufficient skepticism towards the guilt hypothesis, although more empirical research is needed to evaluate this interpretation. For instance, improperly chosen foils is a known source of error, but why do criminal investigators choose improper foils? Is it due to a conscious or subconscious desire to confirm that the suspect is guilty? And/or that the risk of a false identification is underestimated? Today, there are no systematic reviews of whether and to what extent the National Police Board's recommendations, which are based on empirical research, are abided by in practice. This seems a particularly important topic for future research since witness identifications can have strong evidentiary value in Court.[307] Thus, if they are biased, there is a clear risk of wrongful convictions. Although numbers specific for the Swedish legal setting are missing, witness misidentifications have been recognized as one of the greatest contributing factors to wrongful convictions by the American Innocence Projects, since such identifications played a role in more than 70 % of the convictions overturned through DNA-testing.[308]

Suggestive Information and Leading Questions

There is plenty of research suggesting that when police officers believe that the suspect is guilty, this belief is more or less subtly transferred to witnesses, for instance by providing suggestive information or posing leading questions which makes the witness adjust his or her account so that it is consistent with the police's belief.[309]

For instance, Marion and colleagues studied how alibi witnesses react when informed about an innocent suspect's confession.[310] A naïve partici-

[304] Expert opinion, 17th of March 2014.
[305] Södertörn District Court, B 13157-13, p. 41.
[306] Swedish National Police Board's recommendations for line-ups, *Vittneskonfrontation*, RPS Rapport 2005:2, pp. 18-19.
[307] See the Swedish National Police Board's recommendations for line-ups, Vittneskonfrontation, RPS Rapport 2005:2, p. 6. However, this document recognizes that the evidentiary value may vary from case to case, depending on how the line up was conducted.
[308] See The Innocence Project, https://www.innocenceproject.org/causes/eyewitness-misidentification/. See also Valentine & Heaton, *An evaluation of the fairness of police line-ups and video identifications*, pp. 59–72.
[309] See for instance Hasel & Kasin, *On the presumption of evidentiary independence: Can confessions corrupt eyewitness identifications?,* pp. 122-126, Kassin, Bogart & Kerner, *Confessions that corrupt: Evidence from the DNA exoneration case files*, pp. 41–45, Powell, Garry & Brewer, *Eyewitness testimony*, pp. 1-42, Pettit, Fegan & Howie, *Interviewer effects on children's testimony*.
[310] Marion, Kukucka, Collins, Kassin & Burke, *Lost proof of Innocence: The impact of confessions alibi witnesses*, pp. 65-71.

pant and a confederate completed a series of problem solving tasks when the experimenter informed them that a sum of cash had just been stolen from an adjacent office and accused the confederate of the theft. The confederate stated they had both been in the room carrying out tests when the cash was stolen. Participants were then asked to corroborate this as alibi witnesses, both before and after being informed that the confederate had either denied (denial condition) or confessed to (confession condition) stealing the cash. In a third condition, participants were told that the confederate had confessed and that their continued corroboration of the alibi would imply their complicity in the theft (implied guilt condition).

Of alibi witnesses who initially corroborated the suspect's statement, only 45 % maintained that corroboration when informed that the suspect had confessed compared to 95 % of the participants who believed that the suspect was still denying.[311] Even fewer (20 %) maintained their corroboration when the experimenter insinuated that their support of the alibi might imply their complicity. The confession also decreased alibi witnesses' confidence in the accuracy of their alibi and their belief in the confederate's innocence. This suggests that in cases with false confessions (for instance police-induced confessions),[312] an innocent confessor can be stripped of a vital source of exculpatory evidence, if the alibi witness is informed about the confession. This is clearly problematic, especially together with research suggesting that confessions can augment or even produce incriminating evidence such as eyewitness identifications[313] or make witnesses perceive that there is greater similarity between a facial composite and a suspect,[314] which thereby creates an illusion of corroboration. This poses a threat to the presumption of evidentiary independence and can also help explain absence of exculpatory evidence in cases of wrongful convictions.[315]

Confirmation bias can also be displayed in that interrogators ask questions that include or presume details that were not already mentioned by the

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[311] Marion, Kukucka, Collins, Kassin & Burke, *Lost proof of innocence: The impact of confessions on alibi witnesses*, pp. 65-71.

[312] For more on police-induced confessions, see Kassin, Drizin, Grisso, Gudjonsson, Leo & Redlich, *Police-induced confessions: risk factors and recommendations*, pp. 3-38 and Kassin, *On the psychology of confessions: does innocence put innocence at risk?* pp. 215-218.

[313] Hasel & Kasin, *On the presumption of evidentiary independence: Can confessions corrupt eyewitness identification?,* pp. 122-126. In this study, a theft was staged and witnesses made identification decisions from a lineup that did not contain the perpetrator. Two days later, the witnesses were told either that the person they identifed denied, confessed or that another lineup member confessed. Of those told that another lineup member confessed, 62 % changed their selection and among those who made a correct non-identification, 50 % now selected the confessor. See also Kassin, Bogart & Kerner, *Confessions that corrupt: Evidence from the DNA exoneration case files*, pp. 41-45.

[314] Charman, Gregory & Carlucci, *Exploring the diagnostic utility of facial composites: Beliefs of guilt can bias perceived similarity between composite and suspect*, pp. 76-90.

[315] Marion, Kukucka, Collins, Kassin & Burke, *Lost proof of Innocence: The impact of confessions alibi witnesses*, pp. 65-71.

witness or plaintiff.[316] As a result, the risk of conscious or subconscious false testimony is heightened, particularly when the witness or plaintiff is a child.[317] This is related to what prior information interrogators have when conducting the interrogation, since that prior information seems to bias their search for information during the interview.[318]

The influence of prior information on subsequent questioning has been studied empirically by for instance Powell and colleagues whose participants were 100 Australian police officers, all authorized to conduct investigative interviews with children.[319] The police officers were asked to conduct interviews regarding activities[320] the children participated in as part of the experiment.[321] However, false activities were also made up, that is, activities that the children did not take part in. The police officers were divided into two conditions: 1) the non-biased condition, in which they were told that a lady went to the children's school to do an event called the "Deakin Activities" which involved several unspecified activities and 2) the biased condition, where detailed background information (specific for each activity) that 'may or may not have occurred' was provided. For the true activities, both correct and incorrect details were provided and for the false activities the details were obviously all incorrect.[322] The police officers were then asked to elicit an accurate and detailed account of the event, using the techniques they would normally use to interview a child in their line of work.

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[316] Ceci & Bruck, *The role of interviewer bias,* pp. 87-108 and Powell, Garry & Brewer, *Eyewitness testimony*, pp. 1-42.

[317] Powell, Garry & Brewer, *Eyewitness testimony*, pp. 1-42. For research regarding child sexual abuse cases see Ernberg, Tidefors & Landström, *Prosecutors' reflections on sexually abused preschoolers and their ability to stand trial*, pp. 21-29, Magnusson, Ernberg, Landström & Granhag, *Taking the stand: Defendant statements in court cases of alleged sexual abuse against infants, toddlers and preschoolers,* pp. 1-16. For a discussion regarding the so-called recovered memory controversy (in relation to child sexual abuse cases) and its relation to suggestive information, see for instance Pope, *Pseudoscience, cross-examination, and scientific evidence in the recovered memory controversy*, pp. 1160-1181.

[318] See for instance Pettit, Fegan & Howie, *Interviewer effects on children's testimony* and Powell, Hughes-Scholes & Sharman, *Skill in Interviewing Reduces Confirmation Bias*, pp. 126-134.

[319] Because they had completed specialized training in this area.

[320] For ethical reasons, these activities did not similate crimes. Examples of possible activities included: hearing a story about an elephant, interacting with a koala puppet or finding a surprise sticker.

[321] Powell, Hughes-Scholes & Sharman, *Skill in Interviewing Reduces Confirmation Bias*, pp. 126-134.

[322] The following is an example of the level of detail interviewers were provided about an activity; Children met a 4-year-old koala puppet named Kip. Kip was found in a shop and brought to the classroom in a box. However, he normally sleeps under the bed. He was sick because he had a bad cold, so the lady wrapped him in a sweater to keep him warm. Kip's best friend is Charlie, the kookaburra puppet. Kip ate spaghetti for dinner and had a stickthat he uses to cook marshmallows over the fire.

Consistent with previous findings, the results demonstrated that biasing interviewers increase their use of leading questions,[323] in the direction implicated by the provided details.[324] However, it seemed this effect was moderated by interviewer skills.[325] Poorer interviewers asked fewer open questions and more leading questions when they were biased toward particular details than when they were not biased whereas good interviewers asked the same proportion of open and leading questions regardless of whether they had received biasing information. Thus, even if confirmation bias occurs automatically when interviewers receive knowledge about a case, they might be able to mask the bias if they are skilled interviewers.

Since prior information seems to bias interrogators' search for information, it is relevant what prior information is available to the interrogator when conducting the interrogation. A trigger of confirmatory information search which is likely to be common in child interviews is information that the parents convey to the police. This is exemplified below.[326]

> *In a case concerning rape/sexual assault, the 6-year-old plaintiff B did not disclose anything about the alleged rape/sexual assault during the first police interrogation. B's parents were informed about this and encouraged by the police to write down what B had previously told them. B's father called back, telling the police that B was upset that they (her parents) had filed a police report. He was then advised*

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[323] Note that open questions can be as leading as yes/no questions if they also introduce new information that has not been previously raised by the interviewee. For example, an interviewer might ask 'Tell me about what happened in the shed' when the child has not previously mentioned a shed, see for instance Powell & Snow, *Guide to questioning children during the free-narrative phase of an investigative interview*, pp. 57-65.

[324] See also Ceci & Bruck, *The role of interviewer bias*, pp. 87-108, Pettit, Fegan & Howie, *Interviewer effects on children's testimony* and Thompson, Alison Clarke-Stewart & Lepore, *What did the janitor do? Suggestive interviewing and the accuracy of children's accounts*, pp. 405-426. In Thompson and colleagues' study, children were questioned about an event several times on the same day, by different interviewers who differed in their interpretations of the event. The interviewer was 1) *accusatory* in tone: suggesting that the janitor had been inappropriately playing with the toys instead of working, 2) *exculpatory* in tone: suggesting that the janitor was just clean ing the toys and not playing), or 3) *neutral* and non-suggestive in tone. When questioned by a neutral interviewer, or by an interviewer whose interpretation was consistent with the activity viewed by the child, the children's accounts were both factually correct and consistent with the janitor's script. However, when the interviewer contradicted the activity viewed by the child, those children's stories quickly conformed to the suggestions or beliefs of the interviewer. By the end of the first interview, 75% of these children's remarks were consistent with the interviewer's point of view, and 90% answered the interpretative questions in agreement with the interviewer's point of view, as opposed to what actually happened.

[325] Although all officers were authorized child interviewers their skills were categorized prior to conducting the child interviews, on the basis of their adherence to best practice guidelines (such as asking open ended questions).

[326] Extract from Svea Court of Appeal's verdict in B 2450-16.

to be honest and explain to B that they had to file a report because grown ups are not allowed to do such things. Initially, during the second interrogation B did not disclose anything either, but the interrogator then confronted B with information from B's mother according to which B had said that the defendant M had touched C (another plaintiff) on C's private parts. B shook her head and said several times that she did not know. The interrogator then asked if someone had touched B's private parts too and if so, it was important that B told them. B said she had to think. The interrogator then specified that B's mother said that B told her it was the defendant M who touched her private parts. B again said that she had to think. After a while B said: "Yes, that happened", the interrogator then answered: "What happened, so that I can understand?" and B responded: "What my mum said".[327] *M was convicted for sexual assault by Attunda District Court but then acquitted after appealing to Svea Court of Appeal, where he referred to an expert opinion according to which the interrogations with B decreased the trustworthiness of B's statement.*[328] *This was due to suggestive elements which made B try to tell the interrogator what she thought the interrogator wanted to hear, the potential influence of information provided by the parents and the use of anatomical dolls to help B illustrate her statement.*[329]

Confronting B with what she, allegedly, told her mother and thereafter trying to make B agree with the suggestions, is not only contrary to recommendations for child interviews[330] but also displays a confirmatory search for information. That B in the end answered *"What my mum said"* could be an indication that she had no idea whatsoever what the mum said.[331] In child interviews, the question of what prior information the interviewer should have is particularly difficult since children on the one hand might be susceptible to suggestions[332] but on the other hand might also need more support in

[327] Svea Court of Appeal, B 2450-16, pp. 7-8. The remaining three interrogations with B were conducted in a similar fashion.
[328] *Ibid*., p. 7.
[329] *Ibid*.
[330] See for instance Brainerd & Reyna, *Mere memory testing creates false memories in children,* pp. 467-478, Ceci & Bruck, *Suggestibility of the child witness: A historical review and synthesis*, pp. 403-439 and Portwood & Reppucci, *Adults' impact on the suggestibility of preschooler's recollections*, pp. 175-198.
[331] This is of course not the only possible explanation. It could also be for instance that B was ashamed or lacked the vocabulary to explain what had happened and therefore only referred to the mother's statement. The employed interview style does not allow proper evaluations of these alternatives.
[332] See for instance Muir-Broaddus, King, Downey & Petersen, *Conservation as a predictor of individual differences in children's susceptibility to leading questions*, pp. 454-458, a study that highlights individual differences in childrens' susceptibility to leading questions.

disclosing, due to for instance vocabulary issues or perceived negative consequences of disclosure.[333] Thus, such considerations have to be carefully balanced and as implied by for instance Powell and colleagues' study, the skill of the interviewer is an important factor.

3.2.4.4.1.1.3 Forensic Investigation and Analysis

Crime Scene Investigations

A crime scene investigation is often one of the first steps in a criminal inquiry, at least in cases of suspected gross crimes. On the one hand, crime scene investigators (CSIs) cannot possibly secure every item or possible trace and they therefore have to limit what evidence is searched for, secured and sent to the forensic laboratory. On the other hand, evidence is sometimes damaged, contaminated, removed or added to the crime scene, which makes it impossible to restore in its original state at a later time. Thus, the CSIs might just get one chance to secure all the relevant traces. Provided how crucial evidence secured during crime scene investigations can be, not only for the general focus of the inquiry but also for the outcome of the criminal proceedings, it is of vital importance to examine which factors influence CSIs search for and evaluation of items on a crime scene.

One factor that seems to influence CSIs decision making is which information they receive regarding the alleged crime before entering the crime scene. Clearly, some information may be needed, particularly in cases of immediate threats but also about for instance how a body was found or who the victim was, since such information can help CSIs to determine what kind of evidence to look for. Sometimes, incidents are categorized as specific crimes at a very early stage by emergency call responders or the CSIs themselves.[334] If the categorization is wrong, it can have devastating effects since it influences the ways of working, the dedicated resources etc. In the Swedish context, the categorization of an incident as one or the other crime also means that different manuals/recommendations are applicable for how the criminal inquiry should be carried out,[335] which can direct the inquiry in

[333] See for instance Magnusson, Ernberg & Landström, *Preschoolers' disclosures of child sexual abuse: Examining corroborated cases from Swedish courts*, pp. 199-209 and Lemaigre, Taylor & Gittoes, *Barriers and facilitators to disclosing sexual abuse in childhood and adolescence: A systematic review*, pp. 39-52. Other barriers to disclosure can be for instance feelings of self-blame, shame and guilt.

[334] van den Eeden, de Poot & van Koppen, *From emergency call to crime scene: information transference in the criminal investigation*, pp. 79–89.

[335] See for instance a handbook from the Swedish National Police Board regarding domestic violence etc., *Brott i nära relationer*, Handbok 2009, http://kunskapsbanken.nck.uu.se/nckkb/nck/publik/fil/visa/12/Handbok_Brott_i_nara_relat_2009_081202[1][1].pdf

completely different directions. Research in the Dutch setting illustrate that criminal investigators seem to underestimate the degree to which such categorization influences the inquiry.[336] The likely reason for this underestimation, and for suspecting that the influence occurs in the Swedish setting too, is the strong, subconscious, effects of expectations identified in research.[337] This influences criminal investigators' perception and reasoning, which enables confirmation of the expectations.[338]

A study examining the effects of prior information on CSIs decision making on a crime scene was carried out by van den Eeden and colleagues.[339] Experienced Dutch CSIs assessed an ambiguous mock crime scene; a home in which a female victim was found dead, hanging in the stairwell.[340] Before entering the crime scene the CSIs received one of three possible kinds of advance information, which indicated that 1) the victim had committed suicide,[341] 2) was murdered,[342] or, 3) they received no prior information at all.[343] Then, using a 360-degree panoramic photograph, the CSIs examined the scene in 360 degrees as they walked through it and also looked at detailed photographs, some with small forensic traces, such as blood on a door handle and hairs around the victim's neck that were longer and had a different color than the victim's hair. The influence of prior information was measured at three different times in the investigation, 1) the CSIs initial assessment of the scene (first impression), 2) during the investigation, more specifically, which traces they wanted to secure[344] and five traces they wanted to

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[336] van den Eeden, de Poot & van Koppen, *From emergency call to crime scene: information transference in the criminal investigation*, pp. 79–89.

[337] See for instance Cooley & Turvey, *Observer effects and examiner bias: psychological influences on the forensic examiner*, pp. 61-68, Kassin, Dror & Kukucka, *The forensic confirmation bias: problems, perspectives, and proposed solutions*, pp. 42-52, Risinger, Saks, Thompson & Rosenthal, *The Daubert/Kumho implications of observer effects in forensic science: hidden problems of expectation and suggestion*, pp. 1-56, Saks, Risinger, Rosenthal & Thompson, *Context effects in forensic science: a review and application of the science of science to crime laboratory practice in the United States*, pp. 77-90.

[338] *Ibid*.

[339] van den Eeden, de Poot & van Koppen, *Forensic expectations: investigating a crime scene with prior information,* pp. 475-481.

[340] The crime scene was ambiguous in the sense that the victim could have committed suicide or been murdered and there was evidence present for both scenarios. The intended ground truth in the study was that the perpetrator had staged the crime scene as a suicide.

[341] More specifically, participants in this condition were informed that a neighbor found the victim hanging and that the death was considered a supposed suicide, based on for instance that the victim had a history of depression. Also, a witness stated he had not seen anything peculiar nor had he seen anyone leave the house.

[342] Participants in the murder condition received information that a neighbor found the victim and that the death was considered a supposed murder, based on for instance that there were previous reports of domestic violence at the address. A witness had seen a man leave the house at the end of the morning.

[343] In the control condition, participants were told that a neighbor found the victim hanging and that there were no witnesses near the premises.

[344] There was no limit to the number of traces they could secure.

send to the forensic laboratory for further analysis, and 3) when they were finished with the investigation they were asked to indicate the most likely scenario. Effects of the prior information were found for all three measures, although not all reached significance. Among the CSIs in the suicide condition, 89 % stated that their first impression was suicide whereas the corresponding percentage in the murder condition was 55 % (p = .09). Also, participants in the murder condition secured significantly more traces compared to in the suicide condition and participants who mentioned murder as the most likely scenario secured the hairs around the victim's neck significantly more often. Also, for their assessments of most likely scenario, CSIs in the murder condition more often stated murder (60 %) than the participants in the suicide condition (26 %), (p = .33).

Although more research is still needed, van den Eeden and colleagues' study illustrate how prior information poses a risk of biased crime scene investigations. For instance, a supposed suicide seems to be associated with a less extensive investigation as fewer traces were secured in the suicide condition. It also seems to indicate that traces that could potentially turn the supposed suicide in to a case of murder (the hairs around the victim's neck) are to a greater extent overlooked. This is probably because the prior information influences what information CSIs expect to find, that is, they only or primarily search for evidence that is expected to be present if the prior information is true. This confirmatory biased way of testing hypotheses make CSIs unattentive to evidence that would be expected if the prior information was incorrect and/or another hypothesis was correct. For instance, CSIs who believe the victim has committed suicide may search for and even find antidepressants but fail to search for and secure fingerprints on the door handle, or marks from tools that have been used to enter the home. This influence could probably also express itself in what CSIs at all recognize as evidence. For instance, a knife might not be of any interest at all in a suspected suicide but a possible murder weapon in a murder case. Yet another possible manifestation of the influence is which traces are prioritized for forensic analysis, assessments that are necessary even in cases of gross crimes, since there are limitations to the number of analyses that forensics will carry out. To a certain extent such prioritization is unavoidable. However, even with technologies that allow CSIs to test several hypotheses already at the crime scene, so-called *Rapid Identification technologies* (RI)[345], the CSI's seem to integrate

[345] See de Gruijter, de Poot & Elffers, *Reconstructing with trace information: Does rapid identification information lead to better crime reconstructions?,* pp. 88–103 and de Gruijter, Nee & de Poot, *Identification at the crime scene: The sooner, the better? The interpretation of rapid identification information by CSIs at the crime scene*, pp. 296-306. Rapid Identification technologies (RI) enable CSIs to perform real-time analysis of fingerprints and DNA-traces and immediately compare them with existing databases. This gives access to more information at the beginning of an investigation, which makes it possible to test multiple

the results only or primarily if they are in line with their expectations. This is a clear demonstration of confirmation bias.

Forensic Analysis

> *On the 3rd of July 1988 a 9-year old Norwegian girl, TJ, was reported missing by her mother.*[346] *After initial searches in cesspools and basements, the suspicions that TJ had become victim of a crime started growing and one of the most extensive police inquires in Norwegian history was initiated, engaging approximately 100 police officers.*[347] *About 11 000 people were questioned and 4 000 vehicles were searched for any information about what might have happened to TJ.*[348] *The media coverage was extensive, particularly in Norway but also in Sweden.*[349] *By 1989 the inquiry had not resulted in suspicions against any particular person and the magnitude of the inquiry gradually subsided.*[350]
>
> *In 1993 the investigation took a sudden turn as SB, who had been treated in the Swedish forensic psychiatric care since 1991, started confessing several previously unsolved murders and also confessed that he murdered TJ.*[351] *New investigative measures were undertaken, for instance 24 interrogations with SB and extensive searches in a forest region where SB stated he had left parts of TJ's remains and later returned to burn them.*[352] *Finally, pieces of organic material were found in the forest region.*[353]*According to SB, he had cut TJ's body using a saw and the pieces found might originate from Therese's thighbone.*[354] *The pieces were analyzed and two different forensic experts agreed that it was highly probable that the pieces were human bone, presumably originating from a young person.*[355] *The experts also testified that there were traces of a cutting object.*[356] *According to one of them, the appearance of the cut indicated that a saw had been used.*[357] *The same expert also stated that the overall appearance of the*

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hypotheses that can result in a more complete picture of what happened at the scene, provided that such information is incorporated into the criminal investigation.

[346] Hedemora District Court, B 100/97 p. 3.
[347] *Ibid*.
[348] *Ibid*.
[349] *Ibid*., pp. 12-13.
[350] *Ibid*.
[351] *Ibid*., pp. 3-4.
[352] *Ibid*., pp. 4, 8.
[353] *Ibid*., pp. 15-16.
[354] Hedemora District Court, B 100/97 pp. 8, 15-16.
[355] *Ibid*., pp. 15-16.
[356] *Ibid*.
[357] *Ibid*.

bone indicated that it came from an upper arm or a thighbone.[358] *SB was convicted for the murder of TJ and sentenced to continued forensic psychiatric care.*[359]

In 2008, after 13 years had passed since the conviction, SB withdrew his confession and was later granted a new trial and acquitted.[360] *Since SB did not only withdraw his confession in the TJ case but also in five other cases (concerning in total 8 murders), the media attention was enormous. As the inquiry in the TJ case was resumed, forensic analysts re-examined the pieces of organic material that were found in the Norwegian forest region in 1993 and concluded that they were not human bone.*[361]

In the original verdict from Hedemora District Court it is not clear how important the forensic analysts' original conclusions were for the conviction. According to the Court, the pieces of bone could not link SB to TJ's death but they did suggest, to a certain extent, that his confession was correct.[362] However, the primary question of interest in this context is not whether the forensic evidence was decisive for the conviction or not. More important is how come the forensics in the original proceedings concluded that the material was human bone consistent with SB's description whereas the forensics who re-examined the material after the inquiry was reopened came to the opposite conclusion; that it was not human bone at all.

From the documentation in the case, it is not clear whether SB first provided his statement (and whether the forensics therefore could have been influenced by it) or whether the forensics first provided their result (which could have influenced SB:s statement). Regardless of which option is correct, all forensic analysts involved in the case, both before and after SB:s conviction, carried out their analyses in times of vast media reports. During the original criminal investigations, the media reports concerned SB:s confessions (and to a certain extent TJ's disappearance) and after the case was reopened, it concerned the withdrawn confessions and what appeared to be more or less a general consensus that he had been wrongfully convicted.[363]

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[358] Hedemora District Court, B 100/97 pp. 15-16.
[359] *Ibid*., p. 1.
[360] Svea Court of Appeal, Ö 3293-10, Falun District Court, B 3585/10.
[361] Svea Court of Appeal, Ö 3293-10 p. 4.
[362] Since the findings strongly suggested that a young person's remains had been found in the forest region assigned by SB, see Hedemora District Court, B 100/97 pp. 16-21.
[363] See for instance Guillou, *"Klockan tickar om de riktiga mördarna ska kunna dömas",* http://www.aftonbladet.se/nyheter/article11593647.ab (15/12 2008), Baas, *"Glasögonmannen: Thomas Quick är oskyldig",* http://www.expressen.se/nyheter/glasogonmannen-thomas-quick-ar-oskyldig/ (20/4 2009), Andersson, "Quicks erkännande - en kopia av Efterlyst", http://www.expressen.se/nyheter/quicks-erkannande---en-kopia-av-efterlyst/ (20/4 2009), Råstam, *"Material som kunde fria Quick gömdes av polisen",* http://www.dn.se/debatt/material-som-kunde-fria-quick-gomdes-av-polisen/ (17/3 2010).

As is illustrated in the following, research on the so-called *forensic confirmation bias* describes how forensic analysts, just like other humans, are influenced by contextual information in their assessments.[364]

Due to their scientific legitimacy, forensic evidence such as fingerprint comparisons, medical certificates and particularly DNA findings are often considered the most reliable type of evidence available in criminal case procedures.[365] It varies with which exact level of certainty that forensic results are described but the probability scale used by the Swedish National Laboratory of Forensic Science includes possible conclusions like at least 99.99 % probability (+ *4*) that DNA found on a crime scene originates from a particular suspect.[366] The result of fingerprint comparisons are expressed as either a *match* or a *non-match* and no margin of error is declared.[367] In medical certificates, conclusions are presented with qualitative probabilities, ranging from *"does not allow any conclusions about"* (minimal strength) to *"shows that"* (maximum strength).[368] To properly evaluate these forensic results, judges of course have to understand their scientific meaning, which is not necessarily the case.[369] Apart from difficulties with interpretation and/or communication of forensic results, research emphasizes the forensic confirmation bias as an important source of error. More specifically, this bias consists in a tendency among forensic analysts who are aware of contextual information, such as a suspect's confession or that another analyst has made a positive identification, to selectively process and interpret findings so that it is consistent with the provided contextual information.[370] The

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[364] The forensic confirmation bias provides a plausible explanation as to why forensics in the TJ case came to contrary conclusions regarding the same piece of material. It also raises the question of what conclusions forensic analysts without any contextual information at all would have drawn regarding the material.

[365] The important role of forensic evidence is expressed in for instance a report by the Swedish Prosecution Authority and the National Police Board: *"well prepared medical certificates or other documentation of injuries such as photographies and journal entries are authoritative evidence for e.g. which injuries have been inflicited on a plaintiff through violent crimes. Thus, they are needed for e.g. assessments about the credibility a reliability of statements from witnesses, plaintiffs and defendants*." see *Gemensamt regeringsuppdrag för Åklagarmyndigheten och Rikspolisstyrelsen, Granskning av kvaliteten i den brottsutredande verksamheten*, p. 47.

[366] Statens kriminaltekniska laboratorium, *Faktablad – Riktlinjer för tolkning av dna-jämförelser,* i träffrapporter och sakkunnigutlåtanden*,* p. 3.

[367] The apparent reason for this is that research has failed to establish such a margin of error, see Statens kriminaltekniska laboratorium, *Är fingeravtryck säkra bevis?, SKL Intern rapport, Tillförlitligheten av fingeravtrycksbevis ifrågasatt – ärenden internationellt där man yrkat på att avfärda fingeravtryck som bevis i domstol*, p. 28.

[368] Rättsmedicinalverket, *Mall för kroppsundersökning i PDF format, Mall för yttrande i PDF format.*

[369] This is discussed for instance by Wahlberg, *Hård kritik mot NFCs statistiska sannolikhetskalkyler som fällande bevisning.*

[370] Kassin, Dror & Kukucka, *The forensic confirmation bias: Problems, perspectives, and proposed solutions,* p. 42-52, Miller, *Bias among forensic document examiners: A need for procedural change*, p. 407-411, Stoel, Dror, Miller, *Bias among forensic document examin-*

contextual information seems to create expectations that influence forensic analysts' perceptions and judgments.[371]

Already in 1984, Miller instructed his participants to compare a forged check against handwriting samples from one or more suspects.[372] Participants who did not receive any contextual information, all correctly concluded that none of the suspect had authored the forged check. By contrast, among participants who were told that one of the suspects had been identified by two eyewitnesses, 67 % incorrectly concluded that the suspect in question had forged the signature.[373] Quite a few years later, in 2006, Dror and colleagues demonstrated similar effects among fingerprint experts.[374] Five experienced fingerprint examiners were provided with sets of prints that they, unknowingly, had themselves judged as a match several years earlier. When the experts were told that the prints were taken from a high-profile misidentification case, the misidentification of Brandon Mayfield as perpetrator of the Madrid train bombings in March 11th 2004, 4 out 5 concluded that the prints did not match. Similar findings have been found in a range of studies with larger samples of experts,[375] summarized in a meta-analysis in 2008.[376] This research confirms the bias in relation to fingerprints and there are also single studies suggesting that the tendency increases with emotional intensity (manipulated using emotional photographs from crime scenes).[377] These studies furthermore illustrate that the effects seem to occur

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ers: Still a need for procedural changes, pp. 91-97, Lynch, *God's signature: DNA profiling, the new gold standard in forensic evidence*, p. 93-97, Saks & Koehler, *The coming paradigm shift in forensic identification science*, p. 892-895, Dror & Charlton, *Why experts make errors,* pp. 600-616, Dror, Charlton & Peron, *Contextual information renders experts vulnerable to making erroneous identifications*, p. 74-78, Dror & Hampikian, *Subjectivity and bias in forensic DNA mixture interpretation*, p. 204-208, Kukucka & Kassin, *Do Confessions Taint Perceptions of Handwriting Evidence? An Empirical Test of the Forensic Confirmation Bias*, pp. 1-15.

[371] Kassin, Dror & Kukucka, *The forensic confirmation bias: Problems, perspectives, and proposed solutions*, p. 42-52.

[372] Miller, *Bias among forensic document examiners: A need for procedural change,* p. 407-411.

[373] 16.67 % (1 out of 6) deemed the results inconclusive.

[374] Dror & Charlton, *Why experts make errors,* p. 600-616, Dror, Charlton & Peron, *Contextual information renders experts vulnerable to making erroneous identifications*, p. 74-78.

[375] See for instance a follow up study by Dror and Charlton, in which six experienced fingerprint examiners evaluated eight sets of prints that they had previously evaluated as either matches or non-matches. Half of the examiners were provided with case information, either that the suspect had a verified alibi or had confessed. The remaining examiners did not get any case information. Two-thirds of the examiners that were provided with case information made decisions that were inconsistent with their previous decisions but consistent with the provided case information, Dror & Charlton, *Why experts make errors*, pp. 600-616.

[376] Dror & Rosenthal, *Meta-analytically Quantifying the Reliability and Biasability of Forensic Experts*, pp. 900-903.

[377] See for instance Osborne & Zajac, *An Imperfect Match? Crime-related Context Influences Fingerprint Decisions*, pp. 126-134 and Dror, Péron, Hind & Charlton, *When emotions get the better of us: The effect of contextual top-down processing on matching fingerprints*, pp.

primarily in relation to ambiguous fingerprints,[378] such as the one in Picture 1. Picture 2 displays a fingerprint from the target, with which the comparison is made. When positioned right next to each other, the ambiguity becomes clear.[379] The research on forensic confirmation bias predicts that with such ambiguous stimuli, the analyst will be biased by what he or she already knows about the case. Thus, knowing that the suspect has confessed, the forensic analyst will to a greater extent look for and emphasize consistencies than inconsistencies, interpret ambiguity as consistency, and vice versa with knowledge of an alibi witness. Whether the fingerprints do in fact originate from the same source is a question for the reader to answer. Also, the reader could ask two friends to decide one who is told about the confession and one who is told about the alibi witness, and see whether their reasoning and conclusions differ. In the Appendix, both pictures are available with indications for important points of comparison.

799-809. Participants more often concluded that a fingerprint found on a crime scene matched the suspect's fingerprint, when exposed to emotional photographs, both with high and low emotional content. In the low emotional condition, photographs depicting non-violent crimes like burglary or vandalism were used and in the high emotional condition depicted victims or scenes from serious crimes like murder.

[378] Osborne & Zajac, *An Imperfect Match? Crime-related Context Influences Fingerprint Decisions*, pp. 126-134. The applied definition of "ambiguous" was that the fingerprints did not contain sufficient information to make a clear decision and the ambiguity manipulation was pretested by having 12 lay people and three fingerprint examiners use a Likert scale to rate how difficult it was to judge each fingerprint pair as a match or a non-match. For unambiguous stimuli, no effects of contextual information were found.

[379] For more on how fingerprint analysis is carried out see Brunelle, Huynh, Alin, Eldridge, Le, Halámková & Halámek, *Fingerprint Analysis: Moving Toward Multiattribute Determination via Individual Markers*, pp. 980-987.

Picture 1. An ambiguous partial fingerprint. Reprinted with permission from the copyright holder.

Picture 2. The target fingerprint with which the comparison is made. Reprinted with permission from the copyright holder.

Apart from fingerprint comparisons, many other forensic assessments such as comparisons of shoe prints,[380] bite marks,[381] tool marks, bullets[382], tires, or handwriting[383], involve visual comparisons between a pattern (found at the crime scene) and a sample taken from the suspect.[384] The patterns may be distorted, partial or consistent with several types of shoes, tools, tires and so on. Furthermore, even if shoe prints found on a crime scene were unique to a particular brand, clearly more than one individual will be owner of that brand. When it comes to fingerprints, the ambiguity is also referrable to that no two fingerprint impressions from the same individual's finger are identical.[385] This is because of variations in skin elasticity, the amount of pressure applied, the material on which the print was left, how the prints were recovered etc.[386] These factors also provide possible explanations for any inconsistencies between fingerprints and thus allow forensic examiners to conclude that two fingerprints with inconsistencies still originate from the same source. For instance, an inconsistency could be explained by how the suspect must have pressed the finger against a surface to make the print look the way it does. Research on the so-called *signal detection theory* in forensic science illustrates that the likelihood of a positive decision (match) and the associated risk of a false positive, is influenced by decision thresholds that change as expectations change.[387] Biases are most potent where ambiguity is greatest.[388]

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[380] See for instance Kerstholt, Passhuis, Sjerps, *Shoe print examinations: effects of expectation, complexity and experience,* pp. 30–34.

[381] See for instance Osborne, Woods, Kieser & Zajac, *Does contextual information bias bitemark comparisons?*, pp. 267–273.

[382] See for instance Kerstholt, Eikelboom, Dijkman, Stoel, Hermsen & van Leuven, *Does suggestive information cause a confirmation bias in bullet comparisons,* pp. 138–142.

[383] Kukucka & Kassin, *Do Confessions Taint Perceptions of Handwriting Evidence? An Empirical Test of the Forensic Confirmation Bias*, p. 1-15. Kukucka and Kassin asked laymen to evaluate handwriting evidence after reading a case summary. Half of the participants read a summary according to which the suspect had previously confessed wheras the other half received no information about a confession. The participants that were led to believe that the suspect had confessed were more likely to erroneously conclude that handwriting samples from the suspect and the perpetrator were authored by the same person and were also more likely to judge the defendant guilty, compared to those in the no-confession control group. In a follow-up study, corresponding results were found when the same individuals rated the same handwriting samples both before and after reading a case summary.

[384] Dror & Cole, *The vision in "blind" justice: expert perception, judgment, and visual cognition in forensic pattern recognition,* pp. 161-167. There are also examples of situations that are not about visually comparing but visually analysing patterns, for instance bloodstain pattern analysis, see Osborne, Taylor & Zajac, *Exploring the role of contextual information in bloodstain pattern analysis: A qualitative approach*, pp. 1–8.

[385] Cole, *Suspect identities: A history of fingerprinting and criminal identification.*

[386] *Ibid.*

[387] See Phillips, Saks & Peterson, *The application of signal detection theory to decision–making in forensic science*, pp. 294–308 and Risinger, Saks, Thompson & Rosenthal,

Additionally, some research findings suggest that even DNA testing, which is sometimes referred to as *the gold standard*,[389] may be subject to confirmation bias.[390] In 2011, Dror and Hampikian described an actual gang rape case in Georgia in which three of the assailants accepted a plea bargain to testify against the two other suspects.[391] Yet, under state law, his testimony was inadmissible without corroborating evidence. Aware of this evidentiary rule, DNA analysts concluded that a complex DNA mixture taken from the victim's body originated from the two other men. The establishment of this corroborating fact was essential to the prosecution of the suspects that claimed they were innocent. In order to examine whether the awareness of the rule might have biased the analysts' conclusions, the same DNA mixture was later presented to 17 other DNA analysts that were unaware of the case information. Twelve of these concluded that the DNA sample in fact excluded the two other suspects, four judged the sample as inconclusive and only one agreed with the original conclusion, that is, that the sample matched the DNA of the other two suspects. Since this study is not a controlled experiment, care should be taken in the interpretation of the results. It is unknown which information apart from the evidentiary rule, and its relevance, that was provided to the DNA analysts in the actual criminal case. Other information or circumstances might have contributed to their interpretation of the samples. However, the study does demonstrate that most of the DNA analysts who examined the samples unaware of the relevance of the evidentiary rule in the case, made interpretations contrary to those made by the analysts in the actual case. Thus, even if it is not certain that this knowledge was the only factor that caused the analysts' different interpretations, it appears to have at least contributed.[392] Another reason to read the study with caution is

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The Daubert/Kumho implications of observer effects in forensic science: hidden problems of expectation and suggestion, pp. 1–56.

[388] Whereas it may be overridden when the evidence is clearer, see for instance Risinger, Saks, Thompson & Rosenthal, *The Daubert/Kumho implications of observer effects in forensic science: hidden problems of expectation and suggestion,* pp. 1–56.

[389] Lynch, *God's signature: DNA profiling, the new gold standard in forensic evidence*, pp. 93-97

[390] In an examination of the prevalance of different types of errors in forensic DNA analysis, at the Human Biological Traces Department of the Netherlands Forensic Institute (NFI) over the years 2008-2012, the human error was identified as the second most common source of error, after errors caused by contamination, which arguably also is a human error although not following the definition employed in the study, see Kloosterman, Sjerps & Quak, *Error rates in forensic DNA analysis: Definition, numbers, impact and communication*, pp. 77-85. Most of the human errors concerned clerical errors that could usually be corrected and rarely had serious consequences for the cases. Other human errors were positive and negative controls that were overlooked and test results that were not administered correctly.

[391] Dror & Hampikian, *Subjectivity and bias in forensic DNA mixture interpretation*, pp. 204-208.

[392] As Dror points out cognitive contamination of forensic examiners is not limited to the impact of knowing irrelevant case information but emerges from a whole spectrum of sources such as working ”backwards” from the suspect to the evidence, base-rate regularities which

that it deals with interpretation of DNA *mixtures* that are admittedly difficult to interpret and often subject to DNA analysts' contradicting views.[393] Most probably, the differences in the interpretations by analysts who were or were not provided with case information would have been smaller with non-mixed DNA samples. Nevertheless, findings with DNA mixtures are part of real casework and it is therefore reasonable to believe that analysts relatively often have to deal with such findings.[394]

The outlined research seems to imply that forensic examiners are chameleons of the context, that is, that they change color as soon as the context changes. Yet, the null findings from two Dutch studies regarding shoe print examinations and bullet comparisons should be noted.[395] Also, the extent to which contextual information influences forensics' judgments is likely to decrease with a decreased so-called *elasticity* in the evidence, that is, the extent to which subjective interpretations can be justified.[396] However, even

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cause expectations before the actual examination takes place, see Dror, *Practical Solutions to Cognitive and Human Factor Challenges in Forensic Science*, pp. 1-9.

[393] Statens kriminaltekniska laboratorium, *Dna-analyser*, http://www.skl.polisen.se/kriminalteknik/biologi/dna-analyser/, Dror & Hampikian, *Subjectivity and bias in forensic DNA mixture interpretation*, p. 205.

[394] The results should therefore not be discounted due to a belief in that they only speak for very peculiar situations. Furthermore, mixture or not, the DNA analysts that were or were not provided with case information made opposite conclusions with regard to the *same* sample.

[395] In the first study, Dutch officers trained in forensic shoe print examinations evaluated eight pairs of shoes and prints, Kerstholt, Paashuis & Sjerps, *Shoe print examinations: Effects of expectation, complexity and experience*, pp. 30-34. Each pair was presented in the context of a fictional criminal investigation, which either did or did not contain biasing information to suggest that the shoe had created the print. The manipulation had no effects on the officers' evaluations. In the second study, six Dutch firearms examiners judged six pairs of bullets that were presented twice, several months apart, Kerstholt, Eikelboom, Dijkman, Stoel, Hermsen & van Leuven, *Does suggestive information cause a confirmation bias in bullet comparisons?* pp. 138-142. Each pair of bullets was presented twice, once with and once without a biasing case description, to be categorized as a match, a non-match or inconclusive. Since 10 out of 36 judgments of the same pair of bullets changed from one presentation to the next, there seems to have been a problem with intra-examiner reliability. However, the bias manipulation did not have a significant effect on judgments.

[396] The concept of elasticity in criminal evidence is introduced and discussed by Ask, Rebelius & Granhag, *The elasticity of criminal evidence: a moderator of investigator bias*, pp. 1245-1259. Although the elasticity seems to vary with different kinds of evidence, there is clearly room for subjective interpretation even when it comes to DNA evidence. This also raises the question of whether it is possible to reduce the elasticity of forensic evidence. When answering this question, improved technology easily comes to mind. Indeed, the steady improvement of available technology is visible also in the context of criminal investigations. The Virtual Autopsy table is an example, where a big multitouch surface is used to turn, zoom in and out and study a body layer by layer, e.g. skin, skeleton, tissue and blood vessels, see the Swedish interactive institute, https://www.tii.se/projects/autopsy. It is an interactive installation based on cutting edge research on medical visualization. Such a technology seems capable of providing analysts with detailed knowledge about for instance the cause of death and since the entire body can be examined without performing any physical operation, it should also facilitate all-embracing examinations. But then again, regardless of the promises of highly advanced technology, human interaction with the technology is still required to

when taking this into account, the risk of a forensic confirmation bias should clearly be taken seriously not only due to the possibility of biased forensic assessments but also because forensic evidence is considered powerful incriminating or exonerating evidence which can set off a so-called *bias snowball effect*[397] or *corroboration inflation*[398], that is, it can bias other lines of evidence.[399] For instance, a forensic examiner comparing bite marks may be influenced by the knowledge that fingerprint evidence indicates that the suspect is guilty.[400] Similarly, eyewitnesses can change their testimony after learning that forensic evidence suggested that a fire was not accidental but the result of arson.[401] Suspects may even confess to crimes they have not

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produce forensic evidence and therefore potential risk factors in human cognition should not be disregarded. Regardless of the possibility of detailed knowledge, examinations with the Virtual Autopsy Table still requires comparisons, such as whether a certain injury might have been caused by a knife that supposedly is the murder weapon. Furthermore, increased technology may act as an evolutionary force that shapes human abilities, Dror, *What is (or will be) happening to the cognitive abilities of forensic experts in the new technological age*, p. 563. That is, the human examiner is offloading onto the technology whereas in other cases, the examiner is collaborating and sharing the work as partners and thus cognition is distributed between the forensic examiners and the technological apparatus. In order to exploit the potential of promising technology as far as possible, proper training in how it should be used is probably crucial. For instance, a big multitouch surface with great interaction possibilities is likely to attract group attention where the risk of biased decision making is enhanced. Therefore, routines are needed about for instance who and how the analysis should be carried out.

[397] Dror, Morgan, Rando & Nakhaeazadeh, *The bias snowball and the bias cascade effects: two distinct biases that may impact forensic decision making*, pp. 832-833. Dror and colleagues distinguish between two different effects: 1) *the bias cascade effect,* when irrelevant information cascades from one stage to another, e.g. from the initial evidence collection to the evaluation and interpretation of the evidence and 2) *the bias snowball effect*, when the irrelevant information is not only cascading from one stage to another, but the bias also increases as irrelevant information from a variety of sources is integrated and influences each other.

[398] Kassin, *Why confessions trump innocence*, pp. 431-445.

[399] Dror, Morgan, Rando & Nakhaeazadeh, *The bias snowball and the bias cascade effects: two distinct biases that may impact forensic decision making*, pp. 832-833. For a more general examination and discussion about the potential practical consequences of forensic errors, miscommunications of forensic findings to Courts etc., see e.g. Smit, Morgan & Lagnado, *A systemic analysis of misleading evidence in unsafe ruling in England and Wales*, pp. 128-137. However, there are also studies discussing how forensic evidence can be better used to increase solvability e.g. for residential burglaries, see Antrobus & Pilotto, *Improving forensic responses to residential burglaries: results of a randomized controlled field trial*, pp. 319-345, Roman, Reid, Chalfin & Knight, *The DNA field experiment: a randomized trial of the cost-effectiveness of using DNA to solve property crimes*, pp. 345-369, Gianelli, *Cognitive Bias in Forensic Science*, p. 44 and Dror, *Biases in forensic experts*, p. 243.

[400] For related examples see e.g. Hasel, *Evidentiary independence – How Evidence Collected Early in an Investigation Influences the Collection and Interpretation of Additional Evidence,* pp. 142-159, Hasel & Kassin, *On the Presumption of Evidentiary Independence: Can Confessions Corrupt Eyewitness Identifications?* pp. 122-126 and Marion, Kukucka, Collins, Kassin & Burke, *Lost proof of Innocence: The impact of confessions on alibi witnesses*, pp. 65-71.

[401] Hasel, *Evidentiary independence – How Evidence Collected Early in an Investigation Influences the Collection and Interpretation of Additional Evidence,* pp. 142-159, Hasel & Kassin, *On the Presumption of Evidentiary Independence: Can Confessions Corrupt Eyewit-*

committed when they are presented with overwhelming scientific evidence against them.[402] When different pieces of evidence influence one another their value and reliability is clearly diminished and the total distortive power increases as more evidence is affected by (and affecting) other lines of evidence.[403] The overall result is a less accurate criminal investigation, which also results in that the premises for the judges' evaluation of evidence are distorted. More specifically, whereas the judges perceive of the evidence as independent corroborations of the prosecutors' statement of the criminal act as charged, the evidence is interdependent and may all originate from a premature hypothesis about what has happened.[404]

The potentially high distortive power of forensic confirmation bias provides a strong reason for forensic laboratories to find proper ways to avoid exposure to unnecessary contextual information.[405] However, it also implies

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ness Identifications?, pp. 122-126 and Marion, Kukucka, Collins, Kassin & Burke, *Lost proof of Innocence: The impact of confessions alibi witnesses*, pp. 65-71.

[402] *Ibid*.

[403] Dror, Morgan, Rando & Nakhaeazadeh, *The bias snowball and the bias cascade effects: two distinct biases that may impact forensic decision making*, pp. 832-833

[404] For a wider perspective on errors related to forensic evidence see Dror, *Cognitive neuroscience in forensic science: understanding and utilizing the human element*, pp. 1-8. Dror not only points out that there are many different sources of information that influence and shape the work of the human forensic examiner (case/contextual information, organizational/cultural factors, base-rate expectations, reference materials etc.) but also that many different aspects of forensic work, some of which take place even before a crime is commited or after the forensic conclusions have been presented at Court, influence whether and to what extent forensic evidence may misguide the criminal proceedings. These aspects are for instance verification processes and handling of disagreement and error related to forensic analyses as well as the presentation in Court (presentation format, with what confidence, what is heard and understood by the triers of fact). Also, as part of this wider perspective, Dror describes that reliability between and within experts, that is, to what extent experts come to the same conclusions (as other experts or at different points in time) regarding the same material, is potentially even more problematic than biasability, see Dror, *A Hierarchy of Expert Performance,* pp. 121-127.

[405] There is a growing body of research looking into debiasing techniques to be employed inside forensic laboratories. For instance Kassin, Dror & Kukucka, *The forensic confirmation bias: Problems, perspectives, and proposed solutions*, pp. 42-52, propose to conduct so-called blind testing, that is, to shield forensic examiners from extraneous information that may taint their conclusions. Another suggestion is that forensic analysts should work in a linear rather than circular manner. This means that samples found on a crime scene are carefully examined before they are compared to a target, that is, a sample from a suspect. This could prevent analysts from using the suspect sample as a guide that directs their attention to certain matching features of the crime scene sample. It is possible that such procedure would aid analysts in carrying out a comprehensive initial examination of the crime scene sample, discovering details that would not have been discovered if the two samples were compared at once. Yet, it is uncertain which impact such initial examinations will have on analysts' final judgments, since a comparison of the samples will have to be carried out sooner or later. Even if the comparison is carried out later than usual, there is still a risk that the analyst re-assesses the initial examination in the light of the suspect sample, resulting in an analysis that is driven by similarities rather than both similarities and differences. A critical view on this argument could be that experienced analysts are competent in finding both similarities and differences and since they do not have any personal interest in whether the result is a match or a non-

that criminal investigators need to be cautious of which information they provide to forensics as well as which specific questions they request forensic examiners to answer.[406] To a certain extent, it seems like providing forensic

match, there is no reason to believe that their analysis would be focused mainly on finding similarities. Although this is probably true with regard to analysts' general competence and conscious processing of information, it is contradicted by research findings concerning more or less subconscious information processing. The very fact that samples are submitted for forensic analysis strongly suggests that they are somehow related to a crime. It is possible that forensic examiners have biasing base-rate expectations that the results will prove incriminating. Another proposal on laboratory routines is that forensic decisions should be verified using a double-blind procedure, i.e. that an examiner's decision should be tested by a "verifier", who should not be informed of the first examiner's conclusion. Preferably, the first examiner should not select the verifier and the verifier should not know who the first examiner is. If possible, cross-laboratory verification should take place. Since some of the most blatant cases of incorrect forensic assessments in the past were carried out by experts working in isolation, the suggestion to have more than one decision maker seems reasonable. The most well-known example is the Canadian child pathologist dr Charles Randal Smith, whose assessments resulted in that a number of custodians were wrongfully convicted of child murder, see Thiblin, *Rättsmedicin i teori och praktik*, p. 30. However, the success of adding a second decision maker seems very much dependent on that the second decision maker really is completely blind to the first decision maker's decision, as is indicated by the investigation following the Madrid train bombings on March 11th 2004. After the bombings on three commuter trains at different stations in Madrid, fingerprints were found and through the FBI's forensic analysis, Brandon Mayfield, a lawyer from Portland, became the main suspect, see Stacey, *A Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, pp. 709-711.The first finger print examiner made three repeated analysis and came to the same conclusion. Also, three other examiners, of which one was an appointed Court expert, confirmed that the fingerprints originated from Mayfield. The three latter examiners carried out their analysis knowing that the first examiner had already made a positive identification and their analyses might therefore have been affected by an unconscious tendency to confirm the first examiner's conclusion, see Giannelli, *Cognitive Bias in Forensic Science* and *Gianelli, Confirmation Bias in Forensic Testing*, pp. 22-23. Their knowledge about the previous conclusion probably affected their perception of the fingerprints, which in turn affected their conclusions. The first examiner might in his or her turn have been incapable of coming to another conclusion, since he or she had already declared a standpoint in the first analysis. Later on, Spanish authorities carried out a finger print analysis resulting in that Mayfield was ruled out as a suspect since the fingerprints were matched to an Algerian citizen. Yet another suggestion for preventing bias in forensic laboratories is that forensic examiners should be trained in basic psychology that is relevant to their work, see Kassin, Dror & Kukucka, *The forensic confirmation bias: Problems, perspectives, and proposed solutions*, pp. 42-52. The effect of educating forensic examiners in psychology may however be limited since confirmation bias typically operates outside of conscious awareness. Conscious knowledge in itself may therefore be inadequate as a tool for prevention. Yet, such knowledge may very well contribute to reviews of analysis routines and maintenance of e.g. double-blind procedures, if the attitude towards the possibility of undue influence is addressed.

[406] Clearly, it also implies that defense attorneys have good reasons to evaluate and argue regarding the validity of forensic evidence so that judges are made aware of the conditions under which the analyses were carried out and also understand the significance of such information. For more about judges' evaluation of evidence see Kassin, Dror & Kukucka, *The forensic confirmation bias: Problems, perspectives, and proposed solutions*, p. 50. If judges require information about how the analysis was carried out, what was known to the analysts etc. it might have positive directing effects on forensic analysis routines and it would also facilitate an appropriate evaluation of the forensic evidence. This could contribute to more

analysts with contextual information rarely would serve any legitimate interest. For instance, a fingerprint examiner must reasonably be able to perform her job without knowledge about whether the suspect has confessed or has an alibi etc. Likewise, a DNA analyst is probably fully capable of carrying out his or her job unaware of the results' great implications in relation to evidentiary rules. In the Swedish context it varies from case to case which contextual information is available to forensic analysts but often they are informed/have access to information about where a trace was secured, personal data (name and civic registration number) regarding the target, which is the alleged crime and when it, allegedly, occurred.[407] Sometimes, information about previous results from DNA analysis is available and at times the criminal investigators have provided information about the alleged course of event etc.[408] It is unknown whether the availability of potentially biasing information has been influenced by the reorganization of the Swedish police whereby The National Laboratory of Forensic Science became part of the Police Authority.[409] As a way to promote quality and objectivity

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nuanced knowledge and attitudes towards forensic examinations as the basis for evidence in legal proceedings.

[407] This information has been obtained through correspondence with Stina Norlin, a forensic analyst at the National Forensic Centre.

[408] *Ibid*.

[409] The Swedish Government Official Reports, SOU 2012:13. However, the reorganization is of potential importance for forensic analysts' perception of their roles in the criminal proceedings. Although this has not been studied specifically within the Swedish context, international research highlights some risk factors. For instance, in an interview study by Charlton and colleagues, a recurrent theme in fingerprint examiners' individual satisfaction with their job was to help catching criminals and solving crimes, and for some this was more pronounced in high profile or long-running cases. The examiners also expressed a strong need for closure, indicating a desire to provide definitive conclusions as a result of their work. Matching fingerprints was associated with positive emotional effects but some examiners also displayed fear of making errors, particularly false positive errors that would implicate an innocent person, see Charlton, Fraser-Mackenzie & Dror, *Emotional experiences and motivating factors associated with fingerprint analysis*, pp. 385-293. Other research suggests that even working in the context of criminal proceedings may give forensic analysts' biasing base rate expectations of guilt. In a study of four American crime laboratories, Peterson, Mihajlovic and Gilliland discovered that very few reports excluded the known suspect from the crime scene or from a connection to the victim, see Peterson, Mihajlovic & Gilliland, *Forensic evidence and the police: the effects of scientific evidence on criminal investigations*. However, there are a few alternative explanations of these findings, for instance that the criminal investigators identify actual perpetrators at high levels of accuracy or that excluding suspects is generally difficult, due to the nature of the forensic evidence. Yet another interpretation is that examiners are unwilling to exclude suspects from a crime scene because of a fear of being perceived as an "obstacle" to the investigators' hypothesis. The results can also be due to a mixture of these or other circumstances. Without doubt, if forensic examiners are affected by base-rate expectations that a sample will prove incriminating, it would contradict legal demands of objectivity. For instance, the presumption of innocence disallows using any other knowledge that indicates a suspect's guilt, except for the evidence at hand. In which context such evidence has been obtained should therefore not impact decisions. Nevertheless, taking such information into account does not only conform with but is a central criterion of Bayesian

in fingerprint analysis, The Swedish National Forensic Centre uses the ACE-V (Analysis, Comparison, Evaluation, and Verification) method, which entails a first holistic analysis of the fingerprint without access to the target's fingerprints.[410] During this initial analysis, the analyst assesses whether the fingerprint is of sufficient quality to make a comparison, the details (types of patterns, pores, lines etc.) and orientation (which part of the finger has left the print). Only after this, the comparison with the target is initiated and if the forensic analyst considers the degree of consistency to be sufficient, an identification is made and followed by a new analysis from another forensic analyst. Possibly, the initial holistic assessment of the fingerprint is beneficial as it prevents analysts from immediately focusing primarily on confirming or disconfirming information. To what extent this technique can help combat bias in Swedish forensic analysts has not been systematically evaluated.[411] The National Forensic Centre itself has acknowledged the possibility of bias[412] and emphasizes the importance of maintained objectivity.[413]

However, the question of availability to contextual information when conducting forensic analysis has a flipside. Like Thiblin points out, if no contextual information at all is provided, crime-relevant symptoms etc. may be overlooked in attempts to carry out all-embracing examinations.[414] This

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rationality, see Oaksford & Chater, *Bayesian Rationality: The probabilistic approach to human reasoning*, pp. 76-83. The probability that a sample found on a crime scence will prove incriminating is higher than a sample found anywhere else. Taking such base rate information into consideration is therefore rational. As is clear from Bayes theorem, the base rate information should however not cloud a rational decision maker's perception of additional information, in this context the forensic samples. Such information should be evaluated independently and affect the overall probability of someone's guilt in accordance with nothing else but its own innate properties. Hence, the overall probability of someone's guilt should be assessed as higher when the sample is found on a crime scene as opposed to somewhere else. But, if a sample found on a crime scene *per se* is evaluated as more indicative of someone's guilt compared to when the sample does not come from a crime scence, this increases the already higher overall probability in the former case, causing a deviation from Bayesian rationality. Thus, any influence that the context of the criminal investigation has on analysis of forensic evidence is neither objective nor rational.

[410] For more about this methodology see for instance Ashbaugh, *Quantitative-Qualitative Friction Ridge Analysis – An Introduction to Basic and Advanced Ridgeology.*

[411] In fact, the question of forensic confirmation bias and possible ways to prevent it has neither been empirically and systematically evaluated nor discussed to a great extent in Sweden.

[412] See for instance Karlsson, *Önskan att få fast den skyldige kan leda till tankefel.*

[413] See for instance The National Forensic Centre, *Så fungerar resultatvärdering.* http://www.nfc.polisen.se/Ostergotland/kriminalteknik/logiska-angreppssattet/

[414] Thiblin, *Rättsmedicin i teori och praktik*, pp. 48-49. Clearly, forensic examiners have to be able to adapt their ways of working so that they are efficient for the tasks at hand, which requires that criminal investigators seriously consider what information is relevant for the forensic analysts' work and only provide that information.

balancing is not necessarily an easy task and there are no general answers,[415] which the following example, cited from Thiblin's book,[416] illustrates.

> *A 60-year old man was found dead in a culvert in a lumber mill. The forensic examiner was told that the man had undergone heart surgery due to coronary artery disease, five years previously. Since no injuries were visible at first inspection, the forensic examiner initially thought the man had suffered a sudden cardiac death. The autopsy findings; bleedings in the man's face, neck and chest, were also interpreted in this light and more specifically, that they were due to violent CPR. Even when finding large bleedings inside the man's chest, a chrushed liver and a big hole in the diaphragm, the forensic examiner attributed it to what must have been a very violent CPR. However, when the examiner also found that the man's spine was broken, the hypothesis about sudden cardiac death could no longer be maintained. A police investigation was initiated and resulted in the conclusion that the man's body had been squashed by equipment at the lum-*

[415] However, it is difficult to think of scenarios in which it would be justified to provide information such as confessions, eyewitness identifications or the forensic conclusions drawn by other analysts whereas information about findings on a crime scene could be relevant since it may suggest how a crime was committed. Also, criminal investigators are not the only source of contextual information. Just like most of the Western society, forensic examiners live in a high speed information society where they are very likely to be exposed to case relevant information, regardless of whether they actively search for it or not. This is true atleast for cases that attract great attention from the media. Since total isolation from the rest of society is clearly an unreasonable option, measures that are aimed at routines within criminal laboratories and courts are probably more effective. The topic of what information is relevant for forensic pathologists to take into account has also been discussed by Dror, Kukucka, Kassin & Zapf, *No One is Immune to Contexual Bias – Not Even Forensic Pathologists,* pp. 316-317. Emphasizing the risk of contextual bias, they put forward that forensic pathologists, ideally, should make determinations based on relevant medical information, the interpretation of which falls within their training and expertise. For instance, when assessing whether a person died as a result of suicide as opposed to a criminal act, the forensic pathologist shall examine the wounds themselves, rather than the suicide letter (to determine whether it is faked or genuine). For a discussion between the authors and Oliver regarding the differences between accuracy and concensus between forensic pathologists as well as what constitutes "data hiding" or "irrelevant contextual information", see Kukucka, Kassin, Zapf & Dror, *Cognitive bias and blindness: A global survey of forensic examiners*, pp. 452-459, Oliver, *Effects of history and context on forensic pathologist interpretation of photographs of patterned injury of the skin*, pp. 1500-1505, Oliver, *Comment on Kukucka, Kassin, Zapf, and Dror (2017) "Cognitive Bias and Blindness: A Global Survery of Forensic Science Examiners",* p. 161, Dror, Kukucka, Kassin & Zapf, *When Expert Decision Making Goes Wrong: Consensus, Bias, the Role of Experts, and Accuracy*, pp. 162-163, Oliver, *Comment on Dror, Kukucka, Kassin, and Zapf (2018) "When Expert Decision Making Goes Wrong",* pp. 314-315.

[416] Thiblin, *Rättsmedicin i teori och praktik*, pp. 48-49.

ber mill. Using Thiblin's words, this demonstrates "the power of involuntary verification thinking."[417]

When it comes to forensic medical examinations specificially, forensic pathologists are often asked to answer whether injuries etc. are *consistent* with one specific course of event.[418] Clearly, consistency between injuries and one hypothesis in no way excludes that the injuries can also be consistent with other hypotheses. However, when such a statement is evaluated only in relation to the prosecutor's description of the alleged crime, consistency instead becomes support for that (and only that) hypothesis, even if the injuries might very well be consistent with the defendant's version too (regarding which no answer has been provided).[419] This is illustrated in the example below.

In an alleged rape case the plaintiff claimed she was raped in a bedroom, after she had been pushed down into the bed that had a wooden frame.[420] *During the forensic examination, haematomas were found in the woman's genital area and on the outside of her right hip. The finding in the genital area was unspecific, that is, it may have resulted from consensual as well as non-consensual intercourse.*[421] *The haematoma on the hip most likely originated from blunt trauma but it could not be established from which kind of blunt trauma. The placement of the haematoma was considered consistent with bumping into the wooden frame on the bed. The forensic examiner concluded that*

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[417] Thiblin, *Rättsmedicin i teori och praktik*, p. 81. Own translation of: *"kraften i ofrivilligt verifikationstänkande"*. Another example from Thiblin (pp. 48-49) concerns a 55-year old man was found dead in his car outside his home. On the passenger seat there was a note saying "Bee stung". The deceased had regular contact with a physician due to an HIV-infection and the physician believed the man was suicidal since he recently experienced great financial loss and his partner had left him. The note found on the passenger seat was interpreted as a cryptic suicide note that might mean something to his friends and family. However, the forensic examiners decided to also look for signs of an allergic reaction, and found such signs in a microscopic examination of his respiratory tract. The analysis showed that the likely cause of death was high levels of bee poison resulting in a strong anaphylactic shock. Since there were no signs of a bee sting on the man's body, they would not have come to the same conclusion if they did not know about the "suicide note".

[418] *Ibid*., pp. 94-95.

[419] When the Court assesses whether the prosecutor's description of the alleged crime has been proven beyond reasonable doubt, and no other hypothesis has been put forward, a statement that the injuries are consistent with the prosecutor's description must reasonably be interpreted as positive evidence of the description. Other interpretations of the statement, like it being ambiguous or negative evidence would be counterintuitive and/or quite difficult to explain.

[420] Thiblin, *Rättsmedicin i teori och praktik*, p. 95.

[421] McLean, Roberts, White & Paul, *Female genital injuries resulting form consensual and non consensual vaginal intercourse*, pp. 27-33 and Thiblin, *Rättsmedicin i teori och praktik*, p. 95.

the injuries were consistent with the plaintiff's allegations. However, had the examiner had access to the interrogation with the suspect, it would have become clear that the injuries were consistent with his version too. According to the suspect, he and the plaintiff met in a bar and they were both heavily alcohol intoxicated when they walked to his home. They both fell on a tipped-over bike and the woman complained about hip pain shortly after. The intercourse was consensual. Knowing about the suspect's version, the examiner would have concluded that the closer circumstances of the intercourse could not be established on the basis of the findings.[422]

In the described case, the suspect's explanation was tested in the end but clearly, an innocent suspect may not always be able to provide an alternative explanation since the suspect, no more than the criminal investigators, knows what has happened. In the absence of such an alternative explanation, the explanation that has been evaluated forensically is likely to appear as the only viable explanation.[423]

[422] Another example is a murder case in which a man was suspected of having killed his wife using a lawnmower, Kalmar District Court, B 2994-08 and Kalmar Police Authority, Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-05, 22:55-23:15, p. 6 and Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-06, 00:00-00:50, p. 8. The man denied and stated that when he found his wife dead, he heard loud splashes from a nearby lake and he therefore believed that one or a few mooses might have attacked and killed her, an explanation he repeated in several interrogations. However, the initial request for forensic examination only contained the question of whether the deceased woman's injuries (deep cuts with grass inside) were *consistent* with her being run over with a lawnmower. This question was answered positively (Autopsy report, 20080910) which lead up to the detention of the man. More than 4 months later, the police requested another examination regarding the *consistency* between the woman's injuries and that she was attacked by a moose, a question that was also answered positively (Report from forensic medical examination, 20090123). Thus, an alternative explanation which probably appeared highly unlikely to the criminal investigators at first, later on resulted in that the man was discharged from suspicions.

[423] For a forensic pathologist it might be self-evident that consistency between injuries and one course of events does not in any way exclude that the injuries can also be consistent with another course of event, which is perhaps not comprised by the criminal investigators' request. However, for a prosecutor, consistency is likely to be interpreted as support for a hypothesis, which may result in that the prosecutor decides that there are sufficient reasons to press charges against a suspect. In Court, when judges are to decide whether the prosecutor has proven the defendant's guilt beyond reasonable doubt, the consistency is also likely to be interpreted as support for the guilt hypothesis. Thus, the criminal investigator's working hypothesis which set the frames for the forensic examination might become unduly inflated and in the worst case scenario result in a wrongful conviction.

3.2.4.4.1.2 Confirmation Bias in Court

The already cited research about confirmation bias in criminal investigations illustrates the risk that case material presented in Court does not provide a fair and balanced portrayal of reality but instead one that is skewed, one-sided and insufficient. It also highlights that the presented evidence does not necessarily meet the criteria of evidentiary independence as exemplified by for instance the findings that confessions seem to change the statements of alibi witnesses[424] and make forensic analysts more inclined to confirm the suspect's guilt in their forensic assessments.[425] If the case material includes both a confession and a confirming forensic analysis, the odds of a conviction are probably quite high. This is clearly problematic in cases of false or very unreliable confessions, as illustrated by for instance the reopened murder cases in which SB first confessed but then retracted all his confessions, resulting in acquittals for all murders.[426] These reopened cases are well known but not the only ones in which confessions, that were later on retracted, have resulted in convictions that were most likely wrongful.[427] However,

[424] Marion, Kukucka, Kassin & Burke, *Lost proof of innocence: the impact of confessions on alibi witnesses*, pp. 65-71.

[425] See for instance Cooley & Turvey, *Observer effects and examiner bias: psychological influences on the forensic examiner*, Kassin, Dror & Kukucka, *The forensic confirmation bias: problems, perspectives, and proposed solutions*, pp. 42-52, Risinger, Saks, Thompson & Rosenthal, *The Daubert/Kumho implications of observer effects in forensic science: hidden problems of expectation and suggestion*, pp. 1-56, Saks, Risinger, Rosenthal & Thompson, *Context effects in forensic science: a review and application of the science of science to crime laboratory practice in the United States*, pp. 77-90.

[426] After withdrawing confessions to multiple murders, SB petitioned and was granted a new trial 6 times, concerning 8 murders, see The Court of Appeal for Upper Norrland, Ö 454-12 and Ö 493-12, The Court of Appeal for Lower Norrland, Ö 889-11 and Svea Court of Appeal, Ö 3293-10, Ö 3085-11, Ö 3147-09. As is indicated by the official Government Report, Swedish Government Official Report, SOU 2015:52 looking into these cases, the convictions were based on SB's false confessions which had set in motion a process of behavioral confirmation where investigators selectively searched for and interpreted, at times very, ambigous evidence as support of his guilt. For example, in one of the cases, medical experts had identified a few consistencies between SB's description of his *modus operandi* and the findings on the victim's body but disregarded that blood and sperm on the crime scene did not match SB's, see Svea Court of Appeal Ö 3085-11. The Government Report explicitly points to confirmation bias as one possible explanation as to how SB could be convicted of murders which he most likely did not commit, see SOU 2015:52, pp. 591-595.

[427] A far less well-known case concerns ME who confessed to and was convicted for arson and inflicting damage, Falun District Court, B 3510-12, p. 5. After ME appealed the arson conviction and was granted a new trial regarding the inflicting damage conviction, the District Court acquitted him on both charges, Falun District Court, B 2384-14. According to The Court of Appeal, it had been established that ME suffered from insanity (*Allvarlig psykisk störning* in Swedish) at the time of the confession and that there was no other evidence, neither technical nor oral, supporting the charges against him, Svea Court of Appeal, Ö 6261-14. Thus, the convictions had been based exclusively on ME's confessions, which seem to have tainted the Court's evaluation of evidence. The prosecutor had referred to for instance an expert opinion which demonstrated that the findings on the crime scene were consistent with the statement of the criminal act charged but neither this statement nor any

the starting point of a one-sided inquiry is note necessarily a confession but other examples, also found among the reopened cases, are medical statements that provide criminal investigators with all necessary and sufficient explanations for a conviction, but the scientific basis for such statements is lacking.[428] Relatively recent examples are the so-called *Shaken baby (SBS)* cases.[429] In these cases, the notion that the prevalence of three neurological symptoms (the triad) are *"specific of child abuse"*[430] as well as statements regarding intervals within which the symptoms must have arisen,[431] resulted in convictions of two fathers that were later on granted new trials and acquitted.[432] Although the Supreme Court now has acknowledged this issue in relation to the alleged SBS cases in NJA 2014 p. 699,[433] it is clear that judges do not have the means to evaluate the validity of such statements.[434] This

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other evidence placed ME on the crime scene. Other examples of acknowledged or claimed false confessions, that have gained media attention to different extents, are Svea Court of Appeal, Ö 7110-15 concerning SS who in 2015 petitioned for a new trial in a murder case, Solna District Court, B 322-86, and claimed that he at the age of 15 falsely confessed to having killed his stepmother, in order to protect the real perpetrator, namely his father. The Court approved of his petition and he was recently acquitted, see Case appendix 12 and Stockholm District Court B 4343-16. Yet another example is an individual who claims he has falsely confessed after having been provoked by the police, but this individual has been denied a new trial, see The Court of Appeal for Upper Norrland's case, Ö 880-12. See also Svea Court of Appeal, Ö 1375-13 in which MT who applied with help from a legal counsel was refused a new trial although he had withdrawn his confession of a murder and claimed he had falsely confessed as a result of his psychological state at that time as well as a prolonged substance abuse. According to MT, he did not have any recollections of the night when the murder took place.

[428] See for instance Tuerkheimer, *Flawed Convictions: "Shaken Baby Syndrome" and the Inertia of Injustice*, p. 2.

[429] See for instance The Supreme Court, Ö 1860-12 and Ö 2345-12.

[430] Stockholm District Court, B 21167-07, p. 14.

[431] Mölndal District Court, B 1953-04, pp. 1, 16, The Court of Appeal for Western Sweden, B 1402-05, pp. 6-7.

[432] The Supreme Court, Ö 1860-12 and Ö 2345-12.

[433] The Supreme Court stated that the existence of certain physical injuries in themselves are insufficient for concluding that a defendant has caused the injuries through some criminal act. It is also required that the conclusion has a scientific basis regarding which there is very strong evidence. Furthermore, The Supreme Court stated that it has to be practically ruled out that there is no other conceivable explanation for the injuries. Yet, this is only a reminder that the standard of proof *beyond all reasonable doubt* applies in relation to the origin of the injuries and as such it does not change how the evidence should be evaluated, since the BARD-standard was applicable before The Supreme Court's verdict as well.

[434] There are indications that SBS and Abusive Head Trauma (AHT) are still considered valid diagnoses in response to the triad, see Narang, Estrada, Greenberg & Lindberg, *Acceptance of Shaken Baby Syndrome and Abusive Head Trauma as Medical Diagnoses*, pp. 273-278. A survey adressed to physicians at leading children's hospitals in the US asked the physicians to estimate the likelihood that subdural haematoma, severe retinal hemorrhages and coma or death would result from several proposed mechanisms. SBS and AHT were considered valid diagnoses by 88 % and 93 % of the respondents respectively. None of the alternative explanations, except motor vehicle collision, were considered valid explanations of the three findings. In a study regarding the Swedish setting, which retrospectively evaluated records of 733 deceased infants, it was found that the risk of unreported AHT in Sweden is low, with at least

also highlights a risk that other more or less unfounded statements form the basis for convictions.

Apart from that biased criminal inquiries clearly are an obstacle to sound decision making in Court, judges can themselves develop a confirmation bias in relation to the case material. However, the available research in this regard is not at all as extensive as for criminal inquiries. Also, since this research is cited in *Study III*, only a few more in-depth examples will be provided here.[435]

The evidence presented in Court are the building blocks of the prosecutor's description of the alleged crime. This description, put differently, is a story with more or less support in the criminal evidence. Research on or related to so-called *story construction*[436] illustrate that confirmation bias can be the glue that makes the story appear to be sound even when the building blocks are very few or unstable. This is also conveyed by Wagenaar and colleagues according to whom: *"corroboration apparently is an entirely subjective concept in need of not only a logical, but also a psychological definition."*[437] The process by which judges come to perceive of the evidence as sufficient or insufficient for a conviction has been studied by for instance Tanford, Penrod and Collins who examined the effect of assessing

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a 10 times lower incidence rate than the rates reported in other Western countries, see Andersson & Thiblin, *National study shows that abusive head trauma in Sweden was at least 10 times lower than in other Western countries*, pp. 477-483.

[435] Note that the examples provided here are relatively early studies on bias in the Court room. These studies do not to the same extent as later research distinguish and relate confirmation bias and other biases or e.g. mere memory effects from one another. However, the behaviors identified here coincide with the behaviors referred to as confirmation bias. For more on the overlap between confirmation bias and other biases as well as the distinction between description and explanation in this regard, see chapter 3.2.5.

[436] Pennington & Hastie, *Evidence evaluation in complex decision making*, pp. 242-258, Pennington & Hastie, *Explaining the evidence: tests of the story model for juror decision making*, pp. 189-206, Pennington & Hastie, *A cognitive theory of juror decision making: the story model*, pp. 5001-5039. Such stories can be conveyed by for instance pretrial media reports. See the extensive research on so-called pretrial publicity which illustrates its negative impacts on judges' and jurors' perceptions of for instance the defendant's criminality and likeability, resulting in an increased frequency of guilty verdicts, Daftary-Kapur, Penrod, O´Connor & Wallace, *Examining pretrial publicity in a shadow jury paradigm: Issues of quantity, persistence and generalizability*, pp. 462-477, Ruva & Guenther, *From the shadows into the light: how pretrial publicity and deliberation affect mock jurors' decisions, impressions, and memory*, pp. 294-310, Studebaker, Robbennolt, Penrod, Pathak-Sharma, Groscup & Devenport, *Studying Pretrial Publicity Effects: New Methods for Improving Ecological Validity and Testing External Validity*, pp. 19-41.

[437] Wagenaar, van Koppen & Crombag, *Anchored narratives, the psychology of criminal evidence*, pp. 4-10. The authors propose a theory for judicial decision making in criminal cases; the theory of Anchored Narratives according to which triers of fact reach their decisions on the basis of two judgments. First an assessment is made of the plausibility of the prosecution's account of what happened and why. Thereafter it is considered whether this narrative account can be anchored by ways of evidence to common-sense beliefs which are generally accepted as true most of the time.

criminal charges jointly or separetly.[438] The implications of this and other related studies,[439] seem particularly important in the Swedish context where criminal charges are regularly joint in the same trial, in accordance with The Code of Judicial Procedure, 19 ch. 1,6 § and 45 ch. 3 §.[440]

In Tanford, Penrod and Collins' study, subjects viewed videotaped trials of either three joined or separate charges that varied with regard to charge similarity,[441] evidence similarity[442] and judges' instructions.[443] One of the charges was used as a reference charge that was used to measure any differences in evaluations of the evidence, inclination to convict etc. The results indicated that subjects were more likely to convict a defendant in a joined trial than when the reference charge was assessed by itself (separate charges), particularly when the reference charge was in the third position. Also, subjects who judged joined trials more often confused evidence among charges and rated the prosecution's evidence as stronger than the defendant's evidence. Judges' instructions to assess the charges separately reduced convictions rates but this is contrary to findings in other related studies.[444]

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[438] Tanford, Penrod & Collins, *Decision making in joined criminal trials: The influence of charge similarity, evidence similarity, and limiting instructions,* pp. 319-337.

[439] See for instance Borden & Horowitz, *Information processing in joined and severed criminal trials*, pp. 351-370, Greene & Loftus, *When Crimes Are Joined at Trial*, pp. 193-207, Nelson, *If you want to convict a domestic violence batterer, list multiple charges in the police report*, pp. 1-12 and Tanford & Penrod, *Biases in trials involving defendants charged with multiple offenses*, pp. 453-480. Although these studies concern other legal contexts, namely the American and Canadian, the possible implications are far-reaching and the topic therefore deserves more attention in the Swedish setting.

[440] Exceptions can be made if the Court finds it more appropriate that the charges are processed in different trials. However, in the legislative history it is pointed out that the provisions constitute a presumption for joining charges and that this presumption is particularly strong if there is a close connections between the charges, The Swedish Government Bill, Prop. 1986/87:89 pp. 97-98. The presumption is motivated by the interest of promoting procedural economy, enabling a common sanction for all offences and that one trial is generally considered to be less burdensome for the defendant, than two or more trials. Ekelöf argues that an exception should be made for instance when joining charges would result in "mammoth trials", Ekelöf, *Rättegång II*, p. 180.

[441] Charge similarity was defined as the type of crime and the circumstances surrounding the crime, where *identical charges* were three service station burglaries, *similar charges* were three burglaries committed at different establishments and *dissimilar charges* were burglary, assault and armed robbery charges.

[442] Evidence similarity was defined by the main evidence presented in each case by the prosecutor, where *similar evidence* were circumstantial evidence that the defendant had been seen driving suspiciously near the scene around the time of the crime with no explanation for his whereabouts. For *dissimilar evidence* conditions the main evidence was different for each charge.

[443] Judges' instructions were defined as special joinder instructions given by the judge along with the regular jury instructions at the end of the trial. This could be for instance that the evidence for each charge should be treated as separate and distinct or that the fact that the defendant is charged with more than one crime is not evidence against him.

[444] However, there are some inconsistencies across studies in regard to the effect of instructions. Tanford and Penrod found that instructions to consider charges separately did not significantly reduce convictions in joined trials but they used a rather weak and artificial instruc-

One possible explanation of these findings is that the subjects who judged joined trials prematurely concluded that the defendant had a criminal life-style which made them perceive of the guilt consistent evidence as stronger which also increased the odds of a conviction.[445] This explanation gains some support in the less favorable ratings of the defendant among subjects who judged joined charges.[446] Also, as regards the confusion of the evidence for each charge, especially for similar charges and similar evidence, this is probably at least partially due to memory effects.[447] If these effects generalize to real criminal cases, it suggests that for multiple charges judges more often remember and therefore more often refer to guilt consistent evidence in their reasoning. It also means that evidentiary gaps concerning one charge may be filled out with evidence concerning another charge, suggesting that in practice the demands on the evidence are lowered.[448] Clearly, this poses a risk of systematically disfavoring defendants that are charged with more than one crime.[449]

Importantly, this research tests the effect of joining three charges but in real life criminal cases it is common that far more charges are joined and that these charges concern very similar crimes, similar evidence etc. To provide an example, in Södertörn District Court, three defendants were charged with multiple frauds (14) by means of forging of documents.[450] The alleged *modus operandi* was practically identical for all charges, as the defendants had applied for a credit online using the plaintiff's identity, then went to the

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tion manipulation. Using a more realistic manipulation, Greene and Loftus found that the standard multiple-offense cautionary instruction used in Washington State Courts also failed to reduce conviction biases, regardless of whether the instruction came at the start of the end of the trial.

[445] Daftary-Kapur, Dumas & Penrod, *Jury decision making biases and methods to counter them*, p. 136.

[446] However, it is impossible to say whether the advocated outcome influenced the perception of the defendant or the other way around.

[447] This has also been described as joinder or spillover effects, see for instance Greene & Loftus, *When Crimes Are Joined at Trial*, p. 193. The findings are consistent with memory research in which participants that are to remember lists of similar words mix up these words significantly more often than when the lists contain distinct words, see for instance Fernandes & Moscovitch, *Divided Attention and memory: Evidence of substantial interference effects at retrieval and encoding*, pp. 155-176.

[448] See for instance Borden & Horowitz, *Information processing in joined and severed trials*, pp. 351-370.

[449] In real criminal cases it is of course very difficult to say whether the outcome is even partially due to the multiple charges. However, BÅ's case provides an example of when a defendant was convicted for similar repeated gross rapes that allegedly happened on more than 200 occassions, Västmanland District Court, B 2522-01, Svea Court of Appeal, B 6328-02. The convictions were based on weak evidence (the plaintiff's account and the prevalance of scar tissue in the plaintiff's genital area). The case was reopened and BÅ was acquitted on all charges after the plaintiff's trustworthiness had been seriously questioned, The Supreme Court, Ö 1459-12.

[450] Södertörn District Court, B 7633-13. They were also charged with receiving stolen goods and a few other crimes.

plaintiff's address where they sneaked into the apartment building (the plaintiffs all lived in apartments) and fetched the written confirmation etc. from the post boxes by the entrance.[451] They were convicted on all charges. From a legal perspective, even such similar charges shall be assessed independently. However, a stronger inclination to convict in such cases can also be considered rational using probabilistic definitions of rationality, as for instance the close to identical *modus operandi* is likely to increase the prior odds of guilt.[452] Even if legal actors are not, generally, supposed to take such prior odds into account, a close to identical *modus operandi* is likely to have some evidentiary value. The issue is if the multiple charges, as well as similiarites between them, lead the judges to perceive of the other lines of evidence as stronger, and "borrow" evidence referrable to one charge to fill in substantial gaps in the evidence referrable to the other charges, and thereby strengthen the story/hypothesis about the defendants as repeat offenders.

The review of research so far highlights and supports Nickerson's observation that confirmation bias comes in many guises. As such, its closer meaning is best understood when studying specific contexts. However, such studies neither explain why confirmation bias occurs or how it relates to other (partially overlapping) forms of confirmatory reasoning that have also been described in psychological research. The importance of acknowledning confirmation bias as an inherently descriptive phenomenon becomes particularly clear when it is related and compared to other types of confirmatory reasoning. This is explained and discussed in more detail in the following chapter.

3.2.5 Confirmation Bias as a Description of Behavioral Patterns

"Why do humans walk?"

"Due to walkability!"

In the same way that it is not very informative to say that humans can walk due to their walkability, it is insufficient to explain why humans display several different confirmatory behavioral patterns by saying that they are due to confirmation bias. Confirmation bias does not provide an explanation as to why humans display confirmatory thinking but is rather a description (read: *a name*) of those behavioral patterns. The behavioral patterns may in

[451] Södertörn District Court, B 7633-13 p. 11.
[452] For more on Confirmation Bias and Rationality see Chapter 3.3.4.

their turn have several different explanations but these are not encompassed by the label confirmation bias.[453]

Trying for a moment to view confirmation bias as an explanation rather than a description is illustrative of why the latter alternative is the only feasible alternative. If confirmation bias would explain confirmatory thinking, then what is it and how does it make humans behave in certain ways? Is confirmation bias a neural network in the brain that humans are born with? And if so, why do humans have that network, is the predisposition for confirmatory information processing a kind of rational adaptation? Perhaps humans sometimes benefit from confirmatory thinking, in the same way as they benefit from being able to walk. However, researchers have not identified any single confirmation neural network that explains the behaviors[454] and even if there were solid empirical evidence for such a network it is not encompassed in the definition of confirmation bias. Thus, confirmation bias refers to a more superficial observation of confirmatory tendencies in human behavior. Since such confirmatory tendencies deviate from the legal norms stating how legal actors should behave, examining and describing whether there are such tendencies is in itself important. Clearly, this does not render possible explanations of the confirmatory tendencies unimportant. To the contrary, understanding why confirmation bias occurs is a necessary precondition for finding proper debiasing techniques, that is, strategies to prevent or reduce the bias. In that way, an explanatory framework enables a more constructive approach to a behavior that is often problematic in the context of criminal investigations and proceedings. Thus, the descriptions of the behavior in chapter 3.2 is complemented with the explanations in chapter 3.3 which are also converted into testable debiasing techniques in the experiments with police officers, prosecutors and judges (*Study I-III*). Before that, the next chapter discusses how the behavior referred to as confirmation bias relates to and can be demarcated from other overlapping confirmatory behaviors.

[453] Hence, the meaning of confirmation bias is that humans tend to display confirmatory behaviors. To explain confirmatory behaviors with confirmation bias (that is, a tendency to display confirmatory behaviors) has very limited, if any, value. In fact, it seems that behaviors encompassed by the descriptive term confirmation bias can be explained by several different mechanisms, including cognitive limitations, motivational factors, rhetorical positions, e.g. those implied by taking on the roles as defence counsel or prosecutor, and organizational incentives. These explanations are outlined and discussed separately in Chapter 3.3.

[454] However, studies indicate that dopaminergic genes (affecting prefrontal and striatal dopaminergic neurotransmission) are predictive of the degree to which participants persisted in responding in accordance with prior instructions even as evidence against their veracity accumulated, see Doll, Hutchison & Frank, *Dopaminergic Genes Predict Individual Differences in Susceptibility to Confirmation Bias*, pp. 6188-6199.

3.2.5.1 Relating and Demarcating Overlapping Confirmatory Behaviors

Defining confirmation bias as a label of behavioral patterns means that the label in itself is not at as important as the behavior that it refers to. The behavioral patterns that are referred to as confirmation bias might as well be called something else.[455] And indeed, they are, looking at the overlap between confirmation bias and other cognitive biases or tendencies identified in research such as *the primacy effect*,[456] *escalation of commitment*[457] and *the sunk cost effect.*[458] Therefore, the aim of this chapter is to examine how these and similar biases and tendencies relate to and can be separated from confirmation bias.

Demarcating confirmation bias from other biases and cognitive tendencies is vital for construct validity, that is, the extent to which the operational definition employed in this thesis truly reflects the construct confirmation bias.[459] In relation to the empirical studies, this concerns the question of whether the studies measure what they are supposed to measure, as opposed to something else.[460] A mismatch between the operational definition and the construct can arise if the construct is not sufficiently differentiated from other related constructs.[461] The literature on biases and other cognitive tendencies is vast and some of the described behaviors are clearly distinct and separable from confirmation bias, which means that they are unlikely to impact construct validity. However, behaviors overlapping confirmation bias need to be related and demarcated from it in order to promote construct validity. Due to the existing overlaps, studies examining confirmation bias will also examine behaviors that are sometimes labelled differently. When a study measures confirmation bias 100 % accurately it automatically measures other constructs as well, but still the same behavior. Although the labelling of the behavior is somewhat confusing, such a study measures what it is supposed to measure and there is no threat against construct validity. Yet, if the study measures *other* behaviors than those referred to as confirmation bias, that is, behaviors outside of the overlap, there is an issue with

[455] Relating to this is Bruno Latour's critique of principally Lyotard and Baudrillard but also Barthes, Lacan and Derrida, namely that their thinking revolved around artificial sign-worlds, see Schmidgen & Custance, *Bruno Latour in pieces: An intellectual biography*, pp. 1 and 69.
[456] See for instance Robinson & Brown, *Effects of serial position on memorization*, pp. 538-552.
[457] See for instance Beeler & Hunton, *The influence of compensation method and disclosure level of information search strategy and escalation of commitment*, pp. 77-91 and Conlon & Parks, *Information requests in the context of escalation*, pp. 344-350.
[458] See for instance Arkes & Blumer, *The Psychology of Sunk Cost*, pp. 125-140, Thames, *The sunk cost effect: The importance of context*, pp. 817-826.
[459] Shadish, Cook & Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*, pp. 64-82.
[460] *Ibid*.
[461] *Ibid*., p. 74.

construct validity. Below, the biases and tendencies most closely related to confirmation bias are presented and discussed in chronological order.

The primacy effect is the tendency to more frequently recall the first few items of a list as compared to the middle items, as Ebbinghaus defined it in 1913, after performing memory studies on himself.[462] Since then, his findings have been replicated extensively.[463] The most common explanation of the primacy effect is that the first items are more effectively stored in long-term memory since processing of them is undisturbed by other items, whereas items presented later on have to be processed together with the first items.[464] A manifestation of the primacy effect in criminal trials is that evidence presented early during the hearing has a greater impact than the evidence presented later on.[465] For instance, Schum found that nearly half of a group of potential jurors presented with a witness testimony contradicting previously presented evidence chose to either ignore the witness testimony or interpret it in a way supporting the evidence presented earlier.[466] Supposedly, the evidence presented early on unduly influenced the interpretation of the witness testimony.

The overlap between confirmation bias and the primacy effect concerns the memory effects that exposure to early information, or a formed hypothesis, might have. However, confirmation bias is a wider construct since it also refers to how a hypothesis influences the search for as well as interpretation of evidence presented later on. As such, the overlap is relatively small and as soon as a decision maker starts searching for additional information, after the initial exposure or hypothesis, the primacy effect makes no claim as to what will happen, whereas confirmation bias does. Furthermore, as implied, the primacy effect does not require that the decision maker has formed any hypotheses about the early information.

The Halo and Devil effects were coined by Thorndike in 1920 and refer to two opposite effects were either positive or negative beliefs about a person

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[462] The primacy effect is part of the so-called serial position effect, which encompasses both recency effects (recalling items at the end of a list first and best) and the primacy effect, see Ebbinghaus, *On memory: A contribution to experimental psychology*.

[463] See for instance Atkinson & Shiffrin, *Human memory: A proposed system and its control processes*, pp. 89 -195, Davelaar, Goshen-Gottstein, Ashkenazi, Haarmann & Usher, *The demise of short-term memory revisited: Empirical and computational investigations of recency effects*, pp. 3-42, Glanzer, *Storage mechanisms in free recall*, pp. 129-153, Kelley, Neath & Surprenant, *Serial Position Functions in General Knowledge*, pp. 1715-1727, Prohaska, DelValle, Toglia & Pittman, *Reported serial positions of true and illusory memories in the Deese/Roediger/McDermott paradigm*, pp. 865-883 and Waugh & Norman, *Primary memory*, pp. 89-104.

[464] *Ibid*.

[465] Pennington & Hastie, *The story model for juror decision making*, pp. 192-221 and Pennington & Hastie, *Explanation based decision making: Effects of memory structure on judgment*, pp. 521-533.

[466] Schum, *Argument structuring and evidence evaluation*, pp. 175-191.

are erroneously extended to other personality traits.[467] For instance, *the halo effect* means that knowledge of that a person is highly intelligent is associated with a tendency to extrapolate that positive characteristic to other personality characteristics about which nothing is objectively known, such as honesty, friendliness etc.[468] The opposite, *the devil effect* means that observing one bad quality tends to create the belief that the person must have other negative qualities as well. Nisbett and Wilson provided subjects with two different descriptions of the same professor as either friendly or arrogant.[469] The subjects to whom the professor was described as friendly rated the professor's physical appearance and manners much more positively than the subjects who were told that the professor was arrogant. A conceivable manifestation of the devil effect in criminal cases is for instance that a suspect's record of auto theft and shoplifting increases the perceived likelihood that the suspect has committed a murder.[470] The halo effect can manifest itself in for instance that a suspect's proficiency in sport or being a good father and husband makes it difficult for investigators to see how he could also be a murderer or a rapist.[471]

The overlap between the halo and devil effects and confirmation bias concerns when information about personal characteristics taints the processing of subsequent, but unrelated, information. What is already known about a person becomes contagious and guiding for how other information with regard to the person is perceived. Thus, the halo and devil effects can be described as a kind of confirmation bias in relation to personal characteristics, but confirmation bias concerns other types of hypotheses as well, not exclusively those relating to personal characteristics.

The self-fulfilling prophecy is a term first used in 1948 by Merton, who defined it as "in the beginning, a false definition of a situation evoking a new behavior, which makes the originally false conception come true".[472] In other words, a strongly held but false belief is declared as true, which influences people to act in a way that fulfills the prophecy and thus the prophecy becomes true. In criminal cases this can express itself in for instance that investigators who falsely believe that a suspect is guilty, interrogate the suspect in a more guilt-presumptive manner and these suspects are perceived as more defensive and more often guilty, by external observers.[473] Thus, a belief about the suspect's guilt "sets in motion a process of behavioral confir-

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[467] Thorndike, *A constant error on psychological rating*, pp. 25-29.
[468] Cook, Marsh & Hicks, *Halo and devil effects demonstrate valence-based influences on source-monitoring decisions*, pp. 257-258.
[469] Nisbett & Wilson, *The halo effect: evidence for unconscious alteration of judgments*, pp. 250-256.
[470] Compare to Rossmo, *Criminal Investigative Failures*, p. 124.
[471] *Ibid*.
[472] Merton, *The Self-Fulfilling Prophecy*, p. 195.
[473] Kassin, Goldstein & Savitsky, *Behavioral confirmation in the Interrogation Room: On the Dangers of Presuming Guilt*, p.189.

mation by which expectations influence the interrogator's behavior, the suspect's behavior, and ultimately the judgments of neutral observers"[474].

Both the self-fulfilling prophecy and confirmation bias concerns how a person is blinded and restricted by a belief. However, that belief is by definition false when it comes to the self-fulfilling prophecy whereas it can be both true and false when it comes to confirmation bias. Furthermore, the self-fulfilling prophecy implies that an individual more actively through his or her behavior turns a false belief into a true belief. The behavior in itself makes the belief true. Although confirmation bias also refers to when a decision maker unconsciously uses information to bolster a hypothesis, it is not necessarily to the same extent as implied by the self-fulfilling prophecy.

In 1974, Tversky and Kahneman described the so-called *anchoring effect* or more specifically, *the anchoring-and-adjustment heuristic* in judgments made under uncertainty.[475] This refers to that decision makers are disproportionately influenced in their judgments towards an initially presented value.[476] In a classic study, participants were to estimate the percentage of African countries in the United Nations with reference to a range of randomly generated numbers by spinning a wheel of fortune between 0 and 100. When asked whether the actual percentage was higher or lower than the reference value, participants assimilated their final judgments towards the reference value, although it had been chosen randomly and therefore did not provide any relevant information at all. In criminal cases, Russo & Schoemaker found similar tendencies when they asked judges to first roll two dice and then decide whether the sentence should be higher or lower.[477] The judges tended to adjust the sentence to the total of the two dice although the factual circumstances that the judges assessed were identical.

In the same way that a randomly generated number can anchor subsequent unrelated judgments (anchoring effect), a hypothesis can limit a decision makers evaluations so that they do not deviate too much from the hypothesis (confirmation bias). The theory of confirmation bias entails a claim that the decision maker in this way subconsciously promotes the hypothesis whereas with the anchoring effect it is more uncertain why a number comes to function as an anchor. One possible explanation that relates quite strongly to confirmation bias is that the anchoring effect results from the activation of

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[474] Kassin, Goldstein & Savitsky, *Behavioral confirmation in the Interrogation Room: On the Dangers of Presuming Guilt*, p.187.

[475] However, the earliest mention of the anchoring effect was within psychophysics, where judgments of others' weights were influenced by one extreme weight and in decision making it was first introduced by Slovic (1967) who studied descriptions of preference reversals, see Chapman & Johnson, *The limits of anchoring*, pp. 223-242 who cite Brown, *Stimulus-similarity and the anchoring of subjective scales*, pp. 199-214 and Slovic, *The relative influence of probabilities and payoffs upon perceived risk of a gamble*, pp. 233-224.

[476] Tversky & Kahneman, *Judgment under uncertainty: heuristics and biases*, pp. 1124-1131.

[477] Russo & Schoemaker, *Decision traps: Ten barriers to brilliant decision-making and how to overcome them.*

information that is consistent with the anchor presented.[478] Thus, it is assumed that judges consider the anchor value to be a plausible answer and test out the hypothesis that the anchor value is the correct answer. In doing so, judges search for ways in which their answer is similar to the anchor value, and thus activate aspects of the target that are consistent with the first estimate. However, research on the anchoring effect is silent as regards for instance search for and memory for information. Also, the anchoring effect has been used to described insufficient adjustments in relation to numerical values whereas confirmation bias can arise in relation to any hypothesis, not necessarily including a number.

Belief perseverance, a term first used by Ross, Lepper & Hubbard in 1975, refers to a tendency or unwillingness to admit that premises are wrong, even when shown convincing evidence to the contrary.[479] The disconfirming evidence is considered insignificant or misinterpreted.[480]A witness who identifies a suspect and later on is faced with information that the two other witnesses have identified another man as the perpetrator perseveres in the belief that the suspect he or she identified is the real perpetrator.[481]

Belief perseverance and confirmation bias overlap when it comes to the maintaining of a belief even in the face of contradicting evidence. However, whereas belief perseverance only refers to this type of evaluative behavior, confirmation bias also encompasses other behaviors such as the hypothesis-consistent search for information. Thus, belief perseverance coincides with the evaluative part of confirmation bias but since confirmation bias also concerns for instance search for and better memory for hypothesis consistent information, it is a wider construct.

In 1976, Staw described *escalation of commitment,* that is, a tendency to adhere to prior courses of action, even when there are indications that the previous actions were wrong.[482] People search selectively for information to justify their prior decisions rather than prepare themselves for future ones.[483] This discrepancy is indicated by a preference for retroactive information that speaks to the decision already made, rather than prospective information

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[478] See for instance Chapman & Johnson, *The limits of anchoring*, pp. 223-242 and Strack & Mussweiler, *Explaining the enigmatic anchoring effect: mechanisms of selective accessibility*, pp. 437-446.
[479] Ross, Lepper & Hubbard, *Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm*, pp. 880-892.
[480] *Ibid*.
[481] Luus, *Eyewitness confidence: social influence and belief perseverance*, p. 108.
[482] Staw, *Knee-deep in the big muddy: A study of escalating commitment to a chosen course of action*, pp. 27-44.
[483] Beeler & Hunton, *The influence of compensation method and disclosure level on information search strategy and escalation of commitment*, pp. 77-91 and Conlon & Parks, *Information requests in the context of escalation*, pp. 344-350.

about the decision to be made.[484] Also, people tend to interpret incoming information in a distorted manner that serves to justify previous decisions. For example, when rating employees whom they originally hired, managers tended to inflate the ratings of the employees' effectiveness, likelihood of improvement and potential for promotion.[485] Another example is that bank managers tend to be committed to bad loans that they themselves had approved.[486]

Escalation of commitment and confirmation bias seem to be the constructs with the greatest overlap, since they both refer to how the search and interpretation of information are tainted by a previous belief. However, escalation of commitment seems to require that the belief has been generated by the decision maker's action (hiring someone, approving a bad loan) in one way or the other whereas confirmation bias only requires a hypothesis, regardless of why that hypothesis has arisen. Furthermore, escalation of commitment seems to require that the decision maker himself or herself has decided about a course of action, which is not the case with confirmation bias. Another, quite subtle difference is that escalation of commitment implies that someone's escalating belief is due to increased commitment, that is, a motivation to reach a certain conclusion. As will be explained in chapter 3.3.2, motivation to reach a certain conclusion is only one possible explanation of confirmation bias,[487] which can also be due to for instance more general cognitive limitations that make it too demanding to seriously consider more than one hypothesis.

The sunk cost effect refers to a tendency to continue an investment or take an action after a previous investment in money, effort or time has been made, even though the investment has higher future costs than benefits, a term first used by Arkes and Blumer in 1985.[488] It has also been described as "throwing good money after bad".[489] One example is a study by Arkes and Blumer where they asked participants to imagine *"you have spent $ 100 on a ticket for a trip to Michigan. Several weeks later you buy a $ 50 ticket for a trip to Wisconsin. You think you will enjoy the Wisconsin trip more than*

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[484] Beeler & Hunton, *The influence of compensation method and disclosure level on information search strategy and escalation of commitment*, pp. 77-91 and Conlon & Parks, *Information requests in the context of escalation*, pp. 344-350.

[485] Schoorman*, Escalation bias in performance appraisals: An unintended consequence of supervisor participation in hiring decisions*, pp. 58-62.

[486] Staw, Barsade & Koput, *Escalation at the credit window: A longitudinal study of bank executives' recognition and write-off problem loans*, pp. 130-142.

[487] In their meta-analysis, Hart and colleagues identify increased commitment as a risk factor for confirmation bias, see Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling validated versus being correct: a meta-analysis of selective exposure to information*, pp. 555-588.

[488] Arkes & Blumer, *The Psychology of Sunk Cost*, pp. 125-140 and Thames, *The sunk cost effect: The importance of context*, pp. 817-826.

[489] Arkes, *The Psychology of Waste*, pp. 213-224 and Arkes & Ayton, *The sunk cost and Concorde effects: Are humans less rational than lower animals?* pp. 591-600.

the Michigan trip. When you are putting your just-purchased Wisconsin trip ticket in you wallet, you notice that the Michigan trip and the Wisconsin trip are for the same weekend. It is too late to refund either ticket. You must use one ticket and not the other. Which trip will you go on?" In line with assumptions in economic theories of decision making, participants are expected to choose the trip to Wisconsin since it is the most enjoyable trip. Yet instead, most participants chose the Michigan trip, which had been more expensive. Since an already invested cost cannot be recovered, a rational forward-looking decision maker should ignore the costs of the different options and choose the most enjoyable trip.[490]

As such, both the sunk cost effect and confirmation bias refer to irrational behaviors that occur after the formation of a hypothesis or a choice (investment). However, the nature of this irrationality is somewhat different. For confirmation bias it consists of one-sidedness in how information is sought and evaluated whereas the sunk cost effect concerns irrationality by letting some factors (like which trip was more expensive) that are logically less important than other factors (which trip will be more enjoyable), guide future decisions. Furthermore, the sunk cost effect does not at all entail a decision maker searching for or evaluating additional information but instead focuses on how one investment influences the reasoning of a decision maker when making other decisions. Hence, the overlap concerns the irrationality in reasoning in the time period after a hypothesis or decision has been made but when a decision maker also searches for additional confirming information, that behavior falls outside of the overlap.

The investigator bias refers to an intentional or unintentional bias on the part of the investigator of a study towards a desired result, expressed through outright fraud or subtle fallacies held true by the investigator.[491] The more specific origin of the term is uncertain but it has been used and examined by researchers since at least the late 1990's.[492] In the more specific context of criminal cases it is manifested for instance in when a police officer who knows the suspect's identity arranges a witness line up during which he intentionally or unintentionally sends cues about the suspect's identity to the eyewitness, which unfairly enhances the likelihood that the witness will identify the suspect.[493] Such cues can consist of a variety of verbal and non-

[490] Arkes & Blumer, *The Psychology of Sunk Cost*, pp. 125-140.
[491] Greenland, *Accounting for uncertainty about investigator bias: disclosure is informative*, pp. 593-598.
[492] See for instance Phillips, McAuliff, Bull Kovera & Cutler, *Double-Blind Photoarray Administration as a Safeguard Against Investigator Bias*, pp. 940-951.
[493] See for instance Cutler & Penrod, *Mistaken identification: The eyewitness, psychology, and law* and Phillips, McAuliff, Bull Kovera & Cutler, *Double-Blind Photoarray Adminstration as a Safeguard Against Investigator Bias*, pp. 940-951 and Narchet, Meissner & Russano, *Modeling the Influence of Investigator Bias on the Elicitation of True and False Confessions*, pp. 452-465. Investigator bias has also been referred to as research bias or ex-

verbal behaviors, for instance that the police officer directs the witness focus on the suspect by saying "What about this picture over here?", facial gestures like frowning, smiling or body movements like nodding the head or folding the arms.[494] Research indicates that criminal investigators with more experience and training display a more pronounced investigator bias.[495]

As the definition suggests, the investigator bias comprises both intentional and unintentional behaviors whereas confirmation bias only refers to the latter, unintentional behavior. Furthermore, the way in which the term investigator bias has been used in research about criminal cases suggests that the bias is in relation to the guilt hypothesis specifically,[496] whereas confirmation bias can encompass any hypothesis. Yet, there is a clear overlap with regard to the unintentional behavior that in different ways support the guilt-hypothesis.

The guilt bias is a generally stronger belief in that a suspect is guilty than innocent, which results in better memory for guilt implying behaviors as well guilt confirming searches and interpretations of evidence.[497] The origins of this term are uncertain but it has been used since at least the beginning of the 1990's.[498] For instance, in a study by Charman, Kavetski and Hirn Mueller, participants who believed that the suspect was guilty interpreted four pieces of ambiguous evidence in a more guilt-consistent way and also more often made final judgments that the suspect was in fact guilty.[499] As Fahsing points out, a guilt bias might be quite natural to police officers since their job is to find a guilty person and a documented reason to suspect guilt must be present in order to legally commence a criminal investigation.[500] However, since police officers also have to respect the presumption of innocence, a default belief about a suspect's guilt is clearly inappropriate.

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perimenter bias, see for instance Gabr, Kallini, Desai, Hickey, Thornburg, Kulik, Lewandowki & Salem, *Types of Research Bias Encountered in IR*, pp. 546-550.

[494] Greenland, *Accounting for uncertainty about investigator bias: disclosure is informative,* pp. 593-598.

[495] Meissner & Kassin, *"He's guilty!": Investigator Bias in Judgments of Truth and Deception*, pp. 469-480.

[496] Ask, Rebelius & Granhag, *The 'elasticity' of criminal evidence: A moderator of investigator bias*, pp. 1245-1259, Meissner & Kassin, *"He's guilty!": Investigator Bias in Judgments of Truth and Deception*, pp. 469-480. See also Rebelius, *Investigator bias: Contextual influences on the assessment of criminal evidence*.

[497] See for instance Ruva & Guenther, *Keep your bias to yourself: how deliberating with differently biased others affects mock-jurors' guilt decisions, perceptions of the defendant, memories, and evidence interpretation*.

[498] See for instance Zuckerman, *Bias and suggestibility: Is there an alternative to the right to silence?,* Wagenaar, *Anchored narratives: A theory of judicial reasoning, and its consequences,* Leo, *Police interrogation and American justice* and van Koppen, *Blundering justice*.

[499] Charman, Kavetski & Hirn Mueller, *Cognitive bias in the legal system: police officers evaluate ambiguous evidence in a belief-consistent manner*, pp. 193-202. Another example is Crawford & Skowronski, *When motivated thought leads to heightened bias: High need for cognition can enhance the impact of stereotypes on memory*, pp. 1075-1089.

[500] Fahsing, *The making of an expert detective*, p. 25.

The overlap with confirmation bias encompasses the cases in which a dominating guilt hypothesis is at hand,[501] but confirmation bias is a wider construct as it can also entail the opposite, the innocence hypothesis, and any interpretations etc. that are partial in relation to the innocence hypothesis.

The coherence effect, a term first employed by Simon, Snow and Read in 2004, refers to a bidirectional coherence maximizing process in which a conclusion follows from a decision maker's evaluation of the attributes, while the evaluations of the attributes shift to cohere with the emerging conclusion.[502] Thus, the reasoning goes both backward and forward, from premises to conclusion and from conclusion to premises, maximizing the coherence between them as they become mutually supportive. This way of reasoning deviates from the way in which legal actors are expected to reason, that is, unidirectionally, where evidence is first carefully considered and then lead up to a conclusion. Possible implications of the coherence effect in criminal trials are illustrated by Simon, Stenstrom and Read's study in which they asked participants to role-play a juror in a case where Jason Wells was accused of murdering a security guard who encountered Jason as he was stealing from his employer's safe.[503] Among the evidence in the case some supported the conclusion that Jason was guilty, for instance a witness stating he had seen Jason rushing from the crime scene, and some supported his innocence, for instance Jason's manager provided an alibi as he had seen Jason picking up his child from a swim meet about 40 minutes after the crime occurred. According to the manager, it usually took 45 minutes to get from the office to their neighborhood. The eyewitness testimony was altered, in one condition he stated he was "absolutely certain" in his identification, whereas in the other condition he was "not certain at all". This variation in eyewitness confidence swayed the judgments of Jason's guilt and also the inferences drawn from the other items of evidence, increasing coherence between the preferred judgment and the items of evidence.

The coherence effect and confirmation bias overlap in that a hypothesis influences how evidence is evaluated. However, when it comes to confirmation bias, that hypothesis must necessarily have been formed before the evidence was presented, that is, for some other reason than the evidence. The evidence can then be used to bolster the hypothesis but the evidence does not create the hypothesis in the first place. This means that the bidirectionality implied in the coherence effect is not as pronounced when it comes to confirmation bias, although such elements exist. Even so, it is clear that these tendencies are very similar and as such it is possible that a confirmation

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[501] Tversky & Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, pp. 1124-1131.
[502] Simon, Snow & Read, *The Redux of Cognitive Consistency Theories: Evidence Judgments by Constraint Satisfaction*, pp. 814-837.
[503] Simon, Stenstrom & Read, *The Coherence Effect: Blending Cold and Hot Cognitions*, pp. 369-394.

bias may entail coherence based reasoning as a mean to promote a certain hypothesis.

As implied by the comparisons above, distinguishing these biases and tendencies is sometimes problematic, even from a theoretical point of view. Hence, it can be expected to be even more problematic in applied settings. This calls for a clearer, more nuanced and consistent framework. For the purpose of this thesis, it suffices to establish that confirmation bias sometimes overlaps and sometimes deviates from other related constructs in the above described ways.[504] Hence, as longs as the operationalization falls within this overlap, arguments about whether a behavior should be called sunk cost effect or confirmation bias are not fruitful. Arguing about the label of a psychological tendency would be like looking at a previously unknown fruit and saying: "*This is a Tanana!"* "*No, it's a Bapple!"*. Of course, neither one is more right than the other and persevering in such a discussion would be a waste of time. The continued usage of confirmation bias as a label through out this thesis regardless of its limited informative value, should instead be considered as a practical delimitation of which types of behavioral patterns are examined. The next chapter leaves this question behind and instead focuses on possible explanations of confirmation bias.

3.3 Explanations of Confirmation Bias

So far, the chapter has focused on what confirmation bias is and how it may manifest itself, primarily in the context of criminal cases. This section has another perspective as it provides an explanatory framework including perspectives on confirmation bias provided in cognitive psychology, emotion and motivation psychology, social psychology and organizational psychology. These explanations should not be considered mutually exclusive but rather mutually supportive since legal actors do not only have limited cognitive resources but are also emotional creatures that work within social groups as well as organizational settings. However, to clarify the perspectives of each field these are discussed separately in the chapters below.

[504] Furthermore, as the above review illustrates, confirmation bias and other biases are conceptually intertwined so that the confirmation bias that is observed in one situation can be referable to a mechanism that is emphasized in the framework for one of the other biases, whereas in another situation the observed confirmation bias is referable to another mechanism related to another bias. As such, confirmation bias is a wide description of behavioral patterns which, depending on the situation, can overlap or coincide with the mechanisms described as other biases.

3.3.1 Perspectives in Cognitive Psychology

"Tomorrow the trial begins, 143 days of hearings with 40 lawyers and 9 prosecutors (...). This raises the question, can the judges really get a good overview?"[505]

Cognition refers to humans' processing of information, that is, how humans acquire, handle and use information about the world.[506] As such, human cognition includes perception, memory, thought and language.[507] Decision making primarily falls within the subcategory of thought but is also closely related to the other subcategories since humans for instance have to use information stored in memory in order to make a decision.[508] Research within cognitive psychology attempts to understand human cognition by observing the behavior of people performing various cognitive tasks.[509]

In giant trials like the one referred to in the quote at the beginning of this section, the cognitive load is certainly very high. However, research suggests that cognitive capacity limits prevent humans from actively considering all relevant information even with far less cognitively challenging tasks. For instance, research on working memory, the memory that temporarily stores and processes a limited amount of information,[510] suggests that the

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[505] Wahlberg, *Jätterättegångarna kan strida mot Europakonventionen – "svårt att få en överblick",* Veckans Juridik 20150326, https://www.bgplay.se/video/jatterattegangarna-kan-strida-mot-europakonventionen-svart-att-fa-en-overblick

[506] Lundh, Montgomery & Waern, *Kognitiv psykologi*. The word cognition comes from the Latin word *cogitare* which means to think, see Passer & Smith, *Psychology: The Science of Mind and Behavior*, p. 16 and Gräns, *Decisio Juris*, p. 48.

[507] *Perception* refers to *"the acquisition and processing of sensory information in order to see, hear, taste, or feel objects in the world",* see Sekuler & Blake, *Perception*, p. 621. *Memory* refers to the storage and retrieval of information, both on short-term and long-term, see for instance Atkinson & Shiffrin, *Human memory: a proposed system and its control processes*. *Thought* is the ability to reflect in complex ways on our lives, to plan, solve problems, make decisions etc., Eysenck & Keane, *Cognitive Psychology*, p. 458. One commonly cited definition of *language* is *"a system of symbols and rules that enable us to communicate. Symbols are things that stand for other things: Words, either written or spoken, are symbols. The rules specific how words are ordered to form sentences",* Harley, *The psychology of language: From data to theory*, p. 5.

[508] Lundh, Montgomery & Waern, *Kognitiv psykologi*.

[509] Eysenck & Keane, *Cognitive Psychology*, p. 1. However, there are also developments, for instance cognitive neuroscience, an approach that aims to understand human cognition by combining information about behavior and the brain.

[510] According to a model developed by Baddeley and Hitch that has gained acceptance, the working memory consists of four components, a *central executive* that resembles attention, a *phonological loop* that holds speech based information and where subvocal articulation occurs, a *visuo-spatial sketchpad* that is specialized for spatial and visual coding and an *episodic buffer*, a temporary storage storage system that can hold and integrate information from the phonological loop, the visuo-spatial sketchpad and long-term memory, see Baddeley, *Is working memory still working?,* pp. 851-864.

average digit span that humans can actively process and remember is 7.[511] This is fewer digits than what most phone numbers have. These and similar limitations in cognitive capacity provide an explanation of confirmation bias since they simply make it too cognitively demanding to seriously consider more than one hypothesis at the time.[512] This explanation is provided by for instance Evans in his heuristical analytical model of reasoning.[513] Similarly, De Neys argues that cognitive load increases reliance on reasoning strategies that are associated with confirmation bias.[514] The more specific limitations that have been studied are related to working memory capacity, attention and cognitive deficits that separately or together influence susceptibility to confirmation bias. Thus, it seems that confirmation proneness at least partially

[511] The limitations of working memory become clear for instance when we try to remember a phone number (from for instance an email) that we have to enter into our phones before forgetting it. Not forgetting usually requires that the phone number is constantly repeated (and sometimes divided into smaller chunks to facilitate processing. For adults without cognitive impairments the average digit span that can be hold in working memory is 7 (+/-2), see Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information*, pp. 81-97.

[512] Doherty & Mynatt, *Inattention to P (H) and to P (D\ ~ H): A converging operation*, pp. 1-11, Mynatt, Doherty & Dragan, *Information relevance, working memory, and the consideration of alternatives*, pp. 759-778 and Mynatt, Doherty & Sullivan, *Data selection in a minimal hypothesis testing task*, pp. 293-305.

[513] Evans, *The heuristic-analytic theory of reasoning: Extension and evaluation*, pp. 378-395.

[514] De Neys, *Dual processing in reasoning: Two systems but one reasoner*, pp. 428-433. Also, although not specifically addressing cognitive load as an explanation of confirmation bias, Montgomery and Svensson already in the 1970-1980's proposed that decision making is a sequential process in which different decision rules and information processing strategies can be used at different points in time in order to minimize cognitive effort. This also inspired two more general theories of human decision making, the search for a dominance structure (SDS) theory and differentiation and consolidation (DiffCon) theory, see for instance Montgomery, *Decision rules and the search for a dominance structure: towards a process model of decision making,* Montgomery, *From cognition to action: the search for dominance in decision making,* Svensson, *Decision making and the search for fundamental psychological regularities: what can be learned from a process perspective?* pp. 252-267, Svensson, *Values, Affect, and Processes in Human Decision Making: A Differentiation and Consolidation Theory Perspective*, pp. 287-326, Svensson, *Pre-and Post-Decision Construction of Preferences: Differentiation and Consolidation,* pp. 356-371, Montgomery, *Image theory and dominance search theory: How is decision making actually done?,* pp. 221-224, Svensson & Hill, *Turning prior disadvantages into advantages, Differentiation and consolidation in real-life decision making*, pp. 218-235 and Juslin & Montgomery, *Judgment and decision making: neo-Brunswikian and process-tracing approaches*. Although both theories (SDS and DiffCon) emphasize the link between decision making and action, that is, that the decision making process prepares the individual for efficient action, the theories differ somewhat in their proposition on the role of information structuring and how decision rules are used. In SDS theory the goal of the decision process is to build a stable enough intention to act in a certain way, as decision makers attempt to find arguments that enable them to stick to a certain line of action whatever happens. If the chosen alternative is dominating other alternatives the decision maker will have access to arguments that can serve this function. DiffCon views the structuring and the use of decision rules as separate activities, which in conjunction help the decision maker to find sufficient differentitation between alternatives. DiffCon is also concerned with the consolidation processes.

coincides with variation in human working memory capacity.[515] Also, information held in working memory seems to involuntarily drive attention towards matching information.[516] It is therefore not surprising that recent research indicates a confirmation bias in visual search and attention, a tendency referred to as a visual confirmation bias.[517] For instance, stimuli matching a template was prioritized and attended to even when such a strategy was not optimal for the task at hand.[518] Such a bias was also found in an eye tracking study where the majority of participants exhibited gaze patterns indicating that they systematically explored maps in search of features confirming a scenario.[519] Likewise, pilots, who completed aviation tasks in which they imagined that they were lost tended to adopt a confirmatory non-diagnostic approach to ascertain their location, since they focused on features that were present in two different locations even though another feature was unique for the correct location.[520] Confirmatory visual search patterns suggest that humans are blind to, or at least slow to notice, states of the environments that they do not expect to be true.[521] Rajsic, Taylor and Pratt suggest this is due to a matching heuristic, that is, that certain matching stimuli are prioritized on the expense of other potentially contradicting stimuli.[522] As such, confirmation bias would be the result of a low-cost strategy of matching to a single, concrete visual template.[523] This explanation is also consistent with the findings in studies examining how false information regarding the origin of a sample (a leaf) resulted in participants more often perceiving that the sample had a certain characteristics (as indicated by the false information) [524]

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[515] Fukuda & Vogel, *Human variation in overriding attentional capture,* pp. 8276-8733.
[516] Olivers, *What drives memory-driven attentional capture? The effects of memory type, display type, and search type*, p. 1275 and Soto, Hodsoll, Rothstein & Humphreys, *Automatic guidance of attention from working memory*, pp. 342-348.
[517] Rajsic, Taylor & Pratt, *Out of sight, out of mind: Matching bias underlies confirmatory visual search*, pp. 498-507.
[518] Carrasco, *Visual attention: The past 25 years*, pp. 1484-1525 and Rajsic, Wilson & Pratt, *Confirmation bias in visual search*, pp. 1353-1364.
[519] Hill, Gilbey, Stichbury & Podd, *On getting 'un-lost': Using eye-gaze as an index of hypothesis-testing strategies in spatial reasoning scenarios*.
[520] Gilbey & Hill, *Confirmation bias in general aviation lost procedures*, pp. 785-795. The pilots' performance on the tasks were compared to students and orienteers performance. Whereas the students' performance was roughly the same as the pilots, the orienteers greatly outperformed the pilots, possibily a result of better training and more experience in similar situations.
[521] Simons & Chabris, *Gorillas in our midst: Sustained inattentional blindness for dynamic events*, pp. 1059-1074.
[522] Rajsic, Taylor & Pratt, *Out of sight, out of mind: Matching bias underlies confirmatory visual search*, pp. 498-507.
[523] Rajsic, Wilson & Pratt, *The price of information: Increased inspection costs reduce the confirmation bias in visual search*, pp. 1-20. This research also suggests that more sophisticated guidance strategies will be used when sufficiently beneficial. Hence, search guidance itself comes at a cost and the form of guidance adopted in a given search depends on a comparison between guidance costs and the expected benefits of their implementation.
[524] Kozlov & Zvereva, *Confirmation bias in studies of fluctuating asymmetry*, pp. 293-297.

or how contextual information influences the perception and interpretation of skeletal remains examined within the field of forensic anthropology.[525]

If, in line with the research described above, confirmation bias occurs as a result of limited cognitive resources, it seems reasonable to expect that individuals with cognitive impairments would be more susceptible to confirmation bias than others. This notion gains support from the so-called BADE (Bias against disconfirmatory evidence) experiments primarily carried out within cognitive neuroscience,[526] indicating that patients with delusions and delusion-prone individuals do not integrate disconfirmatory evidence as well as non-delusional controls.[527] Although these findings are mixed[528] the positive results are believed to be due to a hypersalience mechanism whereby hypothesis consistent evidence appears as clearly more salient than incongruent evidence.[529] Somewhat paradoxically though, one study found that patients with schizophrenia were in fact less susceptible to confirmation bias than healthy controls.[530] Supposedly, this is because biases are dependent on strial and prefrontal functioning and since patients with schizophrenia exhibit alterations in these neural systems, they "fail" to exhibit bias in the given task.[531] At this stage, it is uncertain what more specific conclusions can be drawn from these findings within cognitive neuroscience. However, overall the research within cognitive psychology suggests that confirmation proneness probably is modulated by to what extent a decision maker has cognitive resources available, as decided by the demands of the task and the decision maker himself or herself, when making a decision.

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[525] Nakhaeizadeh, Dror & Morgan, *Cognitive bias in forensic anthropology: Visual assessment of skeletal remains is susceptible to confirmation bias*, pp 208-214.

[526] Cognitive neuroscience is a subcategory of research within cognitive psychology which aims to understand human cognition by combining information from behavior and the brain, see Eysenck & Keane, *Cognitive psychology*, p. 1.

[527] Balzan, Delfabbro, Galletly & Woodward, *Confirmation bias across the psychosis continuum: The contribution of hypersalient evidence-hypothesis matches*, pp. 53-69 and Buchy, Woodward & Liotti, *A cognitive bias against disconfirmatory evidence (BADE) is associated with schizotypy*, pp. 334-337.

[528] For instance, no difference in task performance were found in studies by Peters, Thornton, Siksou, Linney & MacCabe, *Specificity of the 'jump-to-conclusions' bias in deluded patients,* pp. 239-244 and Bentall & Young, *Sensible hypothesis testing in deluded, depressed and normal subjects*, pp. 372-375.

[529] Speechley, Whitman & Woodwards, *The contribution of hypersalience to the "jumping to conclusions" bias associated with delusions in schizophrenia*, pp. 7-17.

[530] Doll, Waltz, Cockburn, Brown, Frank & Gold, *Reduced susceptibility to confirmation bias in schizophrenia*, pp. 715-728.

[531] *Ibid*.

3.3.2 Perspectives in Emotion and Motivation Psychology

"I don't dare to set him free, what if he goes home and kills his wife?"

Most humans know what fear as well as other emotions are, until asked to provide a definition.[532] The first thing that comes to mind is probably the *subjective feeling*, like fear, anger or joy.[533] However, in Emotion and Motivation Psychology the subjective feeling is considered only one part of an emotion[534] and this field also emphasizes the close relationship between emotion and motivation.[535]

In experimental and other empirical research, emotions that have been linked to increased levels of confirmation bias are fear[536] as well as anxiety

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[532] This is adapted from a quote by Fehr & Russel: *"Everyone knows what emotion is, until asked to give a definition"*, see Fehr & Russell, *Concept of emotion viewed from a prototype perspective*, pp. 464.

[533] See for instance Izard, *Four systems for emotion activation: Cognitive and noncognitive development*, pp. 68-90 and Reeve, *Understanding Motivation and Emotion*, p. 299.

[534] *Ibid*. In fact, the subjective feeling is only considered to be one part of the total of four parts of an emotion, that also encompass *biological reactions,* that is, energy-mobilizing responses that prepare the body for adapting to whatever situation one faces and *agents of purpose*, since for instance anger creates a motivational desire to act as well as a *social phenomenon*, that is, we send recognizable facial, postural and vocal signs that communicate the quality and intensity of our emotionality to others. A similar but briefer definition of emotions is *"feeling (or affect) states that involve a pattern of cognitive, physiological and behavioural reactions to events",* see Passer & Smith, *Psychology, The science of mind and behaviour*, p. 502.

[535] Emotions are one type of motive because they energize and direct behavior, see Reeve, *Understanding Motivation and Emotion*, pp. 301-302. For instance, anger might energize subjective and physiological resources to achieve a particular goal or purpose such as righting an injustice. Some even argue that emotions constitute the primary motivational system, see for instance Izard, *The psychology of emotions*, Tomkins, *Affect, imagery, and consciousness: The positive* affects; Affect as the primary motivational system, pp. 101-110 and Hull, *A behavior system: An introduction to behavior theory concerning the individual organism*. Also, emotions serve as an ongoing readout system to indicate how well or how poorly personal adaption is going. For instance, joy signals social inclusion and progress towards goals, whereas distress signals social exclusion and failure. See Reeve, *Understanding Motivation and Emotion*, p. 302. A similar but briefer definition of motivation is *"a process that influences the direction, persistence and vigour of goal-directed behavior",* see Passer & Smith, *Psychology, the science of mind and behaviour*, p. 475. According to Lazarus, motivation and emotions are always linked because we react emotionally when our motives and goals are gratified, threatened, or frustrated, see Lazarus, *Relational meaning and discrete emotions*.

[536] See for instance de Jong, Haenen, Schmidt & Mayer, *Hypochondriasis: The role of fear-confirming reasoning*, pp. 65-74, de Jong, Mayer & van den Hout, *Conditional reasoning and phobic fear: Evidence for a fear-confirming reasoning pattern*, pp. 507-516, Dibbets, Fliek & Meesters, *Fear-related confirmation bias in children: A comparison between neutral-and dangerous- looking animals*, pp. 418-425, Muris, Debipersad & Mayer, *Searching for Danger: On the Link Between Worry and Threat-Related Confirmation Bias in Children*, pp. 604-609, Muris, Rassin, Mayer, Smeets, Huijding, Remmerswaal & Field, *Effects of verbal information on fear-related reasoning biases in children,* pp. 206-214, Remmerswaal, Muris,

and worry.[537] For instance, fear seems to maintain phobias[538] and fear of having a disease seems to trigger fear-confirming reasoning in hypochondria.[539] Furthermore, (non-clinical) children with high levels of worry displayed a stronger tendency towards information confirming a threat[540] and a single study suggests that a negative mood increased the preference for decision consistent over decision inconsistent information, whereas a positive mood led to a more balanced information search.[541] Since these studies are conducted in contexts distinct from the legal context and sometimes with children or adolescents, the implications for adult legal actors' reasoning in criminal cases are uncertain.

In the legal setting, there are quite a few studies that confirm the importance of emotions for confirmation bias but the character and direction of this relationship needs to be further examined.[542] However, to exemplify, in a

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Mayer & Smeets, *"Will a Cuscus bite you, if he shows his teeth?" Inducing a fear-related confirmation bias in children by providing verbal threat information to their mothers*, pp. 540-546, Remmerswaal, Huijding, Bouwmeester, Brouwer & Muris, *Cognitive bias in action: Evidence for a reciprocal action between confirmation bias and fear in children*, pp. 26-32 and Smeets, de Jong & Mayer, *"If you suffer from a headache, then you have a brain tumour": Domain-specific reasoning 'bias' and hypochondrias*, pp. 763-777.

[537] Hadwin, Garner & Perez-Olivas, *The development of information processing biases in childhood anxiety: A review and exploration of its origins in parenting*, pp. 876-894, Muris & Field, *Distorted cognition and pathological anxiety in children and adolescents*, pp. 395-421, Muris, Debipersad & Mayer, *Searching for danger: on the link between worry and threat-related confirmation bias in children*, pp. 604-609 and Suarez-Moralez & Bell, *The relationship of child worry to cognitive biases: Threat interpretation and likelihood of event occurence*, pp. 425-442.

[538] de Jong, Mayer & van den Hout, *Conditional reasoning and phobic fear: Evidence for a fear-confirming reasoning pattern*, pp. 507-516.

[539] de Jong, Haenen, Schmidt & Mayer, *Hypochondriasis: The role of fear-confirming reasoning,* pp. 65-74 and Smeets, de Jong & Mayer, *"If you suffer from a headache, then you have a brain tumour": Domain-specific reasoning 'bias' and hypochondrias*, pp. 763-777.

[540] Muris, Debipersad & Mayer, *Searching for Danger: On the Link Between Worry and Threat-Related Confirmation Bias in Children*, pp. 604-609.

[541] Jonas, Graupmann & Frey, *The influence of mood on the search for supporting versus conflicting information: Dissonance reduction as a means of mood regulation*, pp. 3-15. The mood was manipulated by having participants either watch a comedy (positive mood) or a film with oppressive scenes (negative mood) and self-reports indicated that the manipulation was succesful. The findings were replicated in a follow up study with higher stakes.

[542] There are also some methodological challenges with this research as, for instance, it is uncertain to what extent experimentally induced emotions are representative for emotions in everyday life. However, the anecdotal evidence provided by individual judges operating in distinct legal contexts can be noted. For instance, Albie Sachs, former judge of the South African Constitutional Court, in his book *The Strange Alchemy of Life and Law*, proposes that judging cannot properly be characterized as simply the application of pure reason to legal problems nor, at the other extreme, as the application of the personal will or passion of the judge. Rather, there is a complex interplay of forces – rational and emotional, conscious and unconscious – by which no judge can remain unaffected. Sachs makes reference to a lecture given by William Brennan (US Supreme Court Justice) in honour of Justice Benjamin Cardozo, where Brennan "set out what could have been my philosophy" (p. 14), using Sach's own words. Interestingly, this description overlaps the description provided by Mikael Mellqvist, a Swedish District Court judge, who argues that the role of the human applying the

study with 61 experienced Swedish criminal investigators, sadness or anger was experimentally induced[543] and the investigators were then asked to read a summary of an assault case as well as two witness reports.[544] One of the witnesses' statements was created in two versions, varying in its consistency with the hypothesis that was indicated by the case summary. Overall, angry investigators[545] relied more on information relating to the witness's individual characteristics than what sad investigators[546] did (who also took into account situational variables such as lighting and viewing conditions that are typically better indicators), when judging how reliable the witness was.[547] This indicates that angry investigators' judgments run a greater risk of being overshadowed by stereotypical information relating to the witness's individual characteristics. Furthermore, when making judgments of the case, sad participants were sensitive to the consistency of a witness statement with the central hypothesis, indicating substantive processing, whereas angry participants were unaffected by statement-hypothesis consistency, indicating heuristic processing. Thus, as a result of reduced processing depth, an angry investigator may rely overly on pre-existing beliefs and expectations and insufficiently on subsequently encountered information.[548]

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law is often forgotten and underestimated. This portrays the established law as something completely independent of humans and thereby also independent of factors such as emotions and emphathy, which is an incomplete representation of reality, see Mellqvist, *Om empatisk rättstillämpning*, pp. 493-501. Also, related to this is the description of pragmatic adjudication provided by Richard Posner, former judge of the US Seventh Circuit Court of Appeal, see Posner, *Pragmatic Adjudication,* pp. 1-20. In this work, which builds on Jerome Frank's ideas about e.g. "hunching" (see Chapter 2.2.2), Posner desbribes judges' emotional responses to individual cases and argues that emotions are not "pure glandular secretion" (p. 14) but influenced by experience, information and imagination and, as such, they can to some extent be disciplined by fact. See also Posner, *How Judges Think.* The awareness of potentially emotional influences that these judges display does not necessarily mean that they could specifically account for how emotions influence their reasoning in individual cases, since such processes can be more or less subconscious.

[543] The emotions were induced by instructing participants to recall an event they had encountered in their service as police officers which caused them to experience either anger (anger condition) or sadness (sadness condition). Participants' self-reports of their experienced emotions showed that the emotion manipulation was effective.

[544] Ask & Granhag, *Hot Cognition in Investigative Judgments: The Differential Influence of Anger and Sadness*, p. 547.

[545] Angry as operationalized in the study.

[546] Sad as operationalized in the study.

[547] Ask & Granhag, *Hot Cognition in Investigative Judgments: The Differential Influence of Anger and Sadness*, p. 547.

[548] *Ibid*. However, with a different non-legally relevant task (searching for information rather than evaluating information as in the described study), angry participants in fact searched for more disconfirming information than what sad or neutral participants did, see Young, Tiedens, Jung & Tsai, *Mad enough to see the other side: Anger and the search for disconfirming information*, pp. 10-21. This study investigated attitudes on different social issues. There is also some research describing *inter alia* the emotional impact of collecting criminal evidence, see Sollie, Kop & Euwema, *Mental Resilience of Crime Scene Investigators: How*

Ask and Granhag have also explored related motivational explanations in Swedish criminal investigators and found that investigators with a high need for cognitive closure (NFC), a desire for a clear-cut opinion on a judgemental topic and avoidance of confusion and ambiguity, were less likely to acknowledge inconsistencies in a case vignette, under certain circumstances.[549]

Furthermore, international research has examined the role of emotional reactions somewhat more systematically, for instance using a series of different scenarios. This research suggests that judges' emotional reactions towards a defendant influence how judges perceive, remember and process information related to the defendant or plaintiff.[550] Overall, judges seem to favor the litigant who generates the more positive affective response. For instance, American judges' assessments of whether an act (pasting a false US entry visa into a genuine foreign passport) constituted "forging an identification card" under Ohio Statutes varied significantly depending on the level of symphathy elicited by the description of the defendant.[551] The defendant was either described as a hired killer who had sneaked into the US to track down and kill someone who had stolen drug proceeds from a cartel (killer condition) or a father trying to earn money for a liver transplant for his critically ill nine-year-old daughter (father condition). Of the judges in the killer condition, 60 % ruled that the act constituted forgery as compared

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Police Officers Perceive and Cope With the Impact of Demaning Work Situations, pp. 1580-1603.

[549] Ask & Granhag, *Motivational Sources of Confirmation Bias in Criminal Investigations: The Need for Cognitive Closure*, pp. 43-63. The investigators with a high NFC were less likely to acknowledge inconsistencies in the case material when presented with a potential motive, but were more likely to do so when made aware of the possibility an alternative perpetrator. It seems NFC varies across individuals, see Kruglanski, *Lay epistemics and human knowledge: cognitive and motivational bases*, and situations, see e.g. Mayseless & Kruglanski, *What makes you so sure? Effects of epistemic motivations on judgmental confidence*, pp. 162-183, Webster, *Motivated augmentation and reducation of the overattribution bias*, pp. 261-271, Kruglanski, Webster & Klem, *Motivated resistance and openness to persuasion in the presence or absence of prior information,* pp. 861-876 and Webster Nelson, Klein & Irvin, *Motivational antecedents of empathy: inhibiting effects of fatigue*, pp. 37-50. The Need for Closure Scale (NFCS), used to measure individual differences in the need for closure was developed by Webster and Kruglanski in 1994, see Webster & Kruglanski, *Individual differences in need for cognitive closure*, pp. 1049-1062. The scale consists of statements such as "I don't like situations that are uncertain" (which reflects a tendency to seek closure) and "I tend to put off making important decisions until the last possible moment" (indicating a tendency to avoid closure). See also Webster & Webster, *Motivated closing of the mind: "Seizing" and "freezing"*, pp. 263-268 and Kunda, *Motivated inference: Self-serving generation and evaluation of causal theories*, pp. 636-647.

[550] See for instance Holyoak & Simon, *Bidirectional Reasoning in Decision Making by Constraint Satisfaction,* pp. 3-31, Simon, Stenstrom & Read, *The coherence effect: Blending cold and hot cognitions*, pp. 369-394, Wistrich, Rachlinski & Guthrie, *Heart versus head: do judges follow the law or follow their feelings?,* pp. 856-911.

[551] Wistrich, Rachlinski & Guthrie, *Heart versus head: do judges follow the law or follow their feelings?* p. 876.

to 44 % in the father condition, and the average sentence was also higher for the killer than the father.[552] Thus, the influence of emotion on reasoning can be manifested both in the fact-finding process and the interpretation and application of the law. This influence is often undetectable as judges are likely to argue in conventionally relevant terms such as the language of the statute or the legislative history, but affective preferences trigger the operation of cognitive processes that shifts their reasoning to the desired conclusion. Such shifts in reasoning are also referred to as motivated reasoning or motivated cognition.[553] Importantly, judges are not necessarily aware of their motivation to reach a certain conclusion.[554] Indeed, if they were aware, and presumably also careful to live up to professional standards, they would have resigned from the case on their own initiative. The problem at issue here is when judges', or other legal actors', emotional reactions subconsciously influence the way they evaluate the evidence etc. so that the evidence allows the conclusions they want to reach.

A framework which addresses the influence of emotions on reasoning using evidence from neuroscience[555] is Bechara and Damasio's so-called *somatic marker hypothesis*.[556] The key idea of the somatic marker hypothesis is that decision making is a process that is influenced by marker signals that

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[552] Wistrich, Rachlinski & Guthrie, *Heart versus head: do judges follow the law or follow their feelings?* p. 878. These differences were significant.

[553] See for instance Hughes & Zaki, *The neuroscience of motivated cognition, pp. 62-63,* Kunda, *The case for motivated reasoning*, pp. 480-493.

[554] See for instance Schultheiss & Pang, *Measuring implicit motives*, pp. 322-344.

[555] The nervous system controls all human actions, ranging from breathing to the most complex kinds of problem solving, Kalat, *Biological Psychology*, pp. 49-57. All of the nervous system's functions depend on communication between neurons and the primary method for communication between neurons is chemical communication. This chemical communication happens by transmission of neurotransmitters at specialized junctions called synapses. Thus, synapses are the points of communication between two neurons. At a synapse, one neuron releases neurotransmitters that affect a second neuron. This release is enabled by the action potential, a change in the electricial potential across the membrane of a neuron, which results in an "on" message (as opposed to an "off" message if an action potential is not triggered). From this system, all human behavior and experience emerge.[555] According to the somatic marker hypothesis, somatic states influence the pattern of neurotransmitter release which modulates synaptic activity by rendering the triggering of action potentials as more or less likely, Bechara & Damasio, *The somatic marker hypothesis: A neural theory of economic decision*, pp. 343-362. In order for the somatic signals to exert a biasing effect on behavior and thought, they must act on appropriate neural systems, such as the striatum (non-conscious mechanism), the anterior cingulate (conscious mechanism) or the lateral orbitofrontal and dorsolateral prefrontal region (LOF). At the level of the LOF the biasing effect arises from an affect on the contents of the working memory, by endorsing some options and reject other ones, before these options are translated into actions. This is mediated by the release of e.g. dopamine and seretonin. When pondering a decision, seperate thoughts may trigger positive and negative somatic states and depeding on their relative strength, an overall somatic state will emerge that is either positive or negative.

[556] Bechara & Damasio, *The somatic marker hypothesis: A neural theory of economic decision,* pp. 336-372.

arise in bioregulatory processes, including those processes that express themselves in emotions and feelings.[557] Emotions (called somatic states by the authors) are considered a major factor in the interaction between environmental conditions and human decision processes as the emotional system provide valuable implicit or explicit knowledge for making fast and advantageous decision.[558] Hence, the influence of somatic states can occur at multiple levels of operation, of which some are conscious and some are subconscious.[559] On the one hand, emerging neuroscience evidence suggests that sound and rational decision making in fact depends on prior accurate emotional processing and hence that emotions do in fact have an IQ, contrary to common claims.[560] On the other hand, somatic states have a biasing action on decisions, since they influence the patterns of neurotransmitter (dopamine, serotonin, noradrenalin, acetylcholine) release, which modulates the synaptic activity by rendering the triggering of action potential as more or less likely.[561] These emotional influences are most likely subconscious.[562]

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[557] Bechara & Damasio, *The somatic marker hypothesis: A neural theory of economic decision,* pp. 336-372.
[558] *Ibid*.
[559] *Ibid*.
[560] *Ibid*., pp. 336-346. The notion that accurate emotional processing is necessary for sound and rational decision making comes from neuroimaging studies of patients with lesions in the ventromedial (VM) prefrontal cortex or the amygdala (both emotional parts of the brain). These patients, as well as normal control subjects, were required to make a series of selections from different decks of cards, in the so-called Gambling Task. The decks of cards yielded either high immediate gain but larger future loss (long term loss, disadvantageous decks) or lower immediate gain but a smaller future loss (long term gain, advantageous decks). Subjects were not told in advance how many card selections they were going to make. The goal of the Gambling Task is to maximize profit on a loan of play money. Probably, subjects' decisions to select from one deck versus another is largely influenced by various schedules of immediate reward and punishment. Normal subjects avoided the disadvantageous decks (long term loss) and preferred the advantageous decks (long term gain), whereas VM – and amygdala patients did not avoid (i.e. they preferred) the disadvantageous over the advantageous decks. Making a sound rational decision in the Gambling Task requires a preference for the decks that yield long term gains, since such gains will result in a greater overall gain. The hypothesis attributes the lesion patients' inability to make rational decisions to defects in an emotional mechanism that rapidly signals the consequences of an action. Lacking such mechanism, the patients were not able to generate an appropriate emotional activation in response to anticipated rewards and punishments, resulting in an inability to make advantageous decisions. The conclusion was based on measures and comparisons of the subjects' (both normal and lesion patients) skin conductance responses (SCRs), a physiological measure under autonomic nervous system control, which was used as an index of the activation of somatic states. The patients could not register how painful it feels, or would feel, when one loses money and failed to avoid the decks that lead to painful losses. Instead, they sampled cards from the disadvantageous decks until they went broke. Consequently, emotional parts of the brain, such as the amygdala and VM prefrontal cortex, seem to assist with rational decisions.
[561] Bechara & Damasio, *The somatic marker hypothesis: A neural theory of economic decision*, p. 343.
[562] *Ibid.*, pp. 348-349. In follow-up investigations, it was found that somatic signals generated in normal subjects anticipating future outcomes did not need to be perceived consciously in order to assist rational decision making. Instead, conscious knowledge of which is the "right"

The key in determining whether emotions facilitate or complicate rational decision making seems to be whether an emotion is integral, that is, relevant, to the decision making task at hand or not.[563]

The assessment of whether an emotion is integral to the decision making task is particularly difficult when it comes to the legal setting. One could argue that emotions are never relevant provided that legal decisions are expected to exclude such reasons for decision making.[564] However, Bechara and Damasio's intended distinction between integral and non-integral emotions does not seem to coincide with what legal actors normatively should or should not take into consideration. Instead, they would probably reason along the lines in the following example. A judge who ponders a detention decision and fears that the suspect will go home and kill his wife if set free might fear this for different reasons. The fear could of course be based on that there is sound evidence that the suspect has grossly assaulted his wife before and, in such a situation,[565] the fear is relevant for the decision. However, it could also be that the fear is based on a more general impression of the suspect or possibly that the judge, in another case, has decided to not detain someone who then went home and killed his wife.[566] In such a situation, it would be more difficult to claim that the fear is relevant. Yet, since judges are not necessarily aware of where their emotions stem from, this

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or "wrong" deck to choose a card from, is probably insufficient for making advantageous decisions. This was indicated by comparing subjects' SCRs at different stages. According to the authors, normal subjects' anticipatory SCRs was an index of activated unconscious biases, derived from their prior experiences with reward and punishment. These biases that occured during a "hunch period" (outside of awareness) helped deter the normal subjects from pursuing a course of action that was disadvantageous in the future. Lesion patients however, did not report a "hunch period" and did not develop anticipatory SCRs. Later, when the lesion patients became aware of which decks were more advantageous, this knowledge did not make them act accordingly. It therefore seemed like knowledge without emotional signaling caused a dissociation between what one knows and how one decides to act, similar to addicts who know the consequences of their drug seeking behavior, but still take the drug.

[563] *Ibid*., p. 351. In the same way that fear of great future losses is relevant for decisions about investments (like in the Gambling Task), fear of e.g. being stopped by a police is relevant for the decision whether or not to cross the highway speed limit, when late for a meeting. It seems that sometimes a bias for a choosing a certain alternative is beneficial, whereas in other situations when the emotional response is unrelated to the task at hand, the bias becomes an obstacle to making rational decisions.

[564] From a legal point of view this is the most appropriate, or even the only possible, interpretation.

[565] This situation is closely related to the requirement of a risk of continued criminal activity which the judge shall take into consideration even in a legal sense.

[566] According to Bechara and Damasio, *The somatic marker hypothesis: A neural theory of economic decision*, pp. 362-365, the overall somatic state is also modulated by pre-existing somatic states. For instance, if one has experienced losses in similar decision tasks previously, the thought of another loss becomes more painful and triggers a stronger negative somatic state. By contrast, after previous gains, the thought of another gain becomes more pleasureable and triggers a stronger positive somatic state. Thus negative pre-existing states breed pessimism whereas positive pre-existing states breed optimism. In a state of pessimism, it is more difficult to switch to optimism and vice versa.

distinction is very difficult to maintain in more than a theoretical sense. This implies that a judge who perceives of the evidence as strong cannot reasonably distinguish between when that perception is based on the evidence *per se* and/or an emotion that triggers a certain perception of the evidence. This subconscious influence ought to be a more or less constant risk factor since humans are emotional creatures and criminal inquiries regularly trigger emotional reactions, for instance due to the defendant's or plaintiff's demeanor, the alleged *modus operandi* or a plaintiff's physical injuries.

3.3.3 Perspectives in Social and Organizational Psychology

At main hearings in criminal cases in the District Courts
the District Court shall consist of one legally qualified judge
and three lay judges (...)

The Code of Judicial Procedure, 1 ch. 3b §

Social psychology attempts to understand and explain how the thought, feeling and behavior of individuals are influenced by the actual, imagined or implied presence of others.[567] In criminal cases, many decisions are made jointly by groups of individuals, for instance investigative teams or members of the Court. For some decisions like those made during main hearings in Court (guilt, sentence, damages etc.) group decision making is even a legal requirement. As implied by the definition of social psychology, individuals are influenced by the social context in which they operate, which motivates inclusion of social psychological perspectives to understand why confirmation bias occurs in criminal cases. This is discussed in chapter 3.3.3.1.

In addition, legal actors do not only operate within groups but also in larger organizations. The organization that perhaps most easily comes to mind is the police organization, *Polismyndigheten*, which has attracted a lot of medial attention since January 2015 when it was reorganized from 21 local authorites into one large authority.[568] Organizational psychology highlights how individuals and groups of individuals working in an organization are influenced by for instance organizational values and reinforcement pat-

[567] This influential definition was provided by Allport in 1954, see Allport, *The nature of prejudice,* p. 3. The term 'implied presence' refers to the many activities the individual carries out because of his or her position (role) in complex social structures and because of his or her membership in a cultural group.
[568] Swedish Government Offical Reports, SOU 2012:13.

terns.[569] How such aspects can help explain confirmation bias in criminal cases is examined in chapter 3.3.3.2.

3.3.3.1 Social Psychology

The importance of social psychology for understanding confirmation bias is here divided and discussed from two different perspectives. The first perspective regards the question of how the actual, imagined or implied presence of others can produce or maintain confirmation bias in individual legal actors. This could be for instance a prosecutor who knows that he or she has to present evidence supporting a charge to members of the Court, the defense counsel, the defendant etc. In other words, this first perspective explores how social mechanisms can help explain why confirmation bias arises. Since this perspective is also specifically addressed and tested empirically in the empirical studies, the review here will be brief and in only one paragraph below. However, the second perspective, which will be addressed in more detail, is about explaining why, even when several individuals make decisions together in groups, this is not necessarily a cure against confirmation bias, but possibly even the opposite. In other words, this perspective is about explaining why confirmation bias arises and can be maintained even in groups of decision makers. Thus, these two perspectives concern different kinds of explanations.

The presence of others can produce or maintain confirmation bias, for instance when an individual legal actor has made a preliminary assessment regarding a suspect's guilt and then has to present the assessment to other legal actors. Thus, after having pressed charges, a prosecutor may be motivated to convince others that his or her assessment was correct,[570] for instance to protect self-esteem and self-image.[571] This can result in a one-sided way of processing and reasoning about the evidence in order to make the correctness of the assessment clear to others. As implied, this is an explanation of confirmation bias where social and motivational factors overlap and it portrays confirmation bias as a self-enhancement or self-serving bias.[572] If

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[569] See for instance Luthans & Kreitner, *Organizational behavior modification and beyond: an operant and social learning approach*.

[570] Greenwald, *The totalitarian ego*, pp. 603-618, Munro & Ditto, *Biased assimilation, attitude polarization, and affect in reactions to stereotype-relevant scientific information*, pp. 636-653 and Munro & Stansbury, *The dark side of self-affirmation: confirmation bias and illusory correlation in response to threatening information,* pp.1143-1153.

[571] Mercier, *The argumentative theory: predictions and empirical evidence*, pp. 689-700, Mercier & Sperber, *Why do humans reason? Arguments for an argumentative theory*, pp. 57-111 and Sperber, Clement, Heintz, Mascaro, Mercier, Origgi & Wilson, *Epistemic Vigilance*, pp. 359-393.

[572] Greenwald, *The totalitarian ego*, pp. 603-618, Munro & Ditto, *Biased assimilation, attitude polarization, and affect in reactions to stereotype-relevant scientific information*, pp. 636-653 and Munro & Stansbury, *The dark side of self-affirmation: confirmation bias and illusory correlation in response to threatening information,* pp. 1143-1153.

this is a valid explanation, a stronger confirmation bias would be expected in relation to self-generated hypotheses than hypotheses generated by others, and such tendencies have been noted in several different (non-legal) contexts.[573] The empirical studies in this thesis also provide partial preliminary support of the viability of this explanation in the context of criminal procedure.

Intuitively, it may seem reasonable to believe that when several individuals make decisions together in groups, the group setting would help prevent and mitigate the effects of confirmation bias.[574] Since confirmation bias is defined as a more or less subconscious process, it is most probably easier to detect in others than in oneself.[575] This notion has resulted in recommendations that important decisions should be made by groups rather than individuals in order to protect against biases.[576] In fact, the legislator's motive for requirements of group decision making is atleast partially similar as it is believed to improve the quality of decision making, although not explicitly mentioning the interest of preventing bias.[577] In addition to group members'

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[573] Dunbar & Klahr, *Developmental differences in scientific discovery processes*, pp. 109-143, Klahr, *Designing good experiments to test "bad" hypotheses,* pp. 355-402, Schunn & Klahr, *Other vs. Self-generated hypotheses in scientific discovery* and Haverkamp, *Confirmatory bias in hypothesis testing for client-identified and counselor self-generated hypotheses*, pp. 303-315.

[574] A polish study suggested that the effect of working in a group is dependent on the invidual's metacognitive self (MCS), that is, the knowledge about one's own knowledge on the subject of biases in one's own behavior, see Brycz, Wyszomirksa-Góra, Bar-Tal & Wisniewski, *The effect of metacognitive self on confirmation bias revealed in relation to community and competence*, pp. 306-311. A high level of MCS means that the individual has a good insight into his or her own biases and irrationalities, which is a sign that the individual is able to look at him/herself from a different more detached perspective. Contrary to the low MCS individuals, who show a higher tendency for confirmation bias within the competence domain (own goals and pursuits) than in the community domain (the individual's relation and actions toward others as a member of a social group), persons with a good insight into their own biases show the same level of confirmation bias in both domains.

[575] Nickerson, *Confirmation bias: a ubiquitous phenomenon in many guises,* p. 175 and Pronin, Gilovich & Ross, *Objectivity in the eye of the beholder: divergent perceptions of bias in self versus others*, pp. 781-799.

[576] See for instance Cooper, Woo & Dunkelberg, *Entrepreneurs' perceived chance of success*, pp. 97-108, Feeser & Willard, *Founding strategy and performance: A comparison of high and low growth high tech firms*, pp. 87-98 and McCarthy, Schoorman & Cooper, *Reinvestment decisions by entrepreneurs: Rational decision-making or escalation of commitment*, pp. 9-24 regarding recommendations for managerial decision making.

[577] This is apparent for instance when it comes to crimes for which the likely sanction is only a fee, regarding which one judge may decide the case him/herself, whereas crimes with more severe sanctions also require three Lay Judges to participate, in accordance with The Code of Judicial Procedure, 1 ch. 3b §. The reason for this, according to the Minister of the Committee on Justice, NJA II 1966 p. 441, is that trials concerning crimes with more severe sanctions are not only more comprehensive but also entail more difficult evidentiary issues as well as more complex questions regarding sentence, see the Minister of the Committee on Justice, NJA II 1966 s. 441. Furthermore, The Swedish Government Bill, Prop. 1996/97:133 and the Report from the Committee on Justice state that Lay Judges' participation is intended as a guarantee that general societal values are incorporated into the decisions and also to promote

ability to point out errors in one another's reasoning and act as devil's advocates in relation to one another,[578] the group's greater cumulative knowledge and potential to deal with more information, supports the idea of groups as superior decision makers than individuals.[579]

However, contrary to these expectations, research suggests that biases may even be produced or exacerbated in groups,[580] as groups often fail to successfully pool the information held by different members[581] and can have very restricted information-processing patterns.[582] These tendencies seem to be present even in groups that are formed arbitrarily and with the purpose of carrying out just one specific task,[583] which is often the case with for in-

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that more and other points of view are put forward and discussed. Furthermore, when discussing possible changes to the Court's composition when deciding criminal cases, it is sometimes put forward that the quality of the criminal verdicts would improve if one more legally trained judge participated than what is currently the case, see The Swedish Government Bill, Prop. 1996/97:133. However, when it comes to participation of Lay Judges specifically, it is also motivated by interests like improving insight into the Courts and a general trust in the Courts' practice.

[578] The so-called devil's advocate procedure entails that one group member is assigned the role of a devil's advocate which means he or she continously contradicts, questions and proposes alternative scenarios, explanations etc. in relation to the other group members' views. This has proven partially succesful but depending on group and context specific factors, see for instance Schweigher, Sandberg & Ragan, *Group approaches for improving strategic decision making: a comparative analysis of dialectical inquiry, devil's advocacy, and consensus,* pp. 51-71, Schweigher, Sandberg & Rechner, *Experiental effects of dialectial inquiry, devil's advocacy, and concensus approaches to strategic decision making*, pp. 745-772, Schwenk, *Devil's advocacy in managerial decision making*, pp. 153-168, Schwenk, *Effects of devil's advocacy and dialectical inquiry on decision making: a meta analysis*, pp. 161-176, Schwenk & Cosier, *The effects of consensus and devil's advocacy on strategic decision-making*, pp. 126-139, Schwenk & Valacich, *Effects of devil's advocacy and dialectial inquiry on individuals versus groups*, pp. 210-222, Valacich & Schwenk, *Devil's advocacy and dialectical inquiry effects on face-to-face and computed-mediatedgroup decision making*, pp. 158-173, Schwind & Buder, *Reducing confirmation bias and evaluation bias: When are preference-inconsistent recommendations effective – and when not?* pp. 2280-2290 and Schwind, Buder, Cress & Hesse, *Preference-inconsistent recommendations: An effective approach for reducing confirmation bias and stimulating divergent thinking?* pp. 787-796.

[579] Huber, *Managerial decision making*.

[580] Houghton, Simon, Aquino & Goldberg, *No safety in numbers: Persistence of biases and their effects of team risk perception and team decision making*, pp. 325-353, Kerr & Tindale, *Group performance and decision making*, pp. 623-655 and Tindale, *Decision errors made by individuals and groups*, pp. 109-124.

[581] Stasser & Stewart, *Discovery of hidden profiles by decision-making groups: solving a problem versus making a judgment*, pp. 426-434.

[582] Janis, *Groupthink*.

[583] A commonly accepted definition of a group is people who are interdependent and have at least potential for mutual interaction, see Taylor, Peplau & Sears, *Social Psychology*, p. 345. Also, in most groups, people have regular face-to-face contact. However, the studied groups have varied in many respects, such as the group size. Most group research has focused on groups ranging from 3 to 20 people, although 2 people (a couple) is also included in the definition. As such, the definition of a group is narrower and more technical than in everyday language where the term is used to refer to all kinds of social units. Yet, in accordance with research using an experimental methodology called *the minimal group paradigm* (the mini-

stance investigative teams or the Court where the composition of members is quite dynamic and varies from case to case.[584] The more specific mechanisms that can produce or exacerbate confirmation bias in groups are for instance the emergence of group norms, conformity and role-induced bias, mechanisms that were identified already in early social psychology studies. Although their relationship to confirmation bias as well as the applicability to the legal setting needs to be further evaluated, these findings, together with more recent replications, highlight potential risk factors.

Muzafer Sherif's (1936) pioneering studies demonstrate that in uncertain and ambiguous situations, people tend to conform to group norms.[585] Using a perceptual illusion called the *autokinetic effect,*[586] Sherif compared individual's estimations of how far a single point of light moved to the estimations of groups of two or three were all individuals stated their estimates out loud.[587] The estimations of the individuals in the first condition varied enormously and so did the estimation in the second condition but over time their estimates became gradually more and more similar and when asked to make individual estimates again, these fell within the approximate range provided by the group. This study, as well as several replications,[588] suggests that a group norm emerged for judging the distance, a norm that individual group members stuck to even when judging the distance individually.[589] Although these estimations, unlike for instance judges' evaluation of evidence (resulting in a conviction or an acquittal), do not have any consequences for other

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mal conditions required for group behavior to occur), merely being arbitrarily categorized into groups using random criteria such as "blue team" and "red team" is sufficient for group members to display group behaviors, see Tajfel, *Experiments in intergroup discrimination*, pp. 96-102, Tajfel, *Cognitive aspects of prejudice*, pp. 79-97 and Brewer & Brown, *Intergroup relations*, pp. 554-594. For instance, such categorization makes group members show more favorable attitudes and behaviors towards members of the own group than toward members of another group.

[584] Similarly, legal actors continuously shift from working in large groups, in pairs and alone. For instance, a prosecutor alone decides to open a preliminary investigation, a team of criminal investigators together make a general plan for the investigation while decisions associated with carrying out specific investigative measures such as suspect interrogations may be formed by one or two criminal investigators. Yet, since the prerequisites for group behavior to occur really are minimal it is most probably sufficient that two police officers cooperate on a given task or that four judges are referred to as "The Court".

[585] Sherif, *The psychology of social norms*.

[586] The autokinetic effect makes light in the dark appear to move even though it is stationary.

[587] Individual male college students sat in a darkened room, watched a single point of light and were asked to estimate how far it moved (even though it was not moving at all).

[588] Taylor, Peplau & Sears, *Social Psychology*, pp. 206-207. The results were replicated in subsequent studies in which a confederate, whose task was unknown to the participants, consistently made either lower or higher estimates than the participants. These later studies suggest that people conform to norms established by a consistent peer, regardless of in which direction the peer is consistent (higher or lower ratings).

[589] *Ibid*.

humans, the value of Sherif's study is the identification of relatively easily formed group norms, at least when there is no objective yardstick.[590]

Whereas Sherif's studies required participants to "guess in the dark",[591] Solomon Asch'(1952) subsequent studies illustrate conformity in stimulus situations where the correct answers were "as plain as day".[592] In groups, where some members were confederates with predetermined judgments, participants were shown three lines and asked to decide which was the most similar in length to another line.[593]Despite the ease of finding the right answer (one of the lines was exactly the same length as the standard whereas the other two were quite different from it), participants conformed to the confederates' clearly wrong answer[594] about 35 % of the time. All in all, 75 % of participants conformed at least once during the study. Asch himself concluded that the tendency to conform was *"so strong that reasonably intelligent and well-meaning young people are willing to call white black".*[595] To a certain extent, Asch's concern is justified[596] but on the other hand, participants did not conform 65 % of the time and 25 % of the participants never conformed despite the outspoken group norm. Thus, an alternative interpretation is that individuals dare to state their contradicting opinions most of the time, although not all the time.[597] Regardless of what one chooses to emphasize, participants most likely would have decided correctly all the time if they were alone, given the clarity of the stimulus situation. Subsequent studies illustrate that levels of conformity have decreased since the 1950's and

[590] Taylor, Peplau & Sears, *Social Psychology*, pp. 206-207.
[591] *Ibid*.
[592] *Ibid*. Asch's aim of greatly increasing the clarity of the stimulus situation was to examine the prevalence and extent of conformity to groups norms when groups members could not reasonably be uncertain of the correct choice, Asch, *Opinions and social pressure*, pp. 31-35.
[593] The participants carried out the task in groups of five, where four members were confederates with predetermined judgements, which was unknown to the fifth real participant.
[594] For the first two sets, all four confederates provided the right answer but for the third set they all provided an answer that was clearly wrong.
[595] Asch, *Opinions and social pressure*, p. 34.
[596] Accordingly, it has been described as *"one of the most dramatic illustrations of conformity, of blindly going along with the group, even when the individual realizes that by doing so he turns his back on reality and truth",* Taylor, Peplau & Sears, *Social Psychology*, pp. 207-208. Group members seemed to appreciate consensus to such a degree that providing a clearly faulty answer was not an issue. Apart from the clarity of the stimulus setting, Asch pointed out that participants had good eyesight and presumably sharp minds, although it is uncertain whether these factors were at all estimated. Also, with reference to the applied method, for instance when it comes to the confederates' numerical advantage (4 to 1) and the lack of consequences of choosing the wrong line, it can be questioned whether this level of conformity is high or low.
[597] The results therefore seem to render opposing interpretations possible. Either, one out of three faulty answers is considered indicative of a high level of conformity or the finding that two out of three answers were correct is regarded as a sign of a high resistance to group norms as individuals dare to state their contradicting opinion most of the time.

that there are cultural variations.[598] Furthermore, critics point out that consensus sometimes trumps truth since it makes collective action possible.[599] Although judges have a duty to decide cases (and thus cannot simply refrain from deciding since there are disagreements), Court decisions do not formally require consensus. However, cultural aspects may lead group members to seek consensus at all costs. Swedish group decision making is often described as *consensus driven*, which means that the primary aim of group discussion is not to reach an accurate decision but instead a decision that all

[598] Thus, the concern of an excessively strong tendency to conform has been partially challenged by more recent research, for instance a meta-analysis of US-studies using Asch's line judgment task according to which conformity has declined since the 1950's, see Bond & Smith, *Culture and conformity: A Meta-Analysis of Studies Using Asch's (1952b, 1956) Line Judgment Task*, pp. 111-137. Naturally, this is unlikely to generalize beyond Western societies and they may even be limited specifically to the US. However, in the same meta-analysis, a review of 133 studies from 17 countries demonstrated that individuals in individualistic cultures showed lower levels of conformity than individuals in collectivist cultures. On a general level, Sweden fits the description of an individualistic culture. For more on individualistic and collectivist cultures see for instance Triandis, *Cross-cultural studies of individualism and collectivism*, p. 42. The notion of an individualistic culture in Sweden is expressed by for instance Daun, *Svensk mentalitet: Ett jämförande perspektiv*, pp. 83-99. However, if Swedish group decision making is driven by a desire to reach concensus (see for instance Daun, *Svensk mentalitet: Ett jämförande perspektiv*, pp. 102-110, Karlsson, *Does Swedishness exist? A scrutiny of theories about the Swedish national character and mentality*, pp. 41-57 and Sontag, *Letter from Sweden*, pp. 23-38.) it is likely to detract any possible advantages of the otherwise individualistic culture.

[599] Campbell argues that Asch was wrong in counting individuals as conforming as soon as they displayed any agreement at all, even if just once, see Campbell, *Asch's moral epistemology for socially shared knowledge*, pp. 39-52. According to Campbell, trusting others is a valid ecological assumption that is overshadowed by the "conformity" that participants were duped into in Asch's studies. He suggested that, from an evolutionary perspective, consensus trumps truth because it makes collective action possible. This argument is somewhat compelling, considering that groups are often forced to make decisions despite initial dissent. If reaching consensus or remaining incapable of acting are the options, it can be considered adaptive to prioritize action over accuracy. However, the notion of consensus as an adaptive mechanism can be challenged because firstly, not all types of actions require consensus and secondly, consensus in it self without any regard to accuracy may very well threaten a group's ability to fulfill their purpose. A similar but more nuanced view than Campbell's is that provided by Hodges and Geyer's values pragmatics account of Asch's experiments, see Hodges & Geyer, *A Nonconformist Account of the Asch Experiments: Values, Pragmatics, and Moral Dilemmas*, pp. 2-19. According to them, Asch's experiments provide powerful evidence for people's tendency to tell the truth even when others do not and for people's concern for other's and their views. They argue that it is unreasonable to apply a *"zero-tolerance norm"* (p. 4) and that the results are better understood reflecting on the values that are at stake in the task. These values are truth (expressing one's own view accurately), trust (taking seriously the values of others' claims) and social solidarity (commitment to integrate the own and those of others without deprecating either). Also moral values are at stake such as the integrity and well being of other participants, the experimenter, themselves and the worth of scientific research. Since these values are equally important components of a system that mutually constrain one another, it will vary over time and situation which value takes the lead. It seems credible that finding the truth is not the only goal of group judgments and this may explain why people agree with norms that are clearly inaccurate.

group members can agree upon, in order to avoid conflicts.[600] Also, in a more recent modified version of Asch's experiment, Baron, Vandello and Brunsman found that increasing task importance and motivation for accuracy can lead to reduced conformity, provided that the task difficulty is low.[601] By contrast, when faced with tasks that are important[602] and high in difficulty,[603] individuals' conformity to group norms seem to increase.[604] This was found using a procedure where participants were exposed to various eyewitness identification slides in the presence of two confederates who gave unanimous and incorrect judgments prior to participants' judgments. A possible explanation of the increased conformity in highly important and difficult tasks is that when task difficulty increases, participants cannot as easily rely on their own perceptions as guides to accuracy.[605] The most sensible guide to a correct response is instead the responses of others, particularly if the others all agree.[606] Although it is uncertain to what extent these findings generalize to reasoning in Court proceedings, a possible manifestation is when a member of the Court is undecided but then conforms to the opinion of two other members who clearly advocate a conviction and thereby tips the scale to convicting the defendant.[607]

Stanley Milgram (1963) criticized Asch's studies of conformity because he believed that judging the length of lines was a trivial task in which there were no significant consequences for the participants or for others.[608] Influenced by a wider social issue, namely Nazi officials' obedience to Hitler's orders, he used a famous task were participants, "teachers", were told to apply electric shocks of increasing strength (75-450 V) to another person, a "learner", when this person erred in a word association assignment.[609] If the

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[600] See for instance Daun, *Svensk mentalitet: Ett jämförande perspektiv*, pp. 102-110, Karlsson, *Does Swedishness exist? A scrutiny of theories about the Swedish national character and mentality*, pp. 41-57 and Sontag, *Letter from Sweden*, pp. 23-38.

[601] Baron, Vandello & Brunsman, *The Forgotten Variable in Conformity Research: Impact of Task Importance on Social Influence,* pp. 915-927.

[602] Task importance was manipulated by informing participants either that the test was a verified measure of eyewitness ability and the possibility of receiving a monetary reward ($ 20) for making accurate judgments (high importance) or that the procedure was part of a pilot study (low importance).

[603] Task difficulty was varied by changing the time and frequency of exposure to the slides.

[604] Baron, Vandello & Brunsman, *The Forgotten Variable in Conformity Research: Impact of Task Importance on Social Influence*, pp. 915-927.

[605] Baron, Vandello & Brunsman, *The Forgotten Variable in Conformity Research: Impact of Task Importance on Social Influence*, pp. 916-924. This is also in line with Festinger's argument that when judgments cannot be verified objectively, individuals become increasingly reliant on social information to gauge the accuracy and appropriateness of their views, Festinger, *A theory of social comparison processes*, pp. 327-346. Hence, the susceptibility to an inaccurate group consensus is heightened.

[606] Baron, Vandello & Brunsman, *The Forgotten Variable in Conformity Research: Impact of Task Importance on Social Influence*, p. 916.

[607] In accordance with the voting rules in The Code of Judicial Procedure 16 ch. 3 §.

[608] Hogg & Vaughan, *Essentials of Social Psychology*, p. 138.

[609] Milgram, *Behavioral study of obedience*, pp. 371-378.

teacher asked to finish the experiment the experimenter responded with an ordered sequence from a mild "please continue" to the ultimate "you have no other choice, you must go on". Overall, 100 % of the participants exceeded 180 V and 65 % continued obeying all the way to the end (450 V).[610] The teachers in Milgram's experiments were most likely aware of the consequences their decisions had for the learners as they received a sample shock,[611] the shock generator had labels like "danger: severe shock",[612] and the learner also grunted in pain/demanded to be released.[613]After conducting in total 18 studies with variations of the original experiment, Milgram concluded that group pressure,[614] the immediacy of the authority figure[615] and victim[616] as well as the legitimacy of the context (where the laboratory was located)[617] were factors that influenced the level of conformity.[618] The results have been replicated with both female and male participants[619] and in a range

[610] Experts that were asked to predict how far a normal, psychologically balanced human being would go, estimated that about 10 % would exceed 180 V and no one would obey to the end, Hogg & Vaughan, *Essentials of Social Psychology*, p. 141.
[611] By the beginning of the experiment, all teachers were given a sample shock of 45 V.
[612] The shock generator had descriptive labels such as "strong", "very strong" and "danger: severe shock".
[613] In the original experiment teachers saw learners being strapped to a chair and electrodes applied to their arms. They also overheard the learner telling the experimenter that he had a slight heart condition. As the teacher applied 75 V the learner grunted in pain, at 120 V the learner shouted that the shocks were becoming painful, at 150 V the learner demanded to be released, at 180 V he cried out that he could no longer stand it and at 250 V the learner screamed in agony.
[614] In follow-up studies Milgram found that the most influential element on participants' obedience was group pressure. With two obedient peers present, 92.5 % of the participants continued to 450 V, whereas with two disobedient peers, the complete obedience dropped to 10 %, which differs greatly from the 65 % complete obedience when no peers were present. It is likely that both the obedient and the disobedient peers helped in confirming that either obeying or disobeying was legitimate, facilitating participants' decisions to continue or stop.
[615] The overall obedience was reduced to 20.5 % when the experimenter was absent from the room and instead gave instructions by telephone. When the authoritative figure gave no orders at all and the participants were entirely free to choose when to stop, 2.5 % persisted to the end.
[616] When participants could not see or hear the victim, there was a 100 % complete obedience whereas when the victim was visible in the same room 40 % obeyed to 450 V and when the teacher had to hold the victim's hand down on the electrode to receive the shock, complete obedience dropped to 30 %.
[617] When the experiments were carried out in a run-down inner-city office building, as opposed to at the prestigious Yale University where earlier experiments were carried out, the complete obedience rate dropped but was still relatively high, 48 %.
[618] Milgram, *The individual in a social world: Essays and experiments*.
[619] The great majority of Milgram's participants were 20-50 year old males from a range of occupations and socioeconomic levels but similar tendencies have been found in a study with female participants, Gibson, *Milgram's obedience experiments: a rhetorical analysis*, pp. 290-309.

of countries[620] with complete obedience rates ranging from 40 % (Australians) to 90 % (Spain and the Netherlands).[621]

Milgram's obedience experiments and more recent replications are mostly known for their illustration of the strength of the situation on human behavior[622] as participants seemed to enter a so-called *agentic state*, that is, a mindset characterized by unquestioning obedience in which personal responsibility is transferred to the person giving orders.[623] It is easy to see how such a mindset could make groups incapable of stopping biased decision making, and thereby fail to fulfill its role as a promoter of decision quality. In more recent research such as the Utrecht Studies that use an "administrative obedience paradigm" in the employment context, the shock generator was replaced by denigrating remarks, and the levels of obedience were still high (84-90 %).[624] However, this and similar research also nuances the picture as some participants in fact refused to obey direct orders[625] and the level of obedience seems to depend on the relationship between the group and the group leader[626] as well as what pressure the group leader applies.[627]

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[620] The results have been replicated in Britain, Germany, the Netherlands, Austria, Spain, Italy, Jordan and Australia, see Smith, Bond & Kagitçibaşi, *Understanding social psychology across cultures: Living and working in a changing world.*

[621] *Ibid*.

[622] Berkowitz, *Evil is more than banal: Situationism and the concept of evil*, pp. 246-253.

[623] Hogg & Vaughan, *Essentials of Social Psychology*, p. 138, Milgram*, The individual in a social world: Essays and experiments*. As the experimenter continuously encouraged participants to apply electric shocks of increasing strength, they were led to trust that what they were doing was legitimate since they were merely aiding scientific progress.

[624] See Elias, *The Court Society*, Meeus & Raaijmakers, *Obedience in Modern Society: The Utrecht studies*, pp. 155-175 and Mermillod, Marchand, Lepage, Begue & Dambrund, *Destructive Obedience Without Pressure*, 345-351. Meeus & Raaijmaker designed the "administrative obedience paradigm" in which they used a sequence of increasingly negative and denigrating remarks instead of a shock generator to punish the victim. The victim was a person in long-term unemployment who had to pass a test to get a job and participants were ordered to make him nervous and disturb him during the test after being told that they were participating in an experiment on the effects of psychological stress on test achievement. In order to do so, the participants had to enunciate a sequence of increasingly denigrating remarks about his performance. Because of this experimental procedure, the applicant failed the test and remained unemployed.

[625] See for instance Burger, *Replicating Milgram: Would people still obey today?* pp. 1-11, Burger, Girgis & Manning, *In their own words: Explaining the obedience to authority through an examination of the participants' comments*, pp. 460-466 and Haslam & Reicher, *Contesting the "Nature" of Conformity: What Milgram and Zimbardo's studies really show*. Haslam and Reicher argued that the use of authoritarian orders may be counterproductive because it undermines a sense of shared identity and hence the motivation to cooperate. As such, the individuals' willingness to follow authorities is conditional on identification with the authority in question and an associated belief that the authority is right.

[626] See for instance Kelman, *The policy context of torture: A social psychological analysis*, pp. 123-124 and Lankford, *Promoting aggression and violence at Abu Ghraib: The US Military's Transformation of ordinary people into tortures*, pp. 388-395.

[627] Mermillod, Marchand, Lepage, Begue & Dambrund, *Destructive Obedience Without Pressure,* pp. 345-351. The obedience rates were significantly higher in the presence of explicit authoritarian pressure (84 %) than in the absence of such pressure (73 %) but the au-

The cited studies can and have been criticized for tricking the participants into obedience[628] which makes the findings somewhat artificial. Also, the settings in Milgram's studies as well as more recent replications are quite remote from the legal context, which makes the implications uncertain. However, they do point to a risk of biased decision making for instance in situations where a law learned judge assumes an authoritative leadership and the Lay judges trust him or her to take responsibility for the legitimacy of the decision, due to his or her superior legal knowledge.[629]

Shortly after Milgram's experiments, Serge Moscovici and Marisa Zavalloni (1969) identified what they referred to as *group polarization*, that is, when a group of like-minded people discuss an issue and the average opinion of group members tend to become more extreme.[630] This so-called "risky shift" was first identified in a sample of French secondary school students in

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thors themselves point out that the obedience rates were still quite high without the pressure. Also, in this study, participants attributed lower responsibility to themselves than to the experimenter, which provides some preliminary support for the agentic state.

[628] For instance, Haslam and Reicher point out that the Milgram studies might be less about people conforming slavishly to the will of the authority than about getting people to believe in the importance of what they are doing, see Haslam & Reicher, *Contesting the "Nature" of Conformity: What Milgram and Zimbardo's studies really show.*

[629] The law learned judge is not only the chairperson of the Court but also, in his or her capacity of a legal expert, often explains the content of the applicable law to the lay judges. As such, the law learned judge often assumes the role as a leader in the group. If lay judges consciously or unconsciously trust the law learned judge to take responsibility for the legitimacy of the decision, they may enter an agentic state where their personal responsibility for the decision is, perceived as, diminished. Although the outlined circumstances in judges' deliberation resemble those present in Milgram's studies, they are hardly identical. Even if it is possible that the law learned judge takes the role of an authoritative leader, it is doubtful whether instructions or opinions expressed by that judge are equal to the orders provided by the experimenter in Milgram's studies. On a general level, it might be more accurate to describe them as requests with less force attached than orders. Assuming that law learned judges do not always provide such forceful arguments it does seem far-fetched to claim that lay judges are affected in the same way as Milgram's participants, in this respect. Furthermore, judges' deliberation is sometimes more similar to an informal conversation that does not fit with the formal sequence of the experimenter's orders and participants' actions in Milgram's studies. If the deliberation is carried out as an informal conversation, the order in which judges present their views varies and it is not necessarily consistent with how Milgram's participants were exposed to either two obedient or disobedient peers before stating their own view. Furthermore, even when formal voting occurs during the deliberation the turn taking for voting is dictated by the judges' age of experience, see The Code of Judicial Procedure 16 ch. 1 §. Even if it is clear that Milgram's findings cannot simply be transferred and applied directly to the legal context, they do highlight a risk that the group does not function as the intended promotor of decision quality. Certainly, the way in which law learned judges express their views varies with for instance the case at hand and the judge's personality. The risk ought to be higher if a law learned judge for instance argues that the applicable law does not allow any other conclusions than the advocated conclusion and discourage any dissenting opinions.

[630] Moscovici & Zavalloni, *The group as a polarizer of attitudes*, pp. 124-135. See also Lamm & Myers, *Group-Induced Polarization of Attitudes and Behavior*, pp. 145-187 and Myers & Lamm, *The group polarization phenomenon,* pp. 602-627.

a group discussion task[631] and has since then been replicated in a range of settings.[632] Possibly, this is because group interaction enables each individual to feel less personal responsibility for the consequences of the decisions and they therefore become more daring.[633] It can also be because group members provide each other with persuasive arguments in support of a certain preferred alternative (and contradicting a non-preferred alternative) resulting in a bargaining process where group members continuously bid above each other with hypothesis consistent arguments.[634] Thus, the advantages of the preferred alternative are emphasized and disadvantages downplayed, increasing the individual members' previous beliefs and simultaneously decreasing the likelihood of anyone presenting opposing ideas, because of the fear of making a fool of oneself in front of the group majority.[635] This means that the group comes to function as one large individual with a very strong confirmation bias. In addition, research suggests that group members display a role-induced bias, that is, they act in the way they believe their assigned role requires them to act, which is primarily expressed by downplaying conflicting evidence.[636] This research stems from Philip Zimbardo's (1973) famous Stanford Prison Experiment (SPE)[637] that had to be terminated earlier than planned since the participants complied too well with their assigned roles as guards and prisoners.[638] Since the SPE had important limi-

[631] The total sample comprised 140 male students in their terminal year at a Parisian lycée (secondary school), aged 18-19. The group discussions concerned General de Gaulle (Experiment 1) and attitudes towards the Americans (Experiment II), topics that, according to the researchers, concerned important and meaningful issues to young people at the time. The group discussions resulted in significant shifts towards the extremes of an opinion scale compared to ratings made by individuals who were not involved in group discussion.

[632] Isenberg, *Group polarization: A critical review and meta-analysis*, pp. 1141-1151.

[633] Moscovici & Zavalloni, *The group as a polarizer of attitudes*, p.126. This is also aligned with the theory of diffusion of responsibility, see Wallach & Kogan, *The roles of information, discussion, and concensus in group risk taking*, pp. 1-19.

[634] See for instance Sia, Tan & Wei, *Group polarization and computed mediated communication: Effects of communication cues, social presence, and anonymity*, pp. 70-90 and McGarthy, Turner, Hogg, David & Wetherell, *Group polarization as conformity to the most prototypical group member*, pp. 1-20. Yet another explanation is that individuals who are attracted to a group may be motivated to adopt a more extreme position to gain the group's approval.

[635] Christianson & Montgomery, *Kognition i ett rättspsykologiskt perspektiv,* pp. 114-115.

[636] Engel & Glöckner, *Role-induced bias in court: an experimental analysis*, pp. 272-284.

[637] Haney, Banks & Zimbardo, *A study of prisoners and guards in a simulated prison*, pp. 19-34, Zimbardo, *Quiet rage: The Stanford prison study video*, Zimbardo, Maslach & Haney, *Reflections on the Stanford prison experiment: Genesis, transformations, consequences*, pp. 193-237, Zimbardo, Haney, Banks & Jaffe, *The psychology of imprisonment*. The experiment was carried out in the basement of Stanford University.

[638] The students assigned the roles of guards harassed, humiliated and intimidated the students acting as prisoners who initially revolted but then gradually became more passive. The prisoners were arrested in their homes and confronted with the police, whereafter they were taken to the prison where things got completely out of hand. Zimbardo's interpretation was that the participants complied too well with their assigned roles and that they did what they though was expected of them, see Zimbardo, Haney, Banks & Jaffe, *The psychology of imprison-*

tations,[639] it should be interpreted with caution. Bearing these limitations in mind, Reicher and Haslam carried out the so-called BBC prison study in 2001[640] and found that the prisoners but not the guards seemed to identify with their roles.[641] Thus, whereas the SPE suggested that people naturally accept the roles they are assigned, the BBC study indicated that people do not automatically assume the roles that are given to them.[642] Instead, the level of identification with a role depends on to what extent group members internalize membership as part of their self-concept, an idea consistent with social identity theory.[643] More recent experimental research in the legal set-

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ment, p. 12. Thus, constraints normally acting upon individuals were undermined by the immersion into the group. Additionally, when the group has power at its disposal, extreme antisocial behavior is encouraged, see Haney, Banks & Zimbardo, *A study of prisoners and guards in a simulated prison*, pp. 19-34, Zimbardo, *Quiet rage: The Stanford prison study video*, Zimbardo, Maslach & Haney, *Reflections on the Stanford prison experiment: Genesis, transformations, consequences*, pp. 193-237 and Zimbardo, Haney, Banks & Jaffe, *The psychology of imprisonment*. A more in-depth explanation is that participants were confronted by a situation that raised their feelings of uncertainty about themselves and in order to reduce the uncertainty, they internalized their given identities and adopted appropriate behaviors, Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study*, pp. 1-40.

[639] For instance, the findings were based on observational data that was only partly recorded and is only partly available, see Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study*, pp. 1-40. Also, it is not clear whether participants' behavior should be attributed to their acceptance of their assigned roles and/or to the leadership provided by the experimenters. Since the guards were instructed to not allow the prisoners any privacy or any freedom of action and this was meant to generate a *"sense of powerlessness"* (p. 4) in the prisoners, the guards were pushed into acting harshly. Furthermore, there was variation in how the individual guards went about carrying out their roles. Whereas some exploited their power, some sided with the prisoners and others were tough but fair, suggesting that situational factors were not the only determinants of participants' behavior.

[640] Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study,* pp. 1-40. The BBC prison study was conducted in conjunction with the BBC documentaries unit.

[641] The guards were told that their responsibility was to ensure that the institution ran as smoothly as possible and that the prisoners performed all their tasks. They were not given any specific guidance about how to achieve their goals, since the only limit on what they could do was a set of ethically determined basic rights for prisoners (for instance a prohibition on physical violence). It turned out that the guards were unable to agree on group norms and priorities and they could not trust others to represent them or act appropriately. As a consequence they felt and were weak, inconsistent and ineffective as a group. By contrast, prisoners displayed a gradually increasing identification with their group as they worked collectively to challenge the guards.

[642] Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study,* pp. 1-40.

[643] Tajfel & Turner, *An integrative theory of intergroup conflict,* pp. 33-47. A crucial difference between the SPE and BBC prison studies is that participants in the latter study were observed and filmed by BBC cameras and they were aware that anything they did might be shown on national TV, see Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study*, p. 25. A critical view is therefore that participants were simply faking their behaviors for the cameras, for instance to make good entertainment or to display socially desirable behavior. Probably, the guards did not want to be discredited as tyrants, which may explain why they were so mild. By contrast, perhaps the prisoners became so rebellious because there is a certain glamour in being a rebel. It can be discussed which of the two studies provide the most realistic setting. Although in real life, people are usually not under constant

ting suggest that the mere assignment of a role as either defense counsel or prosecutor leads to role-induced bias manifested in that conflicting evidence is downplayed.[644] Even after participants had ceased to act in their assigned roles and were offered a substantial financial incentive for being accurate, they made predictions of the Court ruling that were consistent with their roles.[645] How legal actors come to perceive of their roles is likely to stem from for instance norms and values communicated in interaction with older colleagues, leaders or imposed by the organization etc. This does not necessarily extinguish individuals' own understanding of their occupational role or completely prevent them from taking actions that deviate from group norms. It does however provide a baseline on which one can rely to promote a picture of oneself as a competent police officer, prosecutor or judge. Therefore, group norms are likely to function not only as a type of glue that enables common action but also as an instruction to self-fulfillment in one's career.[646]

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surveillance of cameras, neither do they act in complete isolation of a context or other people. For instance, individuals' behavior is often subjected to workplace review, gossip or in some case even medial attention. It is therefore unjustified to dismiss research like the BBC prison study on the basis that it is simply too artificial. Experimental settings that isolate participants or guarantee absolute anonymity have weak ties to reality and might therefore even have greater problems of artificiality, see for instance Cronin & Reicher, *A study of the factors that influence how senior officers police crowd events: On SIDE outside the laboratory*, pp. 175-196, Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study*, p. 26. Yet, even if the surveillance situation in the BBC prison study does carry real life elements, it seems to differ somewhat from real life situations on mainly two points, the greater number of people that could observe participants' behavior and the constant nature of the surveillance. The number of people that could observe participants' behavior via national TV widely exceeds the number of people that can usually observe one another's behavior in for instance a workplace. The participants therefore risked being "on everyone's lips" and consequently, displaying socially undesirable behavior such as authoritarianism could easily prevent participants from getting employment etc. When it comes to legal actors such as police officers, the media is probably particularly attentive to inappropriate behavior due to public and legal demands on professionalism. However, since legal actors are not under constant surveillance, it is possible that situations arise where engaging in inappropriate behavior is less risky. This could mean that the level of social desirability in legal actors' behavior varies across different situations.

[644] Engel & Glöckner, *Role-induced bias in court: an experimental analysis*, pp. 272-284.

[645] *Ibid*.

[646] As can be seen from the BBC study such norms are required for the group to function effectively and they are therefore not solely negative. Most groups would probably be dysfunctional without such norms. As Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study,* puts it, the guards failed to exercise power simply because "they had so much" (p. 28). Importantly norms do not have to be antisocial (like displaying tyranny) but can also be prosocial (p. 33). The prison studies emphasize the importance of the understanding of one's occupational role and how situational as well as personal variables might influence to what extent individuals' act in accordance with such understanding. Hence, the findings in the prison studies cannot be explained with individuals' natural tendency to accept the roles they are provided and they do not support the idea that group membership in general leads to a loss of constraints on antisocial behavior. People do not automatically act in terms of group memberships or roles ascribed by others. Rather, whether they do so or not depends

The term *groupthink* was first used by Irving Janis in 1982 to describe a series of political decisions that had been made by groups and which according to Janis were fiascoes, since the groups failed to realize the moral and practical consequences of their decisions.[647] The term refers to a way of thinking where the will to reach consensus overshadows the motivation to use rational decision making procedures. This mindset results in for example that decision alternatives are not adequately considered and that the group fails to consult outside expertise.[648] Since 1982, groupthink has been studied experimentally in a variety of settings[649] and meta-analyzed in 1994 by Mullen, Anthony, Salas & Driskell.[650] According to the meta-analysis, the two strongest contributing factors to groupthink are strong group cohesiveness and directive leadership.[651] Further studies suggest that the tendency to con-

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upon whether they internalize such memberships as part of the self-concept, an idea consistent with the social identity approach, See for instance Reicher & Haslam, *Rethinking the psychology of tyranny: The BBC prison study*, p. 4. The social identity approach incorporates social identity theory, Tajfel, *Human groups and social categories: studies in social psychology,* Tajfel, *Interpersonal behaviour and intergroup behaviour*, pp. 27-60, Tajfel & Turner, *An integrative theory of intergroup conflict,* pp. 33-34, Turner, *Social categorization and the self-concept: A social cognitive theory of group behavior*, pp. 77-122, Turner, Oakes, Haslam & McGarty, *Self and collective: Cognition and social context*, pp. 454-463.

[647] Janis, *Groupthink, Psychological Studies of Policy Decisions and Fiascoes*. An example is Kennedy and his advisors' decision to invade The Bay of Pigs in Cuba in 1961.

[648] *Ibid.*

[649] See for instance Tschan, Semmer, Gurtner, Bizzari, Spychiger, Breuer & Marsch, *Explicit Reasoning, Confirmation Bias, and Illusory Transactive Memory: A Simulation Study of Group Medical Decision Making*, pp. 271-300 for an example study of confirmation bias in groups' medical decision making. Groups of physicians were asked to correctly diagnos a manikin that displayed ambiguous symptoms, indicating either tension pneumothorax or anaphylactic shock. In the groups that made an incorrect diagnosis initially, a confederate registered nurse drew their attention to information, such as the patient chart, which indicated the correct diagnoses (anaphylactic shock). In 12 out of 18 groups that consulted the patient chart the allergy information was either not found or not communicated. Furthermore, in groups that missed the correct diagnosis, physicians stated hearing different respiratory sounds from each side of the thorax, which is in accordance with the hypothesis of a tension pneumothorax (sounds are absent on the affected lung) but not with anaphylactic shock (sounds are obstructive). The manikin was programmed to start with normal sounds on both lungs, which gradually became more obstructive, but at all times the respiratory sounds were present in both sides. Therefore, a correct auscultation should lead to the exclusion of the pneumothorax diagnosis. Because the perception of different sounds was in accordance with the hypothesis of a tension pneumothorax (but not anaphylactic shock), the researchers assumed that the auditory illusions were due to a confirmation bias. The researchers observed that the illusions seemed to be contagious since different physicians in the same group rarely reported different perceptions of the breathing sounds (either because they perceived them in the same way or because of fear of losing face). They therefore concluded that confirmation bias may be exacerbated by group processes such as the will to conform to the group majority and that the threshold for communicating deviant perceptions or interpretations may constitute a more general problem in medical groups.

[650] Mullen, Anthony, Salas & Driskell, *Group Cohesiveness and Quality of Decision Making: An Intergration of Tests of the Groupthink Hypothesis*, pp. 189-204.

[651] *Ibid*. For more on group cohesiveness see McGrath, *Groups: Interaction and performance*.

form to group norms is stronger in groups where dissent is planned (rather than genuine)[652] and where group members to a larger extent chose the same alternative prior to discussion.[653] This is related to what Hastie and colleagues refer to as *verdict-driven juries* where the jury members enter the deliberation with specific individual verdict preferences, they have a public ballot and subsequently members of each fraction collect evidence in favor of their position.[654] Although Hastie and colleagues did not provide any data on the issue, it could be expected that the larger the majority is, the more strongly the evidence collection should be biased toward the dominant position. As such, research on group think challenge the notion that group members point out errors in one another's reasoning and instead suggest that such errors might be consolidated in groups. This has important implications for the prevalence of confirmation bias in groups, since the disregard of alternative hypothesis on an individual level is reinforced by the will to reach consensus on a group level. In the Governmental Report examining the reopened murder cases in which SB had previously been convicted largely based on his, now retracted, confessions, groupthink is explicitly pointed to as an explanation as to why the investigators did not consider and investigate alternative hypotheses, such as another perpetrator, sufficiently.[655]

3.3.3.2 Organizational Psychology

Organizational psychology is the scientific study of individual and group behavior in formal organizational settings.[656] A formal organization is an

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[652] Schulz-Hardt, Jochims & Frey, *Productive conflict in group decision making: Genuine and contrived dissent as strategies to counteract biased information seeking*, pp. 563-586.

[653] Schulz-Hardt, Frey, Lüthgens & Moscovici, *Biased information search in group decision making,* pp. 655-669. These results were found in both laypersons (high school and college students) and experts (managers from banks and industrial companies). The greater preference for supporting information in homogenous groups than in heterogeneous groups seemed to be reflected by group-level processes such as higher commitment and confidence. Importantly, the differences between homogenous and heterogeneous groups were attributed to group-level phenomenon and were not simply an aggregation of individual confirming strategies. In a follow up experiment, the participants chose articles individually after having made their (individual) decisions but before entering the group discussion and these individual choices were then compared to the group choices. If group information search was carried out by aggregating the individual information requests, then each group should select all those articles that had been selected by at least one group member. This was not the case as homogenous groups showed an even stronger preference for confirming information, whereas a confirmation debiasing took place in heterogeneous groups. That is, the homogenous groups had a stronger confirmation bias than one would expect on the basis of their members' individual basis. On the contrary, the heterogeneous groups' showed a smaller confirmation bias than the biases in their individual members.

[654] Hastie, Penrod & Pennington, *Inside the jury*.

[655] Swedish Government Offical Reports, SOU 2015:52 *Rapport från Bergwallkommissionen*, p. 18.

[656] Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, p. 2. The Swedish National Committee for Psychological Sciences, http://sncfp.psychology.su.se/eng/, refers to a more general denomination, namely work and organizational psychology, which is

organization that exists to fulfill some explicitly stated purpose (such as law enforcement), which is often stated in writing (the law) and organizations typically exhibit some degree of continuity over time, that is, they often survive far longer than the founding members do.[657] Today, the research field's primary concern is to better understand the behavior of individuals and groups working in organizational settings.[658]

Apart from numerical identifiers of organizations,[659] a primary defining characteristic of an organization is *patterned* human behavior,[660] which means that a structure, typically derived from formal job descriptions and organizational policies, is imposed. Most organizations also have a set of values that they want employees to abide by. Thus an organization cannot exist when people just "do their own thing" without any consideration of the behavior of others. As such, all organizations attempt to influence employees' behaviors, in one way or another. One major component that can and often is used to exert such influence is *reinforcement*, that is, any stimulus that increases the probability of a given appreciated behavior.[661]

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the study of individuals' work related experiences, perceptions, reactions and actions in relation to work matters and organization, individual expectations and the ways in which individuals comprise and/or interact with groups and organizations. Research studies within this field examine the importance of physical and psychosocial factors of the work environment for motivation and performance as well as for career development, health and well-being.

[657] As opposed to informal organizations where the purpose is typically less explicit than for a formal organization, see Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, p. 2. For instance, a softball team would fit the description of an informal organization. The individuals in the team spend time together because they enjoy playing softball and, probably, each other's company. It is doubtful though that these reasons for playing softball are formally stated in writing or even explicitly stated. It is also doubtful whether this group would continue to exist if half of the team members moved to another city or simply lost interest in playing softball.

[658] This knowledge is also used to help make organizations more effective, which for public organizations usually entails higher-quality services and cost saving to taxpayers. Historically, the study field of organizational psychology can be traced back to the US and pioneers such as Hugo Munsterberg (1916) and Walter Bingham (1952) who studied topics like skill acquisition and personnel selection, see Vinchur & Koppes, *A historical survey of research and practice in industrial and organizational psychology*, but also non-psychologists such as Frederick Winslow Taylor (1915) who developed the principles of scientific management, see Jex & Britt, *Organizational Psychology: A Scientist-Practitioner Approach*, pp. 14-15.

[659] Organizations are typically defined as social units larger than 20 people, that do not necessarily involve personal knowledge and interaction among all members, see Taylor, Peplau & Sears, *Social Psychology*, p. 345. However, there are no definite numerical limits over or under which a social unit is considered an organization or a group. Within the legal context, the group and organization is probably more easily distinguished by that the group setting in which legal actors operate is usually more dynamic and changes with the task at hand whereas the organizational setting is more static (despite occasional reorganizations such as that of the Police authority in 2015), Swedish Government Offical Reports, SOU 2012:13.

[660] Katz & Kahn, *The social psychology of organizations.*

[661] In the behavioral approach to motivation in organizations, this component is often emphasized as a factor influencing employees' behavior, see for instance Luthans & Kreitner, *Organizational behavior modification and beyond: an operant and social learning approach*,

The Police Authority, Prosecution Authority and the Courts all by themselves as well as together fit the definition of an organization. They are all smaller components of the larger organization of the legal system, which has its own structure and incentives, thus common to all components, but the authorities also have their own more specific structures and incentives. To illustrate, the Government Offices, *Regeringskansliet*, describes the overall goal of the legal system as: *"to ensure private individuals' security before the law*[662] *and the rule of law."*[663] Also, it states that the legal system has to adjust to the changing society, demonstrate strength in preventing crime and increasing safety and that it is crucial that more crimes, both everyday crimes and crimes against the democratic society such as organized crime, terror crimes and hate crimes, are prevented and resolved.[664] This clearly places emphasis on the resolvement of crime and that legal proceedings are initiated against criminals. These overall goals are transmuted into specific and often quantitative goals for instance regarding the proportion of crimes that the police resolves,[665] the number of initiated prosecutions and length of

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Ludwig, Geller & Clarke, *The additive impact of group and individual publicly displayed feedback: Examining individual response aptterns and response generalization in a safe-driving occupational intervention*, pp. 338-366 and Camden, Price & Ludwig, *Reducing absenteeism and rescheduling among grocery store employess with point-contingent rewards*, pp. 140-149. In organizations, the application of behaviorism is known as Organizational Behavior Modification (OBM) and there is ample evidence that OBM can be used to successfully influence behavior in organizations. Similar to reinforcement is *shaping*, which has to do with reinforcement of successive approximations of a particular behavior and is used for instance when employees are first learning their job, see for instance Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, p. 314.

[662] Security before the law is defined as that private individuals shall be protected against crimes against life, health, freedom, integrity and property, see the Government Offices, http://www.regeringen.se/regeringens-politik/rattsvasendet/mal-for-rattsvasendet/

[663] The rule of law means that the administration of justice is predictable, uniform and of high quality, see the Government Offices, http://www.regeringen.se/regeringens-politik/rattsvasendet/mal-for-rattsvasendet/

[664] See the Government Offices, http://www.regeringen.se/regeringens-politik/rattsvasendet/mal-for-rattsvasendet.

[665] According to the Swedish Government Bill, Prop. 2010/11:1, the Police Authority shall aim to decrease crime and increase individuals' safety and also make sure that more crimes are followed by legal proceedings, SOU 2012:13 p. 158. Furthermore, the Police Authority shall aim to get significantly better results, see the Committee Directive, Dir. 2010:75, and these results are largely quantitative, although due to criticism of such a quantitative focus, the police now has so-called *promises to the citizens (sv. medborgarlöften)*, that are locally anchored plans for police work, see the Police Authority, *En polis närmare medborgaren. Ett kunskapsstöd i arbetet med medborgarlöften*. However, the main focus still seems to be quantitative, for instance as regards the proportion of resolved crimes, see the Police Authority, *Polisens resultat till och med maj 2018*. The category resolved cases includes for instance cases where a prosecutor has decided to press charges, abstained from prosecution or decided on a summary imposition of fines, see the Swedish Government Official Reports, SOU 2012:13 p. 165. In the Government's letter of appropriation it is also stated that particular care shall be taken in improving the capacity to solve specific crimes types such as rapes, human trafficking and hate crimes, see the Government's letter of appropriation for 2018

detentions[666] and that for 75 % of the criminal cases the Courts shall take no more than 5 months to reach a decision.[667]

No doubt, these aims impose a structure of effectiveness, protection and safety of individuals where the need to get and present results is evident. Some argue that such organizational incentives in fact result in that law enforcement personnel abide by a presumption of guilt[668] and use this as a statement of statistical confidence.[669] There is no empirical evidence to support such a claim but it can be noted that using a presumption of guilt would in many cases promote goal fulfillment, at least on a superficial level. For instance, many suspects would be prosecuted and the Court's decisions about guilt would be quick and easy. Since organizations usually encourage and reinforce individual or group behaviors that promote goal fulfillment, for instance through praise, promotions and recognition of competence, behaving in such a way might very well be goal-rational not only for the organization at large but also for the individuals operating within the organization who wish to succeed in their careers. In line with this, Ask, Granhag and Rebelius found that exposure to occupational norms associated with efficiency sped up and reduced the depth of investigators' processing of criminal evidence.[670] This also reduced their openness to sequentially late witness evidence, an influence which seemed to operate outside of investigators' awareness.[671]

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concerning the Police Authority, *Regleringsbrev för budgetåret 2018 avseende Polismyndigheten*.

[666] According to the Prosecution Authority itself, its goal is to contribute to that legal proceedings are taken against perpetrators and that this is done in a both effective and legally secure way, see The Prosecution Authority, https://www.aklagare.se/om-oss/uppdrag-och-mal/. In the Government's letter of appropriation it is stated that the Prosecution Authority shall for instance report the number of suspects of terror crimes regarding who decisions about prosecution have been made and against whom legal proceedings have been initiated, see the *Regleringsbrev för budgetåret 2018 avseende Åklagarmyndigheten*. Also, statistics regarding the length of detentions shall be recorded, since Sweden has received criticism from both the Council of Europe and The Committee Against Torture (CAT) for exceedingly lengthy detention periods (as well as excessive use of restrictions etc.), see for instance The Prosecution Authority, *Häktningstider och restriktioner*, Report January 2014.

[667] This (which excluded priority cases) is according to Government's letter of appropriation for 2017 concerning the Courts, *Regleringsbrev för budgetåret 2017 avseende Sveriges Domstolar*. Overall, effectiveness in decision making is emphasized, see for instance See for instance the Swedish National Courts Administration, *Strategisk inriktning 2010-2020*.

[668] See for instance Joy, *The Relationship Between Prosecutorial Misconduct and Wrongful Convictions: Shaping Remedies for a Broken System*, pp. 399- 405, Packer, *The Limits of Criminal Sanction*, p. 237 and MacDonald, *Constructing a Framework for Criminal Justice Research*, p. 257.

[669] Joy, *The Relationship Between Prosecutorial Misconduct and Wrongful Convictions: Shaping Remedies for a Broken System,* pp. 399- 405.

[670] Ask, Granhag & Rebelius, *Investigators under influence: How social norms activate goal-directed processing of criminal evidence*, pp. 548-553.

[671] *Ibid*.

The systems psychodynamic framework is specifically intended to convey the notion that the features of an organization continually interact with its members which stimulates particular patterns of individual and group dynamic processes.[672] This implies that trying to understand and correct error only with reference to the humans is insufficient. Instead, a multilevel analysis is required where all of the legal system's components, that is, the individuals, the groups and the organization at large, are included.[673] The value of such multilevel analysis becomes apparent for instance when combining organizational and motivational psychology. For many individuals, the workplace represents a primary setting in which esteem and competence needs are satisfied.[674] Although the extent of the influence created by organizational incentives cannot be stated on a general level, motivational psychology in the work place setting identifies some important factors. For instance, individuals have different levels of *organizational commitment*, that is, feelings of attachment and loyalty toward the organization,[675]*competence needs*, that is, desires to feel a sense of competence and mastery,[676] as well as

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[672] Gould, Stapley & Stein, *The systems psychodynamics of organizations – integrating the group relations approach, psychoanalytic and open systems perspective*, p. 3. The systems psychodynamic framework distinguishes between *goal rational* and *psychodynamic* fields in the system and these fields continually interact with each other, Visholm, *Organisationspsykologi och psykodynamisk systemteori*, pp. 40-41. The goal rational field has its basis in the system's primary task, for instance rules that are to ensure fulfillment of the primary task like formal roles that divides labor with reference to the primary task. Parallel to the goal rational activity there are also unconscious and psychodynamic processes resulting in that the actors in the system have informal psychodynamic roles that are different from their formal roles. A formal role which demands too much of the individual (due to e.g. how division of labor is divided in the organization) risks resulting in conscious or unconscious temptations to regress and use *social defense mechanisms* that can both impede and facilitate task performance, Gould, Stapley & Stein, *The systems psychodynamics of organizations – integrating the group relations approach, psychoanalytic and open systems perspective*, p. 3. The notion of social defense mechanisms overlaps social, motivational and cognitive explanations of why confirmation bias occurs in individuals or groups.

[673] Visholm, *Organisationspsykologi och psykodynamisk systemteori*, p. 49

[674] See Baumeister, *Meanings of life*. Maslow's Need Hierarchy explain how individuals are motivated by their needs and also illustrate five different types of needs with decreasing priority (as the first level is satisfied, the individual moves on to satisfy the next level): 1) Physiological needs: needs for food, oxygen and water, that is, attributes that are physiologically necessary to sustain life, 2) Safety needs: which includes things like shelter from the elements and protection from predators, 3) Love and belonging needs: the need to form meaningful social relationships with others and the desire to feel sense of belonging, 4) Esteem needs: that are linked to a desire to feel a sense of competence and mastery and 5) Self-actualization: to self-actualize is to realize individual's potential and maximize their capabilities. This hierarchy has found partial support in empirical studies, see Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, pp. 292-295 and Maslow, *A theory of human motivation*, pp. 370-396.

[675] Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, p. 247.

[676] *Ibid*., p. 294. This is related to Self-determination theory (SDT), see Sheldon, Turban, Brown, Barrick & Judge, *Applying self-determination theory to organizational research*, pp. 357-393, which is an influential theory in and outside areas of organizational psychology. SDT emphasizes the importance of individuals performing tasks out of intrinsic interest or a

a need to realize individual potential and maximize capability, so-called *self-actualization*, which is usually high for individuals who view work as a calling.[677] Thus, these feelings and needs are related to an individual's self-image and displaying behaviors that are rewarded at the work place can therefore promote self-image.[678] In that way, incentives created by the organization can maintain or even fuel a confirmation bias in individual or groups of legal actors. Provided that confirmatory reasoning sometimes is likely to promote goal fulfillment for both individuals and the organization, a reasonable question is whether this behavior is in fact rational within the context of criminal cases.

3.3.4 Confirmation Bias and Rationality

The conception that confirmatory reasoning is sometimes rational has been presented by several scholars.[679] Their ideas of when and why such reasoning is rational or irrational, not surprisingly, coincide with their definition of what rationality is[680] but many of them are linked to the idea of goal fulfillment. As is illustrated in the literature summary below, this implies that it is unreasonable to speak of a single rationality. Since the goals of a decision maker, organization etc. vary, so do the behaviors that are to be considered

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sense that task performance is relevant to important aspects of an individual's identity. According to SDT, individuals develop to their fullest potential when they are able to satisfy three types of needs which are thought to be innate: 1) Autonomy, that is, the degree to which employees have control and discretion over their job and the critical psychological state associated with autonomy is labeled felt responsibility, which is higher for an executive who has complete autonomy to determine the strategic direction of an organization (and feel a strong sense of responsibility for the success or failure of that organization) than employees who simply follow orders (who are less likely to feel a great deal of responsibility for the outcomes of their work, 2) Relatedness (feeling connected to others) and 3) Competence, as defined by for instance organizational goals.

[677] Jex & Britt, *Organizational Psychology: A Scientist-Practioner Approach*, p. 294.

[678] See for instance Austin & Vancouver, *Goal-Setting Theory, Goal constructs in psychology: Structure, process, and content*, pp. 338-375 and Carver & Scheier, *Perspectives on personality*, who describe the idealized self-image, which represents the ideal images individuals have set for themselves and work place principles or values provide guidelines for how individuals should behave in order to reach that self-image.

[679] See for instance Klayman & Ha, *Confirmation, Disconfirmation, and Information in Hypothesis Testing*, Lewicka, *Confirmation bias, cognitive error or adaptive strategy of action control?* pp. 233-258 and Oaksford & Chater, *Bayesian Rationality – the probabilistic approach to human reasoning*.

[680] From Aristotle to the present day, the project of explaining what rationality means has been the focus of enormous intellectual effort in for instance philosophy, mathematics and economics, Oaksford & Chater, *Bayesian Rationality – the probabilistic approach to human reasoning*, pp. 1 and 76. Historically, the dominant idea is that rationality can be explained by comparisons to systems of logic, which can serve as ways of distinguishing valid, i.e. rationally justified, from invalid arguments. However, many scholars believe that the emphasis on logic has to be rethought and the conception of rationality as following logical rules is therefore outdated, see for instance Gigerenzer, *Rationality for Mortals*, p. 13.

rational or irrational. Thus, the same behavior can be considered completely irrational in relation to one goal but fully rational in relation to another goal.

For instance, Lewicka describes confirmation bias as an adaptive must that is part and parcel of human survival equipment since it ensures profits without undue exposure to uncertainty and risk.[681] With Gigerenzer's *Ecological Rationality*, confirmatory reasoning is not rational or irrational *per se*, only relative to the structure of an environment and the goals of the decision maker.[682] Another view stemming from the so-called *probabilistic turn* is that rationality is the ability to reason about uncertainty.[683] This means that many errors and biases are in fact the result of people applying probabilistic strategies to cope in an uncertain world.[684] Human thought is considered sensitive to subtle patterns of qualitative Bayesian probabilistic reasoning.[685] This means that what constitutes irrational or rational behavior can be explicated using Bayes theorem. For instance, according to Bayes theorem, it is fully rational, and even essential, to take the base rate of guilt into account

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[681] Lewicka, *Confirmation bias, cognitive error or adaptive strategy of action control?* p. 246. Lewicka also believes that confirmation bias underlies habit acquirement and automatization of routine activities. Mastering a sufficiently good way to obtain a desirable result frees our consciousness from unnecessary deliberation, leaving speace for important life decisions. Furthermore, confirmation bias facilitates commitment since attachment to one possibility helps to devalue alternative possibilities. This is a precondition for an action to be taken at all, a view shared by Beckman & Irle, *Dissonance and action control*, pp. 129-150, Kuhl, *Volitional aspects of achievement motivation and learned helplessness: Toward a comprehensive theory of action control*, pp. 99-170, Lewicka, *Is hate wiser than love? Cognitive and emotional utilities in decision making*, pp. 90-106 and Montgomery, *Decision rules and the search for the dominance structure: Towards a process model of decision making.*

[682] Gigerenzer, *Rationality for Mortals – How people cope with uncertainty*, pp. 18-86. Gigerenzer borrows the pair of scissors-analogy initially used by Herb Simon, where the mind is one blade and the structure of the environment is the other. According to Gigerenzer, one has to look at both blades and how they fit in order to understand behavior. More specifically, to evaluate cognitive strategies as rational or irrational one also needs to analyze the environment because a strategy is rational or irrational only with respect to a particular physical or social environment. However, the study of cognitive illusions and errors one-sidedly focuses on *"the cognitive blade"* (p. 86) and compares it with laws of probability rather than with the structure of the environment, which is insufficient because *"one blade alone does not cut well."* (p. 86). For instance, miscalibrations sometimes labeled as overconfidence bias can instead be a reflection of regression to the mean (that the average number correct is always lower than a high confidence level), see Borg & Westerlund, *Statistik för beteendevetare*, p. 391.

[683] Oaksford & Chater, *Précis of Bayesian Rationality: The Probabilistic Approach to Human Reasoning*, pp. 69-120.

[684] *Ibid*.

[685] *Ibid*. This is not the same as claiming that people are good at numerical reasoning in general. Instead it means that purportedly logical reasoning problems, revealing apparently irrational behavior, are better understood from a probabilistic point of view. See also the framework regarding the so-called *naïve intuitive statistican*, in e.g. Fiedler, *Beware of samples! A cognitive-ecological sampling approach to judgment biases,* pp. 659-676*,* Fiedler & Juslin, *Taking the interface between mind and environment seriously*, pp. 3-32 and Lindskog, Winman & Juslin, *Calculate or wait: Is man an eager or a lazy intuitive statistician?* pp. 994-1014.

when estimating the probability of an individual defendant's guilt or innocence.[686] However, a decision maker is irrational if he or she does not update his or her beliefs in accordance with the theorem or interprets the evidence in a "pseudo-diagnostic" manner, that is, noting that evidence is likely if the suspect is guilty but fail to recognize that the evidence is likely also under alternative hypotheses where the suspect is innocent. Such reasoning is illustrated by for instance the case of Sally Clark,[687] a woman who's first child died a few weeks after birth without a clear reason and it was hypothesized that it was a case of *sudden infant death syndrome*.[688] Then, also her second child died under similar circumstances and the investigators reasoned that it was extremely unlikely that this would happen twice to the same woman and therefore she probably murdered them. However, it was not taken into account that the alternative hypotheses (a woman killing her two babies) is also extremely unlikely. Sally was convicted of the murders of her two infant sons in 1999. An appeal against the convictions was dismissed in 2000 but, in 2003, a second Court of Appeal quashed the convictions. Today, they are acknowledged cases of wrongful convictions.

Along the same lines, other scholars have noted how searching primarily for confirming information is often rational because it maximizes (the expected) information gain and therefore maximally reduces uncertainty.[689] Furthermore, such a *positive test strategy* does not prevent discovery of dis-

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[686] Koehler, *The base rate fallacy reconsidered: Descriptive, normative, and methodological challenges*, pp. 1-17. How this base rate shall be determined is a question explored by Dahlman, *Determining the base rate for guilt*. See also Dahlman, Zenker & Sarwar, *Miss rate neglect in legal evidence.*

[687] *R v Sally Clark* [2003] EWCA Crim 1020.

[688] For further case description and detailed analysis see Byard, *Unexpected infant death: lessons from the Sally Clark case*, pp. 52-54 and Shaik, *Sally Clark, mother wrongly convicted of killing her sons, found dead at home*.

[689] See for instance Earman, *Bayes or bust? A critical examination of Bayesian Confirmation Theory,* Horwich, *Probability and evidence*, Howson & Urbach, *Scientific reasoning: the Bayesian approach*, Mackie, *The paradox of confirmation*, Oaksford & Chater, *Bayesian Rationality – the probabilistic approach to human reasoning*. Oaksford and Chater elaborate this argument with a vampire example. If someone wants to test the hypothesis that people who get bitten by vampire bats develop pointy teeth, that person is better of investigating people that have pointy teeth and people he knows have been bitten by vampire bats. It is scarcely productive to investigate someone without pointed teeth to see if they have been bitten. Naturally, it is possible that such a person might have been bitten, which would disconfirm the hypothesis. However the probability of that being the case is almost infinitely small, which means that it is an ineffective strategy. Furthermore, The Optimal Data Selection Model (ODS) assumes that initially people are maximally uncertain about which hypothesis is true and the goal in selecting cards is to reduce this uncertainty as much as possible while turning the fewest cards. In Wasons selection task cannot know how much information they will gain by turning a card nefore doing so. Consequently they must base their decision on the *expected information gain,* taking both possible outcomes into account. The ODS model assumes that people select each card in direct proportion to its expected information gain. The ODS model suggests that performance on the selection task displays rational hypothesis testing behavior rather than irrational confirmation bias.

confirming information since when a search is initiated, it is unknown whether the results will confirm or disconfirm the hypothesis.[690] However, the appropriateness of such a strategy varies with task specific variables, for instance whether an initiated search can result in deterministically accurate answers and how narrow or wide the information search is from the beginning. These different views raise more questions, such as whether humans display confirmation bias because they are rational, as implied by for instance Lewicka's description of it as an adaptive must. Or, is confirmation bias sometimes a rational strategy in criminal cases, given for instance the structure of the environment, following Gigerenzer's definition? The placement of this section under the chapter about explanations of confirmation bias may imply a belief in the first option, that humans' rationality would explain confirmation bias. This is however not the intended meaning since there is no empirical basis for such a claim, although the thought in itself has been discussed.[691] Rather, the intention is to communicate that, provided the explanations of confirmation bias, for instance that it promotes goal fulfillment, this bias sometimes produces rational results in criminal cases. Thus, in criminal cases confirmatory reasoning can have both rational and irrational elements, depending on which definition of rationality is employed, which in turn relates to what the goal of the decision maker is. This is illustrated by the case cited below in which IW was suspected of having murdered his wife AW by running her over using a lawnmower.

> *On the 5th of September 2008, AW, a 64 year old woman, went out for a walk with the family's dog in a forest region close to the family's house in Loftahammar, Småland. She did not return that night but instead she was found dead close to a lake. 11 minutes after the first police officer had arrived at the place where AW was found, an interro-*

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[690] Klayman & Ha, *Confirmation, Disconfirmation, and Information in Hypothesis Testing*, pp. 211-228. A positive test strategy involves hypothesis testing by examining instances in which the property or event is expected to occur, to see if the property or event does occur. Since the result is unknown, it does not necessarily contradict the goal of seeking falsification. This runs contrary to the belief that disconfirmation requires that the hypothesis tester should make a deliberate attempt to find any falsifying evidence. Under certain circumstances positive testing may be the only way to discover falsifying information.

[691] This relates to Gigerenzer's view that biases shall not be referred to as adaptions since that implies that the bias not only fits the environment but also that it has been shaped by the environment for that task, Gigerenzer, *Rationality for Mortals – How people cope with uncertainty*, p. 54. Thus, unlike claiming that a heuristic is an adaption, a claim that it is ecologically rational deliberately omits any implication that this is why the trait originally evolved. Thus, biases or heuristics should not be described as adaptive solely on the basis that researchers have found a bias in humans and then searched for an environment in which that bias works well. To claim adaptation, it is at least necessary to check that the bias is generally used only in environments in which it works well and better than other heuristics in a given environment. Ecological rationality might then be useful as a term indicating a more attainable intermediate step on the path to a demonstration of adaptation.

gation was carried with her husband IW, in order to clarify the circumstances surrounding AW's death.[692] *IW told the police that he had been mowing the lawn and watched TV until approximately 9 p.m. when he started worrying because AW had still not returned from her walk with the dog. He started calling neighbors and searching for her. As he approached the lake he heard "loud splashes"*[693] *that sounded "like strokes from rowing."*[694] *When he found AW by the lake, he immediately called the emergency unit and tried to resuscitate her. During the second interrogation a few hours later, IW repeated that he had heard loud noises from the lake.*[695]

Early the following morning, at 5:13 a.m., the prosecutor on duty decided to arrest IW in his absence and the police therefore apprehended him shortly thereafter.[696] *During the course of the day, two additional interrogations were carried out during which IW was notified that he was reasonably suspected for the murder of AW.*[697] *IW denied having killed his wife and once again described loud noises from the lake.*[698] *This time IW also introduced the possibility that the noises came from mooses who had attacked and killed AW and then went into the lake.*[699] *The investigators ignored that hypothesis and instead focused on IW. The prosecutor applied for a detention order, which was approved by Kalmar District Court that found IW to be reasonably suspected of murder, and that setting him free would be associated with a risk that he would impede the inquiry by e.g. removing evidence.*[700] *Although the prosecutor later rescinded the detention order, IW was the main suspect of the investigation for five months.*[701] *IW had no previous convictions.*[702]

The hypothesis that IW had killed AW using a lawnmower came from the finding that AW had deep cuts with grass inside on her

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[692] Kalmar Police Authority, Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-05, 22:55-23:15, pp. 5-6.
[693] *Ibid*., p. 6.
[694] *Ibid*.
[695] Kalmar Police Authority, Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-06, 00:00-00:50, p. 8.
[696] Kalmar Police Authority, Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-06, 09:55-10:00, p. 9.
[697] Kalmar Police Authority, Detention Memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-06, 09:55-10:00 and Interrogation 2008-09-06, 13:20-14:35, pp. 9-47.
[698] Kalmar Police Authority, Detention memo, Ref. No. 0800-K19154-08, Interrogation 2008-09-06, 13:20-14:35, p. 12.
[699] *Ibid*.
[700] Kalmar District Court, Record from the detention hearing, Case No. B 2994-08, p. 2.
[701] Kalmar Prosecution Authority, Decision to rescind the detention order, Ref. No. AM 138010-08, 2008-09-15. The time frame 5 months is from 2008-09-06 when IW was notified that he was reasonably suspected of murder until 2009-01-28 when the prosecutor dismissed IW as a suspect, Kalmar Prosecution Authority, Ref. No. AM-138010-08.
[702] Kalmar District Court, Extract from IW's criminal record, 2008-09-09.

body.[703] *The police requested an expert statement that examined whether the injuries were consistent with the lawnmower hypothesis, which was answered affirmatively.*[704] *Also, the police searched for and found blood traces underneath IW's lawn-mower.*[705] *When this evidence was presented at Court, the forensic analyses of the blood had not yet been completed*[706] *and it was therefore impossible to know whether it came from AW or not. More than 4 months later, the police also requested an expert statement regarding the consistency between AW's injuries and that she had been attacked and killed by a moose, which was affirmed.*[707] *Also, it turned out that the blood traces underneath the lawn-mover did not originate from AW but from a small animal.*[708]

Statistically speaking, it is far more likely that a husband kills his wife than that a woman is attacked and killed by a moose.[709] Thus, using Bayes theorem, the higher base rate of guilty spouses, as compared to attacking mooses, suggests that the investigators were rational when primarily focusing on IW.[710] However, there were also other base rates that were relevant for the assessment of how probable IW's guilt was. First of all, even if it is far more common that a victim is killed by a spouse than a moose, the difference in base rates between a victim being killed by her spouse *using a lawnmower* and being killed by a moose must reasonably be much smaller. In this light, the lawnmower hypothesis appears more of an *ad hoc* explanation to AW's unusual injuries, which would allow investigators to maintain the hypothesis that IW was guilty. Also, IW had no previous convictions[711] and the incident

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[703] Autopsy Report, 20080910.
[704] *Ibid*.
[705] Kalmar District Court, Record appendix from detention hearing, Case No. B 2994-08.
[706] *Ibid*.
[707] Medical opinion 20090123. See also Directive from the prosecutor, 2009-01-23, Case No. AM-138010-08. The detention was rescinded by the prosecutor 2008-09-15 and IW was dismissed as a suspect 2009-01-28.
[708] Directive from the prosecutor/Record from meeting, 2008-12-04, Email correspondence between prosecutor and police officer, 2008-10-16, 2008-11-19, Directive from the prosecutor, 2008-11-28, Directive from the prosecutor, 2009-01-23, Kalmar Prosecution Authority, Decision to dismiss IW as a suspect, 2009-01-28, Case No. AM-138010-08.
[709] According to Ericson, Department of Wildlife, Fish, and Environmental Studies, Faculty of Forest Sciences, The Swedish University of Agricultural Sciences (SLU), email correspondence 2014-08-08, this case is the only one documented in Sweden, Europe and North America in which the moose has not previously been injured, is in its natural habitat and the human who got killed was not a hunter/hunting. See also Petersson, *"Ihjälsparkad av älgtjur – Första dokumenterade fallet i världshistorien där älg dödat människa"*.
[710] Clearly, it would not make much sense to try to catch the moose, as a mean to solve the crime. However, this is not the question at issue, but rather whether the possibility of a moose attack was taken seriously.
but if anything, seriously consider the moose attack as an alternative explanation to AW's death. For a discussion on the topic of determining base rates of guilt see Dahlman, *Determining the base rate for guilt*, pp. 15-28.
[711] Kalmar District Court, Extract from IW's criminal record, 2008-09-09.

took place during the mooses' mating period when mooses can be aggressive. Taking this into consideration it appears irrational to only request forensic examination of the consistency between AW's injuries and the lawnmower hypothesis but not the moose hypothesis.

Furthermore, requesting an analysis of the blood from the lawnmower is not in itself necessarily irrational. When making the request, investigators could not know what the test would show, i.e. if it was AW's blood or not. The results could either confirm or disconfirm the hypothesis that IW was guilty and the course of action can therefore be understood in terms of a general positive test strategy.[712] However, when facing the disconfirmatory evidence, that the blood did not come from AW, their beliefs should reasonably have been updated, according to Bayes theorem. Supposedly, this was not the case, as indicated by the repeated searches of IW's house and garden, seizures of his lawnmower and car, the reconstruction with the lawnmower and the tapping of IW's phone for more than a month.[713] Even if, from a probabilistic perspective, it is rational to take base rates of guilt into account, their implications are far from clear and there is no perceivable way to know that they are just taken at face value (and this value is difficult to establish) and does not for instance influence legal actors' perception of the evidence in the case. Also, it is self-evident from a normative legal perspective that base rates of guilt should not be taken into account when deciding about an individual defendant who has a right to be presumed innocent, even if that is rational using probabilistic definitions of rationality.[714] Thus, from a legal perspective it might be considered completely irrelevant whether the behavior is rational or irrational since it is still illegal. Yet, the discussion is an important addition to a framework in which confirmatory reasoning is often described as more or less generally irrational without further consideration.

In sum, the discussion above suggests that there is no single rationality but several rationalities that are all relative to different goals. In the context of criminal proceedings there seems to be at least three different types of rationality that are likely to be present simultaneously, possibly to different extents in different contexts and for different individuals/groups. Firstly, it is possible to speak of a *judicial rationality*[715] where the goal is to get a crimi-

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[712] Klayman & Ha, *Confirmation, Disconfirmation, and Information in Hypothesis Testing*, pp. 211-228.

[713] Kalmar Prosecution Authority, Decisions to use coercion; Search of premises 2008-09-06, 2008-10-07, 2008-10-21, 2008-11-11, 2008-12-02, 2008-12-05, Decision to use coercion; Seizure, 2008-09-06, Prosecutor's notes – summary of investigation 2008-10-28, E-mail correspondence prosecutor and police officer, 2008-11-17, Case No. AM-138010-08,

[714] Thus, one could speak of an *illegal Bayesian*, that is, a decision maker who by taking base rates into account is rational from a Bayesian point of view but simultaneously contradicts legal requirements such as the presumption of innocence and the principle of objectivity.

[715] The term judicial rationality has been used before but in a different meaning. For instance, *feminist judicial rationalities* have been offered as alternatives to rationality that through Western history and philosophy is intervowen with masculinity, see Grear*, Learning legal*

nal procedure that, as far as possible, protects the rule of law, including for instance the suspect's right to be presumed innocent. Most often, this is best fulfilled by avoiding confirmation bias.[716] Secondly, also an *individual rationality*[717] is likely to be present, where the goal is to adjust to incentives in the organization in order to reach career and/or financial goals, and the fulfilment of such goals may be facilitated by confirmation bias. Thirdly, also a *biological rationality*[718] can be present, which is relative to the human species' goal of maximizing its "fitness",[719] for instance through optimal search strategies that can at least overlap with confirmation bias. As such, one and the same behavior can be judicially completely irrational but individually and biologically fully rational. This is likely to be the case relatively often when it comes to confirmation bias, which suggests that it is inaccurate to describe it as a generally irrational behavior. However, when it comes to understanding the importance of confirmation bias in the legal context, it seems reasonable to put primary emphasis on the judicial rationality. Following this definition of rationality, the behavior will be considered irrational in virtually all situations.

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reasoning while rejecting the oxymoronic status of feminist judicial rationalities: a view from the law classroom, pp. 239-254.

[716] "Most often" is here used instead of "always" in order to convey that a hypothesis about guilt may very well be correct and in such situations the ultimate consequence of being blinded by the guilt hypothesis can in fact be a correct conviction. However, even if the guilt hypothesis is correct, being blind in relation to the hypothesis is clearly still problematic with respect to the suspect's right to be presumed innocent, a right which is part of the judicial rationality discussed here.

[717] Basu uses a wider definition of the term individual rationality, drawing on e.g. definitions used in economics and game theory. This essentially holds that a person is rational if, given the information available to the person, he or she chooses the action that maximizes his or her objective, whatever that objective happens to be. In other words, the person is good at choosing the actions that lead to whatever he or she wishes to maximize (often given the name utility), see Basu, *Prelude to Political Economy: A study of the social and political foundations of economics*, pp. 1-36. For a different but related type of rationality refered to as procedural rationality (that facilitates collective actions within and between organizations), see Walter, Kellermanns & Lechner, *Decision Making Within and Between Organizations, Rationality, Politics, and Alliance Performance*, pp. 1582-1610.

[718] The concept of a biological rationality and its relation to an economic rationality is discussed by for instance Thorngate & Tavakoli, *In the long run: Biological versus economic rationality*, pp. 9-26.

[719] The concept of fitness is often understood as reproductive fitness and being biologically rational would therefore be away of acting that promotes the goal of reproductive success over the life span, see for instance, Santos & Rosati, *The Evolutionary Roots of Human Decision Making,* pp. 17-18 and Mohr, *Rationality and Fitness: Two Broad Theories of Intentional Behavior*, pp. 152-165. This can however be related to behaviors that are not strictly speaking about reproduction, for instance to maximize the inflow relative to consumption of calories, through e.g. optimal search strategies. An optimal search strategy would maximize the probability of finding a satisfying result while minimizing cost, something that has been studied for instance in the context of web searches, see for instance Wilczynski & Haynes, *Developing optimal search strategies for detecting clinically relevant qualitative studies in MEDLINE*, pp. 311-316.

Chapter 4. The Swedish Criminal Procedure

4.1 Introduction

The purpose of this chapter is to examine and discuss the relation between confirmation bias and legal rules and principles guiding the Swedish criminal procedure. The legal rules and principles of interest are those that prescribe how legal actors should behave in the process of forming their decisions. Thus, the more specific prescriptions for legal actors' behaviors are discussed and related to the behaviors associated with confirmation bias. The prescriptions are largely the same for police officers, prosecutors and judges but a few differences between these categories of legal actors as well as the stages of the criminal procedure will be pointed out.

The chapter begins with a discussion of the purposes and priorities of the criminal procedure (4.2). It then examines the implications of the suspect's right to a fair trial (4.3) and the ancillary requirements of objectivity and equal treatment (4.3.1) as well as the presumption of innocence (4.3.2). Thereafter the implications of the principle of free evaluation of evidence are discussed (4.4).

4.2 Purposes and Priorities of the Criminal Procedure

As part of an ongoing legal political debate,[720] Swedish legal doctrine contains a few somewhat different views on what the purposes of the criminal procedure are. The most commonly mentioned purposes have been to promote efficient crime fighting through law enforcement,[721] to counteract that

[720] For a discussion on how law relates to politics see for instance Zamboni, *Legal Realisms: on law and politics*, pp. 295-317, Zamboni, *Law and politics, a dilemma for contemporary legal theory* and Zamboni, *The policy of law: a legal theoretical framework.*

[721] See for instance Lindblom, *Domstolarnas växande samhällsroll och processens förändrade funktioner – floskler eller fakta?* pp. 229-262 and Lindblom, *Straffprocessens samhällsfunktioner*, p. 414. However, Lindblom does not perceive of crime fighting as the only or even the primary purpose of the criminal procedure. Bylund explicitly objects to crime fighting as a purpose of the criminal procedure, Bylund, *Tvångsmedel I. Personella tvångsmedel i straffprocessen,* p. 38. Bladini states that the presumption of innocence is an argument against the view that the criminal procedure aims to fight crime but to completely disregard of crime fighting as a purpose would be misleading since then the criminal procedure could not impose the criminal law. This in turn would mean that none of the purposes of the criminal law, for instance general and individual prevention of crime or retribution could be fulfilled. It is therefore more appropriate to consider crime fighting and protection against

innocent individuals are convicted,[722] to promote materially correct verdicts[723] and judicial review.[724] Clearly, some of these purposes are closely intertwined, since when the purposes of fighting crime and protecting innocent individuals are fulfilled, the purpose of reaching materially correct verdicts is also fulfilled. However, it is also widely acknowledged that there is a divergence between some of these purposes, especially between efficient crime fighting and to counteract convictions of innocent individuals. Many scholars believe that the importance of these different purposes may vary across the different stages of the criminal procedure. A relatively common view is that during the early stages of the criminal inquiry the main purpose is law enforcement, whereas it's both law enforcement and counteracting wrongful convictions during the main hearing.[725] Furthermore, the primary purpose of the Court deliberation is to counteract wrongful convictions.[726]

There is no doubt that one important purpose of the criminal procedure is to fight crime. This is expressed in for instance the Code of Judicial Procedure 23 ch. 2 § according to which: *"During the preliminary investigation, inquiry shall be made concerning who may be suspected of the offence and whether sufficient reasons exist for his prosecution (...)"*[727] and is also ex-

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wrongful convictions, and other aspects relating to the rule of law, parallell functions of the criminal procedure, see Bladini, *I objektivitetens sken – en kritisk granskning av objektivitetsideal, objektivitetsanspråk och legitimeringsstrategier i diskurser om dömande i brottmål*, p. 165.

[722] According to Bylund, this is the primary purpose of the criminal procedure, which is apparent in for instance that the prosecutor has the burden of proof for the defendant's guilt and the high standard of proof *beyond all reasonable doubt* required for a conviction, Bylund, *Tvångsmedel I. Personella tvångsmedel i straffprocessen,* p. 38. Also, Lindell, Eklund, Asp, Bladini, Ekelöf & Edelstam, Lindblom agree that this is an important purpose of the criminal procedure, although to different extents, see Lindell, Eklund, Asp & Andersson, *Straffprocessen,* Bladini, *I objektivitetens sken*, p. 164, Ekelöf & Edelstam, *Rättegång I*, p. 30, Lindblom, *Domstolarnas växande samhällsroll och processens förändrade funktioner – floskler eller fakta?* pp. 229-262 and Lindblom, *Straffprocessens samhällsfunktioner*, p. 414.

[723] This view is expressed by for instance Lindell, Eklund, Asp & Andersson, *Straffprocessen*, pp. 22-25. The purpose of reaching materially correct verdicts is emphasized in relation to convictions. See also Forsberg, *Rätt utan Sanning? En reflektion över sanningens roll i straffprocessen idag,* pp. 243-258.

[724] According to Lindblom, one of the purposes is judicial review in a broad sense, that is, to ensure that the Swedish criminal law does not contradict the constitution, EU-law or the ECHR:s practice, see Lindblom, *Tvekamp eller inkvisition – reflektioner om straffprocessens samhällsfunktion och grundstruktur,* pp. 627 and 633.

[725] This is sometimes referred to as *differentierat funktionstänkande*, see Lindblom. *Tvekamp eller inkvisition – reflektioner om straffprocessens samhällsfunktion och grundstruktur,* pp. 627 and 633, Ekelöf & Edelstam, *Rättegång I*, p. 30 and Lindell, Eklund, Asp & Andersson, *Straffprocessen*, pp. 22-23.

[726] Lindblom, *Tvekamp eller inkvisition – reflektioner om straffprocessens samhällsfunktion och grundstruktur,* pp. 627, 633, Ekelöf & Edelstam, *Rättegång I*, p. 30. Lindell, Eklund, Asp & Andersson, *Straffprocessen*, pp. 22-23, Träskman, *Omvänt eller bakvänt: Om konstycket att lägga bevisbördan i brottmål på den tilltalade, utan att det kommer bak på människorättigheterna*, p. 352.

[727] Own translation of: *"Under förundersökningen skall utredas vem som skäligen kan misstänkas för brottet och om tillräckliga skäl föreligga för åtal mot honom (...)"*.

plicit in for instance the Government's letters of appropriation to the Police[728] and Prosecution[729] Authorites.[730] Despite this, the criminal procedure undoubtedly also serves the purpose of protecting innocent individuals from being convicted, as this is the specific purpose of some of the most crucial rules and principles that are discussed in this chapter.[731] Thus, the criminal procedure aims to fulfil both of these purposes. As regards the relative importance of these purposes during the different stages of the criminal procedure, such a distinction can be *derived* from the law regarding the different legal actor's tasks.[732] These different tasks indicate that crime fighting is a more important purpose during criminal inquiry than it is during Court deliberations, which also seems reasonable. However, the supposedly greater importance of crime fighting during the criminal inquiry is not necessarily intended to result in a corresponding decreased importance of the protection against wrongful convictions, as the suspect's right to a fair trial is to be carefully protected through out the criminal procedure.[733] Also, it might appear as if only the judges are really capable of preventing wrongful convictions as they have the final say regarding the verdict. Yet this is misleading as the evidentiary basis upon which judges form their decisions are provided by the criminal inquiry, which is why the quality of the investigative material is directly related to the accuracy of the Court's judgment.

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[728] According to the Swedish Government Bill, Prop. 2010/11:1, the Police Authority shall aim to decrease crime and increase individuals' safety and also make sure that more crimes are followed by legal proceedings. Furthermore, in the Government's letter of appropriation it is stated for instance that particular care shall be taken in improving the ability to solve specific crimes types such as rapes, human trafficking and hate crime, see the Government's letter of appropriation for 2018 concerning the Police Authority, *Regleringsbrev för budgetåret 2018 avseende Polismyndigheten*.

[729] For instance, in the Government's letter of appropriation it is stated that the Prosecution Authority shall for instance report the number of suspects of terror crimes regarding who decisions about prosecution have been made and against whom legal proceedings have been initiated, see the Government's letter of appropriation for 2018 concerning the Prosecution Authority, *Regleringsbrev för budgetåret 2018 avseende Åklagarmyndigheten.*

[730] The letter of appropriation addressed to the Courts are more focused on effectiveness in decision making, see *Regleringsbrev för budgetåret 2017 avseende Sveriges Domstolar*. The purpose of fighting crime also constitutes the legitimate basis upon which individuals are for instance deprived of their liberty or have their phones secretly wire-tapped. This is clear from The Code of Judicial Procedure 24-28 ch. that regulates the usage of coercive measures against suspects. Thus, claiming that crime fighting is not a purpose of the criminal procedure would leave the claimer with (quite a heavy) burden of explanation.

[731] See for instance The Swedish Government Official Reports, SOU 2011:45 pp. 16, 95, 115 and The Swedish Government Bill, Prop. 2015/16:68 pp. 30-31.

[732] There is of course a difference between criminal investigators' task to investigate who may be suspected of a crime and whether there are sufficient reasons to prosecute (The Code of Judicial Procedure 23 ch. 2 §) and the judges' task to decide what has been proven in a case (The Code of Judicial Procedure 35 ch. 1 §).

[733] For the moment, it is disregarded that this equation does not quite seem to add up. In Chapter 3.3.3.2 it is discussed how incentives in for instance the police organization can promote a guilt confirming mindset, in contradiction of for instance the presumption of innocence.

Thus, it is clear that the criminal procedure serves several different purposes simultaneously and a more relevant question is therefore how these purposes *should be* and *are* weighed against each other in practice. To the ”should” question there is quite an easy answer found in for instance the principle of *in dubio pro reo* (when in doubt for the accused) and the famous Blackstone 10:1 ratio[734] which state that within the criminal procedure, greater care should be taken in avoiding wrongful convictions than avoiding wrongful acquittals. This clearly signals that the purpose of counteracting wrongful convictions is prioritized before the purpose of efficient crime fighting. In other words, the criminal procedure's *specificity,* that is, its ability to classify the innocent as innocent (true negative rate) is explicitly prioritzed over its *sensitivity*, that is, its ability to classify the guilty as guilty (true positive rate).[735] A foolproof process for determining whether a suspect is guilty would be 100 % sensitive, that is, all guilty are identified as guilty and 100 % specific, that is, all innocent are identified as innocent.[736] However, there are usually trade-offs between the measures, depending on for instance the priorities in the context in which they are used.[737] As mentioned, the normative priorites within the criminal procedure are absolutely clear. Yet, what the priorities are in practice is less certain.

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[734] Sir William Blackstone, quoted in *The Oxford dictionary of quotations*, p. 85. Compared to previous suggestions, Blackstone broadened the rule to include noncapital offences. For instance, Fortesceu (1349-1476) suggested that: *"One would rather that twenty guilty persons should escape punishment of death than that one innocent person should be condemned and suffer capitally"*, Coffin v United States, 156 U.S. 432, 455 (1895) and Lord Hale suggested that: *"it is better five guilty persons should escape unpunished than one innocent person should die."*, Coffin v United States, 156 U.S. 432,456 (1895). See Hammond, *Human Judgment and Social Policy, Irreducible Uncertainty, Inevitable Error, Unavoidable Injustice*, p. 47.

[735] See for instance Brett, Phillips & Beary, *Psychophysiology: Predicitive power of the polygraph: Can the "lie detector" really detect liars?* pp. 544-547 and Vrij, *Detecting lies and deceit, Pitfalls and Oppurtunities*, p. 322. This terminology, often used in experimental testing and medical diagnosis, thus refers to the test's ability to correctly classify patients who have the disease as suffering from the disease, i.e. the sensitivity (true positive rate) and also its ability to correctly classify the patient whom do not have the disease as not suffering from the disease, the specificity (true negative rate).

[736] Thus sensitivity and specificity can be used to estimate the criminal procedure's *predictive power*, that is, the extent to which it makes correct classifications of suspects as either guilty or innocent, see for instance Brett, Phillips & Beary, *Psychophysiology: Predicitive power of the polygraph: Can the "lie detector" really detect liars?,* pp. 544-547. This is clearly linked to the purpose of reaching materially correct verdicts. Only convicting when it is certain that a defendant has committed a crime would result in a low false negative rate and a high true negative rate, i.e. specificity. However, it would also lead to quite a few misses, decreasing the true positive rate, i.e. sensitivity. Conversely, convicting virtually all defendants even if there is no sound evidence at all would mean that no misses were made on the expense of lots of false alarms, i.e. a high false negative rate and few correct rejections i.e. a low true negative rate, i.e. a low specificity.

[737] *Ibid*.

Confirmation bias in relation to a guilt hypothesis completely turns the priorities around. When decision makers search for and evaluate criminal evidence in a way that promotes the guilt hypothesis, they are unlikely to 'miss' a guilty person (sensitivity is high) but more likely to trigger some 'false alarms', that is, to catch and convict innocent individuals (specificity is low).[738] Thus, the procedure is highly sensitive but low in specificity, which means that even if it is greatly succesful in identifying the guilty as guilty, it is simultaneously very poor in identifying the innocent as innocent. In this way, confirmation bias strikes at the very heart of what the criminal procedure primarily aims to prevent, that is, wrongful convictions. Below, this is discussed in relation to the suspect's right to a fair trial.

4.3 The Right to a Fair Trial

The provision most commonly referred to as a basis for the defendant's right to a fair trial is Article 6 of the European Convention for the Protection of Human Rights (ECHR), but the right is also laid down in Article 10 of the Universal Declaration of Human Rights (UDHR) and Article 6 in The Lisbon Treaty,[739] together with the Protocol relating to Article 6 (2) of the Treaty on European Union on the Accession of the Union to the European Con-

[738] Apart from "misses" and "false alarms", there are two other possible outcomes: "hits", that is, convicting the guilty and "correct rejections", that is, acquitting the innocent. This terminology stems from experimental tests of the so-called Signal Detection Theory that provides a general framework for describing decisions that are made in uncertain or ambigous situations. It is most widely applied in psychophysics but the theory has implications about how any type of decision under uncertainty is made, see for instance Wickens, *Elementary Signal Detection Theory*, pp. 3, 5-6. It has also been employed by researchers within legal psychology, see for instance Wagenaar, van Koppen and Crombag, *Anchored Narratives, The psychology of Criminal Evidence*, p. 12. Furthermore, similar divisions have been used in decision theory, see for instance Kaplan, *Decision Theory and the Factfinding Process*, pp. 1071-1072.

[739] According to Article 6 in The Lisbon Treaty, the Union recognizes the rights, freedoms and principles set out in the Charter of Fundamental Rights of the European Union of 7 December 2000, as adapted at Strasbourg, on 12 December 2007, which shall have the same legal value as the Treaties. The article furthermore states that the provisions of the Charter shall not extend in any way the competences of the Union as defined in the Treaties. The rights, freedoms and principles in the Charter shall be interpreted in accordance with the general provisions in Title VII of the Charter governing its interpretation and application and with due regard to the explanations referred to in the Charter, that set out the sources of those provisions. The Union shall accede to the European Convention for the Protection of Human Rights and Fundamental Freedoms. Such accession shall not affect the Union's competences as defined in the Treaties. Fundamental rights, as guaranteed by the European Convention for the Protection of Human Rights and Fundamental Freedoms and as they result from the constitutional traditions common to the Member states, shall constitute general principles of the Union's law. The Lisbon Treaty entered into force on the 1st of December in 2009. Article 6 of the Treaty regulates the freedoms and rights of the members of the Union partly through the embodiment of the Charter of Fundamental Rights of the European Uninion (2000/C 364/01) and partly through the reference to the ECHR.

vention on the Protection of Human Rights and Fundamental Freedoms.[740] Although the wording fair *"trial"* or *"hearing"* of the mentioned articles implies that the right only refers to the main hearing in Court, the principles comprised by the articles are applicable during the entire criminal procedure,[741] thus including police officers', prosecutors' and judges' decision making within that procedure.[742]

The right comprises several different, yet related, basic fundamental rights,[743] but only the ones with the clearest relevance for the question of confirmation bias will be discussed. These rights are directly or indirectly related to the wordings of article 6 (1) that everyone is entitled to a fair and pulic hearing within a reasonable time by an *independent and impartial tribunal*[744] established by law and article 6 (2) that everyone charged[745] with a

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[740] According to article 1 in the the protocol, the agreement relating to the accession of the Union to the European Convention on the Protection of Human Rights and Fundamental Freedoms (hereinafter referred to as the 'European Convention') provided for in Article 6(2) of the Treaty on European Union shall make provision for preserving the specific characteristics of the Union and Union law.

[741] Swedish Government Official Reports, SOU 2011:45 p. 112 and Bring & Diesen, *Förundersökning*, p. 66.

[742] Also, with reference to Court proceedings, the ECHR has stated that the question of whether there has been a breach of a defendant's right to a fair trial shall be assessed with reference to the entire trial, that is, only after the trial has been completed, see *Dikme v Turkey*, judgment of 11th of July 2002 (20869/92). This is because only when the trial has been completed is it possible to determine whether there has been a breach, since for instance a procedural flaw in the lower Court can be corrected for in the Appellate Court, see *Dallos v Hungary*, judgment of 1st of March 2001 (29082/95).

[743] In criminal cases, the right to a fair trial comprises the following basic fundamental rights: the right of access to court, to be heard by a competent, independent and impartial tribunal, the right to equality of arms, the right to a public hearing, the right to be heard within a reasonable time, the right to a counsel and the right to interpretation. These rights are listed in almost all international conventions, however some provisions, such as Article 6 ECHR provide more detailed hypotheses of specific rights see Leanza & Pridal, *The Right to a Fair Trial,* p. 6

[744] Whereas the requirement of an independent and impartial tribunal directly and explicitly regulates decision making in Court, its relevance also for criminal inquiry is only realized when considering the ECHR's case law and the Swedish legislative history. See for instance *Edwards v UK,* judgment of 7th of June 1998 (46477/99). The ECHR's reasoning in this case regarding the starting point of the suspect's right to be informed of the nature and cause of the accusation against him can, in line with the argument in the legislative history, be considered support for a corresponding requirement of objectivity during the criminal inquiry, see The Swedish Government Official Reports, SOU 2011:45 p. 112.

[745] The word *"charged"* shall not be taken literally, since the right to be presumed innocent arises much earlier than with the charging decision. In accordance with *Neumeister v Austria*, judgment of 27th of May 1966 (1936/63), the right most certainly applies during criminal inquiry as it arises already when the suspect is affected by the criminal suspicions, even if the suspicions are not yet formalized. For a more in-depth analysis of this case see Nowak, *Oskyldighetspresumtionen*, pp. 116-120. See also see *Mikolajová v Slovakia*, judgment of 18th January 2011, 4479/03. The ending point seems to be the conviction in itself, since the presumption does not entail a general prohibition against executing a sentence, even if it has not yet entered into force, see for instance *Phillips v The United Kingdom*, judgment of 12th December 2001, 41087/98 and Danelius, *Mänskliga rättigheter i europeisk praxis,* p. 319. As

criminal offence *shall be presumed innocent until proved guilty according to law*.[746] In the Swedish setting the requirement of an independent and impartial tribunal, and to a certain extent also the presumption of innocence,[747] is linked to demands on objectivity and equal treatment,[748] through out the criminal procedure.[749] For criminal inquiries, the so-called principle of objectivity is laid down in The Code of Judicial Procedure 23 ch. 4 §. Also, applying to the Police Authority, Prosecution Authority and the Courts, is the principle of objectivity laid down in the Constitution, more specifically, The Instrument of Government 1 ch. 2 and 9 §§, 2 ch. 11 §.[750] In the Swedish doctrine, the principle of objectivity is sometimes labelled differently. For instance, Bull and Sterzel divide it into two: 1) the principle of everyone's equal treatment before the law and 2) the principle of objectivity.[751] They also emphasize that the principle of everyone's equal treatment before the law regards *the application* of law not the formulation of law and as such provides protection against arbitrariness and discrimination.[752] This is differ-

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Stuckenberg points out with reference to the ECHR's practice, the presumption of innocence does have meaning if a defendant is not convicted, a situation in which *"the accused must be fully rehabilitated"* (p. 313) and this is consistent with ECHR forbidding of *"voicing of suspicions"* in *Sekanina v Austria,* judgment of 25th August 1993, 13126/87 and *"casting doubt on [the defendant's] innocence, after an acquittal"* in *Vostic v Austria*, judgment of 17th October 2002, 38549/97 see Stuckenberg, *Who is Presumed Innocent of What by Whom?* p. 313.

[746] The presumption of innocence is also laid down in the EU Charter of Fundamental Rights, article 48.1 and the UN:s Universal Declaration of Human Rights, article 11. For more on this, see Cameron, *An Introduction to the European Convention on Human Rights*, p. 89.

[747] The presumption of innocence is not independently regulated in Swedish law but according to the legislative history it is expressed through The Code of Judicial Procedure 23 ch. 4 § according to which not only circumstances that are a suspect's disadvantage but also those in his or her favour shall be searched for, preserved and considered, see The Swedish Government Official Reports, SOU 2011:45 p. 112-113. Also, Nowak points out that the principle *in dubio pro reo*, which is an expression of the presumption of innocence, is mentioned in The Freedom of the Press Act 1 ch. in which it is stated *"when in doubt for the accused"* (own translation of: *"i tvivelsmål hellre fria än fälla"*), see Nowak, *Oskyldighetspresumptionen*, pp. 32-33. See also The Swedish Government Official Reports, SOU 1996:18 pp. 367-368.

[748] Bladini, *I objektivitetens sken*, p. 89 and Danelius, *Mänskliga rättigheter i europeisk praxis*, p. 167.

[749] The Swedish Government Official Reports, SOU 2011:45 p. 112.

[750] For a historical summary of the Swedish legislation relating to or regarding the principle of objectivity, see Bladini, *I objektivitetens sken*, pp. 80-84. The formulation that the principle has today came with the reform of the Constitution in 1967. However, already Olaus Petri's rules for judges from the year 1540 expresses requirements of equal treatment and objectivity: *"Equal crimes require equal punishment and therefore one shall not take into consideration that one is poor or wealthy, but instead punish one in the same way as the other, when the crimes are equal."* Own translation of: *"Lika brott kräver lika straff, och därför skall man icke se därefter, att en är fattig eller rik, utan straffa den ena som den andra, där lika brott äro."*

[751] Bull & Sterzel, *Regeringsformen – en kommentar*, p. 58.

[752] *Ibid*.

ent from the principle of objectivity that, primarily, is the constitutional basis for the *non-competence provisions* in The Code of Judicial Procedure.[753]

Taken together this regulation can be divided into two categories: 1) demands on objectivity and equal treatment, comprising the non-competence provisions, and 2) the presumption of innocence. The meanings of these demands, as determined by the ECHR's case law as well as Swedish practice, are discussed below.

4.3.1 Objectivity and Equal Treatment

The objectivity expected by criminal investigators is expressed in the following way in The Code of Judicial Procedure 23 ch. 4 §: *"A criminal investigation shall be conducted objectively. At the criminal investigation the leader of the investigation as well as those assisting him or her shall search for, preserve and consider both cirumstances and evidence that are to the suspects advantage and disadvantage."*[754] This means that criminal investigations should be carried out in a broad, comprehensive and unbiased way.[755] Evidence favourable to the suspect may not be omitted from the investigation and there is therefore a duty to report and document[756] such circumstances as well as circumstances that are not unambigously in favour of the suspect but that could be important for his defense.[757] In order to fulfil the principle of objectivity, it is vital that investigators do not focus onesidedly on a certain hypothesis from the beginning of the investigation.[758] In terms of time, this objectivity is to be observed even from before the starting point of a preliminary investigation[759] and all subsequent inquiry,[760] includ-

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[753] Bladini, *I objektivitetens sken*, pp. 81-82.

[754] Own translation of: *"En förundersökning skall bedrivas objektivt. Vid förundersökningen skall undersökningsledaren och den som biträder honom eller henne söka efter, ta till vara och beakta omständigheter och bevis som talar såväl till den misstänktes fördel som till hans eller hennes nackdel."* The words "search for" were added in order to emphasize the obligation to actively strive for enriching the investigative material with circumstances and/or evidence that are to the suspect's advantage, The Swedish Government Bill, Prop. 2015/16:68 p. 84.

[755] The Swedish Government Official Reports, SOU 2011:45 p. 95. The objectivity demands is also expressed in for instance The Code of Judicial Procedure 23 ch. 12 § which prohibits undue interrogation methods and the Decree on preliminary investigations (1947:948).

[756] According to the Code of Judicial Procedure 23 ch. 21 §.

[757] The Parliamentary Ombudsmen, JO 2007/08 p. 87 and JO decision, 7th of July 2006, registration no. 2181-2005.

[758] Swedish Government Official Reports, SOU 2011:45 p. 100.

[759] See The Parliamentary Ombudsmen, JO 1975/76 p. 34, Fitger, *Rättegångsbalken, part 2*, p. 23:21 and 23:7. This means that investigators are expected to be objective even before there is reason to believe that a crime has been committed, for instance when making inquiries about a missing person or a building that has been burned. Not only circumstances suggesting that a person committed the crime, but also other circumstances shall be considered and preserved. Furthermore, the decision about whether to open a preliminary investigation and all subsequent decisions during the preliminary investigation shall also be in accordance with the principle of objectivity, see The Parliamentary Ombudsmen, JO 2839-2008, p. 4.

ing that undertaken after a decision to prosecute the suspect. Thus, even if the prosecutor, with the charging decision, becomes the defendant's counter party, he or she, as well as those assisting the inquiry, shall still conduct their work objectively, in accordance with The Code of Judicial Procedure 45 ch. 3 a §.[761]

There are several examples of lacking objectivity which have resulted in criticism against the Swedish prosecution and police authorities, for instance when a prosecutor omitted that a witness had withdrawn her previous statement regarding a robbery from the preliminary inquiry report,[762] and a police officer omitted the result of a photo line-up in which a witness had not identified the suspect.[763] The reason for the omission of such potentially exoner-

[760] The principle of objectivity is considered to counterweight the inquisitorial elements of a preliminary investigation, see the Swedish Government Official Reports, SOU 2011:45 pp. 98-99. These inquisitorial elements are more pronounced in the beginning of preliminary investigations when the individual who is the object of the authorities' investigations has not yet received the status of a party. It is only later on, when the investigation has advanced so far that a person is reasonably suspected of committing the offence that the person becomes a party and some accusatory elements emerge. These accusatory elements involve certain rights for the suspect, which are laid down in The Code of Judicial Procedure, 21 ch., 3a §, 23 ch, 18 § and The Decree on Preliminary Investigations (1947:948) § 12. When there is reasonable suspicion, the suspect shall be notified of the suspicion, the right to hire a defense counsel and that a public defense counsel can be appointed under certain circumstances. The suspect and his or her defense counsel shall also be informed continuously of developments in the investigation, to the extent possible without impediment to the investigation (as decided by the inquiry leader). They have the right to state what inquiries they consider desirable and the requested inquiries shall be made, if it may be assumed to be relevant to the investigation. Furthermore, the prosecutor may have a meeting with the suspect or his/her defense counsel before deciding about whether to prosecute, if such a meeting is assumed to be of value when deciding on the prosecution or for future proceedings in the matter. As is clear from these articles, the suspect's rights are conditional in relation to the judgements made by the inquiry leader.

[761] The Swedish legislator considered the provision in The Code of Judicial Procedure 45 ch. 3 a § to be necessary in order to clearly express that the objectivity demands apply to all stages of the law enforcement authorities' work, see The Swedish Government Bill, Prop. 2015/16:68 pp. 33, 83 and 89. This was not regulated in law before, see Swedish Government Official Reports, SOU 2011:45 p. 95, The Parliamentary Ombudsmen, JO 2007/08 p. 87. The prosecutor's role as an inquiry leader comprehend making decisions about *which* inquiries shall be carried out as well as *in which order* but *how* such inquiries are made is usually a question for the police, The Swedish Government Official Reports, SOU 1988:18 pp. 112-113 and 295. Even if this is the case, the prosecutor's responsibility encompasses all of those questions. The reason why prosecutors do not usually carry out the investigation is that it might endanger their objectivity, Lindberg, *Om åklagaretik*, p. 203.

[762] The Office of the Chancellor of Justice, JK decision, 21st of September 2006, registration no. 3704-04-21.

[763] The Parliamentary Ombudsmen, JO 2009/10 p. 11. The available Swedish Court practice primarily concerns other aspects of the right to a fair trial, for instance when a defense counsel has not been present. For an example see The Court of Appeal of Western Sweden, B 1132-10, in which the defendant had been interrogated on reasonable suspicion for rape against a child without a defense counsel which was considered a breach of the right to a fair trial, regardless of that the interrogating police officer had informed the suspect of his right to legal counsel, something which the suspect had refrained from demanding. See also RH

ating information is not clear and there is no basis for claiming that it was due to confirmation bias. However, there is an empirical basis for claiming that confirmation bias could produce such or similar behaviors as the value of hypothesis inconsistent information is often downgraded,[764] and therefore, possibly, not perceived as relevant to the investigation. For instance, this behavior is expected in a suspect driven investigation as well as when investigators are assymetrically skeptical in relation to the evidence. Since this process is largely subconscious it poses any equally, or even more, potent threat to the suspect's right to a fair trial as well as the system's specificity, than what conscious one-sidedness does.

As regards the Courts, the objectivity demand has gained its meaning primarily from the non-competence provisions in Swedish law[765] as well as the practice from Swedish Courts and ECHR's on when a judge is considered partial.[766] A characteristic of the non-competence provisions and the associated practice is that it concerns situations in which a judges' partiality is more or less tangible or can be reasonably assumed given the circumstances, which is similar but not identical to the regulation for police officers

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2013:8 in which a police interrogation with a child had been conducted in absence of the defendant's legal counsel, in contradiction of the defendant's right to a fair trial. Other examples of Swedish Court practice relating to the right to a fair trial concern are when evidence referred to by one of the parties (the plaintiff) was incorrectly dismissed, see The Court of Appeal of Western Sweden, RH 2012:14.

[764] Nickerson, *Confirmation bias: A ubiquitous phenomen in many guises*, pp. 175-220.

[765] As Bladini points out, there are a few other rules that establish demands on objectivity, such as the Judge Oath, The Code of Judicial Procedure 4 ch. 11 § and the Common basic values for central government employees but the practical relevance is very limited since breaches do not get any legal consequences (with exception for when a judge testifies under specific circumstances regulated in The Code of Judicial Procedure 36 ch. 2 §), see Bladini, *I objektivitetens sken*, pp. 94-100. Possibly, they could help interpretation the closer meaning of the objecitivity demands provided that they are more detailed than other regulations.

[766] As Danelius points out, it is not possible to completely seperate the criteria of *independent* and *impartial* Courts since they are partially overlapping. However, they emphasize different aspects of the objectivity demand. Whereas the independence criteria primarily concerns the protection against external influence, the impartiality criteria aims to prevent that one of the parties gets an advantage or disadvantage in relation to the other party. See Danelius, *Mänskliga rättigheter i europeisk praxis. En kommentar till Europakonventionen om de mänskliga rättigherna,* p. 167. Despite the overlap, the independence criterion is largely left outside of the discussion here. However, it should be mentioned that the ECHR's discussions regarding the independence criterion has revolved around for instance how members of the Court are appointed, how the protection against external pressure is functioning as well as the Court's composition and structure, see *Campbell and Fell v United Kingdom*, judgment of 28th June 1984, 7819/77 and *Academy Trading Ltd et al., v Greece*, judgment of 30th November 1995, 30342/96. This has been discussed primarily in relation to Military Courts where the Court members are often military personell that have some kind of hierarchical relationship to the involved parties, see *Findlay v United Kingdom*, judgment of 25th February 1997, 22107/93, *Coyne, Cable et al. v United Kingdom,* judgment of 18th February 1999, 24436/94 etc. and *Mills v United Kingdom*, judgment of 6th May 1997, 35685/97.

and prosecutors.[767] This is most certainly the case with the non-competence situations listed in the Code of Judical Procedure 4 ch. 13 § points 1 to 9, that include for instance marriage with one of the parties or a financial interest in the matter. Through the so-called general clause, point 10, the legislator has delegated to the Courts to decide what, in addition to the circumstances listed in point 1-9 is likely to undermine confidence in the judge's impartiality in the case.[768]

So far, the general clause has been applied, or - with reference to the ECHR's practice - been considered applicable by legal scholars, in cases where judges have previously decided in a related case.[769] The judges' assessments in the previous cases, for instance regarding a plaintiff's trustworthiness[770] or a defendant's complicity,[771] have been considered to undermine

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[767] Although there are similarities in the non-competence provisions for police officers, prosecutors and judges, the differences in their roles within the judicial system have also motivated some differences, The Swedish Government Bill, Prop. 2000/01:92 p. 20. Whereas judges may be disqualified from a case on the basis of measures they have taken within the frames of their occupation, such measures do not render prosecutors and police officers non-competent. This is an important exception which means for instance that a prosecutor can not be disqualified from deciding in a case where the defendant has petitioned for a new trial, on the basis that the prosecutor handled the original case which the petition for a new trial concerns, according to The Supreme Court in the case NJA 1992 C 119. See also The Swedish Government Bill, Prop. 2000/01:92 p. 20 and the Committe on Justice report 2000/01: JuU23. According to The Prosecutor-General in JO 1989/90 pp. 44-52, the provisions on non-competence need to be applied restrictively in order to allow prosecutors to practice their work in an effective and purposeful way in complicated or "infected" cases. Police officers' non-competence is regulated in The Code of Judicial Procedure 7 ch. 6 and 9 §§ and The Administrative Procedure Act 11-12 §§. Prosecutor's non-competence is regulated in The Code of Judicial Procedure 7 ch. 6 § and 4 ch. 13 §.

[768] Bylander, *Om jävsprövningen i TPB-målet*, p. 182.

[769] See The Supreme Court, NJA 1998 p. 228, NJA 2007 N 18, NJA 1994 p. 678 and Nowak, *Oskyldighetspresumtionen,* p. 158 and Lambertz, *Kvalitetssäkring av bevisprövningen i brottmål*, pp. 1-14 and the ECHR's practice: *Ferrantelli and Santangelo v. Italy*, *Rojas Morales v. Italy, Poppe v. Netherlands.*

[770] See The Supreme Court, NJA 2007 N 18 where a judge had previously assessed how trustworthy a plaintiff was in another case regarding the same defendant and where, in the case in question, the same plaintiff's trustworthiness was again of importance. Another related example is NJA 1998 p. 228 where the general clause was applied to disqualify a Lay judge from deciding in a bribery case due to previous participation in a perjury case where a witness falsely relieved a woman of responsibility for bribery. However, in NJA 1994 p. 678 the general clause was not considered applicable when an individual who was deemed trustworthy in another case testified again concerning a similar charge but against another defendant.

[771] The general clause has been considered applicable in cases of multiple defendants if a judge prior to dealing with that case has decided regarding one of the defendants and made statements regarding the other defendant's complicity. See for instance Nowak, *Oskyldighetspresumtionen,* p. 158 and Lambertz, *Kvalitetssäkring av bevisprövningen i brottmål*, pp. 1-14 and the ECHR's practice: *Ferrantelli and Santangelo v Italy*, judgment of 7th August 1996, 19874/92, *Rojas Morales v Italy*, judgment of 16th November 2000, 39676/98 and *Poppe v Netherlands,* judgment of 24th March 2009, 32271/04. This can be compared to ECHR's practice in *Schwarzenberg v Germany*, judgment of 10th november 2006, 75737/01, where judges in a German Court were not considered partial even if they had

confidence in their impartiality. Presumably, this is because of the risk that the judge would be incapable of reasoning independently of their previous assessment. With this interpretation, it seems like the behaviors which the general clause is intended to prevent encompass behaviors referred to as confirmation bias.[772] However, exactly how closely related a previous assessment can be before rendering a judge non-competent is not clear. This is manifested in that the Swedish legislator did not consider a previous detention of a suspect to be a ground for disqualification during the main hearing. This is despite the ECHR's judgement of the opposite in a case where a Danish judge was considered non-competent after having detained the suspect on several occasions and then also decided about his guilt.[773] The primary reason stated by the Swedish legislator was that the Swedish standard of proof for detention is lower than the corresponding Danish standard.[774]

Judges have a legal duty to be impartial, not just appear to be so.[775] However, it is generally impossible to know whether a judge *de facto* is or has been partial in a concrete case. Since this so-called subjective requirement is very hard or impossible to prove, a test of whether the fear of partiality is objectively justified, the so-called objective requirement, is carried out to evaluate claims of non-competence.[776] In this test, the personal impartiality of a judge is presumed until there is proof to the contrary[777] and the viewpoint of the accused is important but not decisive.[778] However, since the assessments made in this regard are never followed by a "correct answer" (there is no counterfactual world with which to compare), there is no way to tell whether the rules in fact prevent what they are intended to prevent. This

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previously convicted an accomplice of the defendant now facing charges and the verdict against this defendant was partially based on information provided by the accomplice. However, as Nordh and Lindblom point out, judges should be considered non-competent in situations where they would have to repeatedly assess different defendants' involvement in the same act, using the same evidence, Nordh & Lindblom, *Kommentar till RB,* booklet 1, p. 121.

[772] However, research on confirmation bias proposes that a wider application of the clause might be useful, considering for instance that multiple charges seem to make judges more likely to confuse the evidence and more likely to convict. This is not necessarily to say that judges should be deemed non-competent in such situations because it would often often be practically impossible to change the judges in such situations. However, it does suggest that far from all biasing circumstances are – or are expected to be - acknowledged by the ECHR's practice.

[773] See The Swedish Government Bill, Prop. 1992/93:25 p. 16 regarding *Hauschildt v. Denmark,* judgment of 24th May 1989, 10486/83.

[774] The Swedish Government Bill, Prop. 1992/93:25 p. 16.

[775] *Hauschildt v Denmark*, judgment of 24th May 1989, 10486/83, p. 16.

[776] See for instance *Saraiva de Carvalho v Portugal,* judgment of 25th of July 2017, 17484/15, and *Padovani v Italy*, judgment of 26th February 1993, 13396/87. See also Danelius, *Mänskliga rättigheter i europeisk praxis. En kommentar till Europakonventionen om de mänskliga rättigherna*, p. 168.

[777] See for instance *Piersack v Belgium*, judgment of 1st October 1982, 8692/79.

[778] See for instance *Saraiva de Carvalho v Portugal* and *Padovani v Italy*, judgment of 25th of July 2017, 17484/15.

is a clear example of how law generates empirical questions but use other, non-empirical, methods to answer them.

Furthermore, in cases where the applicant has initiated complaints under Article 14[779], the prohibition of discrimination, taken together with Article 6 of the Convention, the ECHR has stated that every national court is obliged to undertake sufficient remedies to ensure its impartiality, provided that the ground for the complaint is not manifestly devoid of merit.[780] This obligation has been at hand in cases of explicit statements of bias, such as when a juror has uttered: *"In any case, I'm a racist"*[781] or when jurors have put forward concerns to the Court as a result of other jurors' racist remarks in relation to the defendant during deliberations.[782] The remedies undertaken by the Courts were considered insufficient because of refusal to take formal note of events that occurred outside the Court room[783] and because of failure to dismiss the jury, despite the defense's request, and instead directing the jury to search their conscience, set aside prejudice and if they could not, to voluntarily withdraw from the case.[784] The ECHR stated that: *"(...) generally speaking,*

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[779] According to Article 14 of the ECHR, the enjoyment of the rights and freedoms set forth in the Convention shall be secured without discrimination on any ground such as sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status.

[780] See for instance *Remli v. France,* judgment of 12th April 1994, 16839/90 and *Remli v France, Part One: European Court of Human Rights: Summaries of Judgments*, p. 612.

[781] *Remli v. France*, paragraph 11. The applicant, Mr. Remli, who was a French national of Algerian origin informed the French Court that a witness, Mrs. M had overheard one of the jurors declare to the other members of a group of jurors: *"In any case, I'm a racist."* by the door to the Court room. Mr. Remli furthermore requested the Court to take formal note of this remark but the Court dismissed the application, thus averting a replacement of the juror in question and preventing Mr. Remli from relying on the fact in issue in support of his appeal, *Remli v France, Part One: European Court of Human Rights: Summaries of Judgments*, p. 612.

[782] *Sander v United Kingdom,* judgment of 9th May 2000, 34129/96. The Birmingham Crown Court dealt with a case in which a juror handed the Court a letter according to which other jurors involved in the case had made openly racist remarks and jokes and the juror therefore feared that they would convict the defendants not on the evidence but because they were Asian.

[783] *Remli v France*, paragraph 11. Neither did the Court order that evidence should be taken to verify what had been reported by Mrs M, see *Remli v France, Part One: European Court of Human Rights: Summaries of Judgments*, p. 612.

[784] *Sander v United Kingdom.* The judge first discussed the complaint with counsel in chambers whereafter the defense, in open court, asked the judge to dismiss the jury since there was a real danger of bias. However, the judge decided to call the jury back into court and the juror who had written the complaint was asked to join the others. The judge told all the jurors about the letter, directed them to search their conscience and if they felt they could not try the case solely on the evidence and put aside their prejudice, they should inform the jury bailiff the morning after (the judge's full statement is found in the judgment, paragraph 11). The jury was then adjourned and the morning after, the judge received two letters from the jury in which they all (including the juror who wrote the first letter) strongly refuted the allegations, whereafter the judge decided to not discharge the jury but instead continue the proceedings, which resulted in the conviction of one of the defendants, Mr. Sander, who then raised the

an admonition or direction by a judge, however clear, detailed and forceful, would not change racist views overnight."[785] and that *"(...) an open admission of racism cannot be easily expected from a person in jury service, the latter being generally regarded an important civic duty."*[786]

The ECHR's practice illustrates an understanding of bias not only as something explicit and tangible that is apparent in the jury or judges' behavior. Although this does not necessarily mean that a complaint based on the risk of confirmation bias would be successful, the Court has acknowledged that the national courts are obligated to act also in relation to more subtle biases and that traditional remedies such as directions to the jury are insufficient in this regard. In order to be successful, such remedies should probably be aimed at the procedure rather than investigation into what has or has not occurred in individual cases. This is because investigation in individual cases not only risks missing the problem but can also be complicated by for instance deliberation secrecy.[787]

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complaint to the ECHR. However, in *Gregory v The United Kingdom, judgment of 25th February 1997, 22299/93,* the judge had also received a note alleging racial bias. The note said: *"Jury showing racial overtones. 1 member to be excused."* The ECHR thought that the judge's instructions to base the verdict only on the evidence was sufficient and Article 6 had not been breached. Unlike in the Sander case, there was some uncertainty as to the stance taken by defense counsel with regard to the follow-up (to recall the jury and give the directions) to be given to the note as explained by the judge. Whereas the defense counsel claimed he asked the judge to discharge the jury, the prosecution counsel claimed the defense counsel did not raise strong objections to the approach the judge had indicated he intended to pursue.

[785] *Sander v The United Kingdom*, paragraph 30.

[786] *Ibid.*, paragraph 29.

[787] The question of secrecy in relation to claims based on Article 6 has been discussed in the British setting, for instance regarding the Young Case where it was alleged that a jury's guilty verdict in a murder trial had been reached with supernatural help provided by a "Ouija board", *R v Young* [1995] Q.B. 324. Since this allegedly had happened outside of Court, an investigation was ordered and the Court quashed the conviciton when it revealed the allegation to be true, see Spencer, *Did the jury misbehave? Don't ask, because we do not want to know*, pp. 291-292. However, in the later case of Miah, *R v Miah* [1997] 2 Cr. App. R. 12, the Court did not order an investigation (after claims of racial bias in the jury) since that would have required investigating what the jury did at Court, in breach of the secrecy of the retiring room. According to the Contemt of Court Act, section 8, such breaches has the status of criminal offences. For more on this see Spencer, *Did the jury misbehave? Don't ask, because we do not want to know*, pp. 293 and *R v. Quereshi* in which investigation was not ordered in relation to claims of racial bias, with reference to secrecy of the retiring room. Spencer's view is that the decision in *R v Quereshi* is due to a will to avoid a situation where many complaints are raised, some perhaps owing their origin to friends or relatives of the defendant. In this regard, the House of Lords have stated that it is questionable whether a rule that significantly curtails the ability of the Court to consider on appeal allegations of impropriety on the part of the jury is compatible with the right to a fair trial under Article 6 ECHR, G. Daly, *Jury Secracy: R v Mirza; R v Connor and Rollock*, pp. 186-190. See also *R v Mirza* [2002] Crim LR 921 and R v Connor & Rollock [2004] UKHL 2. Spencer argues that the fact that many allegations of this sort are false cannot justify ignoring all of them, since some of them regrettably are true (e.g. the Young Case). If juries are composed of twelve people chosen from the electoral role at random, it is inevitable that they will sometimes be dominated by people who are racists, or are irresponsible and silly, and the legal system is gravely deficient if it fails to

4.3.2 The Presumption of Innocence

Already from the wording of Article 6 (2) that *everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law* it is clear that the presumption of innocence is directed at the process of reaching a decision. Furthermore, the ancilliary principles *in dubio pro reo* (when in doubt for the accused)[788] and *in dubio mitius* ("more leniently in case of doubt")[789], specifically prescribes how judges shall act if they, during the decision making process, are doubtful. This is not to say that these prescriptions are particularly clear since for instance *in dubio pro reo* provides no information about which level of certainty is required to rebut this presumption.[790] Similarly, the prosecutor's burden of proof, which is also an expression of the presumption of innocence, signals that, during the decision making process, it is up to the prosecutor to present evidence in support of the defendant's guilt and if, when the Court deliberates, it finds that this evidence has not reached the threshold *beyond all reasonable doubt*, the defendant shall be acquitted. Yet, of course this does not dictate exactly when this should happen. Therefore, it is difficult to claim that the presump-

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guard against this obvious danger. Thus, according to Spencer, either investigation of serious allegations of bias or misconduct must be allowed or the juries should not be left to deliberate unsupervised. He argues that this was done in France sixty years ago by radically altering the structure of trial, so that the judges and the jury retire and deliberate together. An alternative that would require less violence to the British traditions, Spencer argues, is to require jury deliberations-like, police interviews with suspects, to be tape-recorded. The tape could then be sealed and locked away, to be opened only if plausible allegations of misconduct were later made. The issue of secrecy (during Court deliberations) in light of Article 6 ECHR has not been discussed or tested in the Swedish legal setting. The relevant legislation on deliberation secrecy is found in the Public Access to Information and Secrecy Act 43 ch. 6 § and the associated responsibility for breach of confidentiality is found in the Penal Code 20 ch. 3 §, where it is stated that in petty cases, no punishment shall be imposed.

[788] See for instance Träskman, *Omvänt eller bakvänt: Om konstycket att lägga bevisbördan i brottmål på den tilltalade, utan att det kommer bak på människorättigheterna*, p. 352, Nowak, *Oskyldighetspresumptionen*, pp. 32-33 describes *in dubio pro reo* as a procedural rule which means that when it is doubtful whether the circumstances indicating a suspect's guilt are correct, the decision shall not be founded on those circumstances. By contrast, circumstances indicating innocence shall be taken into consideration, even if there is doubt about the correctness of such circumstances. Thus, *in dubio pro reo* is meant to be considered in the evaluation of evidence as well as when deciding if the defendant is guilty beyond all reasonable doubt (the BARD-standard). Furthermore, and also according to Nowak, *in dubio pro reo* is meant to influence prosecutors' classifications of crimes. When in doubt about whether the available proof is sufficient for a conviction on the more serious of two crimes (with respect to their range of punishment), prosecutors' are expected to prosecute only for the less severe crime.

[789] *In dubio mitius* means that the Courts are expected to choose the more lenient punishment when there is doubt about whether the requirements for a more serious punishment are fulfilled, Nowak, *Oskyldighetspresumtionen*, p 33.

[790] Stuckenberg, *Who is Presumed Innocent of What by Whom?* p. 308.

tion has been set aside in individual cases,[791] unless more tangible circumstances are put forward.

"Mr de Varga and Mr de Ribemont were the instigators of the murder"[792] and other publicly spoken or written statements during press conferences, Court proceedings and in verdicts, that directly or indirectly pinpoint a defendant as guilty before the conviction, have been considered breaches of the presumption by the ECHR.[793] However, legal presumptions, according to which a person under certain circumstances is to be presumed guilty of a crime, have been considered consistent with the presumption. For instance, in *Salabiaku v France* and the related case *Pham Hoang v France*, the ECHR stated that a French rule according to which a person who has passed the customs with illegal gods is presumed to have intent to smuggle the goods, does not contradict the presumption of innocence. However, the ECHR added that article 6 (2) requires states to confine the legal presumptions "*within reasonable limits which take into account the importance of what is at stake and maintain the rights of the defense."*[794]

Even if not explicit in national law, some presumptions regarding a person's guilt might be operating in practice. Since these presumptions are not even formally recognized as presumptions, they might be greater risk factors than legal presumptions, particularly since the ECHR has stated that the legal presumptions have to be rebuttable. An example are the so-called *Shaken baby* cases, in which forensic medical reports have stated that there

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[791] The practical relevance of the presumption has been discussed and critizised. For instance, Stuckenberg refers to it as a *"(...) legal wallflower with no practical relevance (...)",* see Stuckenberg, *Who is Presumed Innocent of What by Whom?* p. 302. Other authors present it as a *"logical absurdity", see* Manzini, *Trattato di diritto processuale penale*, pp. 53-54 or a *"piece of high-flown rhetoric",* see Fletcher, *The Presumption of Innocence in the Soviet Union*, p. 1220.

[792] *Allenet de Ribemont v France,* judgment of 10th February 1995, 15175/89, p. 8. In this case, several individuals, among them Allenet de Ribemont, had been arrested for the murder of a prominent politician. The domestic minister and the head of the police held a press conference during which they explained that Allenet de Ribemont was one of the instigators of the murder.

[793] See for instance *Allenet de Ribemont v France, Butkevičius v Lithuania*, judgment of 17th January 2012, 23369/06, *Pandy v Belgium*, judgment of 21st September 2006, 13583/02, *Konstas v Greece,* judgment of 24th May 2011, 53466/07*, Böhmer v Germany,* judgment of 15th November 2001, 37568/97 and *Marziano v Italy,* judgment of 28th November 2002, 45313/99.

[794] ECHR in *Salabiaku v France*, judgment of 7th October 1988, 10519/83, p. 11 paragraph 28. These reasonable limits had not been trespassed since the French courts had taken into consideration circumstances indicating that the defendants had in fact acted unintentionally. Thus, the presumption was rebuttable. Similarly, a presumption that the owner of a car is guilty of traffic offences commited using the car, was not considered a breach in e.g. *Falk v Netherlands,* judgment of 19th October 2004, 66273/01 and *Krumpholz v Austria*, judgment of 18th March 2010, 13201/05, since the defense had been able to offer evidence in disproof. Neither the French rule according to which defamatory statements were presumed to be in bad faith was considered a breach, in *Radio France and others v France*, judgment of 30th March 2004, 53984/00.

is no other possible explanation of a baby's injuries then that they have been subject to shaking (*Shaken baby syndrome, SBS)* Combined with the fact that the baby is still very little and has only been taken care of by its family,[795] such a report strongly suggests not only that a crime has been committed but also that the perpetrator is someone in the family. As indicated by the now reopened *SBS* cases, the medical reports had an enormous biasing effect, expressed in for instance guilt presumptive police interrogations and that the Courts disregarded or greatly discounted other possible scientific explanations.

Stuckenberg proposes a normative concept of the presumption of innocence, in which the presumption's function is the protection of a certain procedure, an ordered process of fact-finding.[796] In this procedure, it is not the sheer 'existence' of a crime but only the finding of guilt in a prescribed procedure that legitimizes the state's punishment of an individual.[797] A crucial component of the procedure is that it *ends* with a decision.[798] Thus the procedure aims to reach a decision and is defined by its openness in relation to the outcome, which is maintained during the entire time of delay of the concluding decision.[799] If, on the contrary, the process is not open, that is, its aim is not to find a decision but to present and justify a decision already made, it shall not be called a procedure but a ritual.[800] Thus, according to Stuckenberg, the task of the presumption of innocence is to maintain the openness of the procedure, for instance by protecting the openness against all kinds of interference resulting in that somebody is treated as guilty before the conviction.[801] He goes on to say that: *"This seems to simply stress the self-evident, namely the ancient insight that guilt is established only by a conviction and not by mere suspicion or accusation."*[802] The main consequence of this understanding of the presumption of innocence is the forbidden anticipation of punishment before the procedure has come to the determined end. Stuckenberg's normative concept of the presumption provides a framework that, in comparison to the general principles of *in dubio pro reo* etc. appears more substantive and clear. However, it can be questioned whether the presumption really is intended to protect the *openness* of the procedure, since openness in a literal sense does not favour one hypothesis over the other. The presumption of innocence does not equate the hypothesis

[795] Two acknowledged cases of wrongful convictions based on such statements can be found in The Supreme Court's decision to grant the convicted new trials, see Ö 1860-12 and Ö 2345-12.
[796] Stuckenberg, *Who is Presumed Innocent of What by Whom?* p. 311.
[797] *Ibid*.
[798] Thus, the basis of the punishment is always 'formal guilt', according to Stuckenberg. This is similar to Packer's concept of legal guilt, see Packer, *The Limits of the Criminal Sanction.*
[799] Stuckenberg, *Who is Presumed Innocent of What by Whom?* p. 311.
[800] *Ibid*., p. 311-312 and Luhmann, *Rechtssoziologie*.
[801] Stuckenberg, *Who is Presumed Innocent of What by Whom?* pp. 311-312.
[802] *Ibid*.

of innocence with the hypothesis of guilt but instead implies that the hypothesis of innocence shall get a good headstart. Therefore, a possible appropriate adjustment to Stuckenberg's concept could be to describe the presumption's task as the maintenance and protection of this headstart through out the procedure, until the hypothesis of guilt has caught up and passed the hypothesis of innocence. Crucial to this definition is that legal actors must not allow the hypothesis of guilt to do so until after the criminal inquiry and proceedings are completed. Thus, the presumption of innocence requires legal actors to patiently hold on to and believe that there is a practically relevant possibility that the hypothesis of innocence will prevail in the end.

Using this conception of the presumption of innocence enables a comparison with confirmation bias primarily on two points. Firstly, confirmation bias in relation to a guilt hypothesis means that the good headstart intended for the hypothesis of innocence is instead given to the hypothesis of guilt, which thereby reverses the priorities of the procedure and promotes the system's sensitivity instead of its specificity. Possible manifestations of this found in the research on confirmation bias are for instance hypothesis-leakage during a suspect line-up, suggestive or leading information in interrogations and that only evidence consistent with the hypothesis that a certain suspect is guilty are secured during crime scene investigations. Secondly, since confirmation bias can encompass any hypotheses, both that of guilt and that of innocence, it can result in behaviors that are both inconsistent (for the guilt hypothesis, in the way described under the first point) and consistent with the procedure that the presumption of innocence aims to protect. If the confirmation bias is in relation to the hypothesis of innocence, that is, legal actors assume that the suspect is innocent and fail to search for or recognize incriminating evidence, their behavior does not contradict the presumption of innocence. This does not mean that a confirmation bias in relation to the hypothesis of innocence is in fact what the presumption of innocence aims to accomplish, since this would eradicate the other purposes of the procedure (such as crime fighting) and thereby be a threat to the rule of law. The presumption does not require legal actors to disregard or systematically downplay incriminating evidence but instead to ensure that they do not prematurely conclude that the hypothesis of guilt has prevailed.

4.4 Free Evaluation of Evidence

After evaluating everything that has occured
in accordance with the dictates of its conscience,
the Court shall determine what has been proven in the case.
(The Code of Judicial Procedure, 35 ch. 1 §)

In general terms, *the principle of free evaluation of evidence*, expressed in The Code of Judicial Procedure, 35 ch. 1 §[803] means that the Courts are not bound by legal rules when deciding cases.[804] Instead the Court is free to assess what evidentiary value the evidence in the case has.[805] However, the Court is not completely free in this process of decision making, but in line with *the principle of immediacy*, their judgment may only be based on the evidence referred to during the main hearing[806] and this evidence shall, as a main rule, have been presented orally, in accordance with the *principle of orality.*[807] Thus, other evidence or circumstances, with exception for those

[803] The principle of free evaluation of evidence is however only one part of the more general principle of free sifting of the evidence (in Swedish: fri bevisprövning), laid down in the paragraph, which also includes the principle of free production of evidence. The principle of free production of evidence means that on a general level, the parties are allowed to refer to all types of evidence, even if the origin of the evidence is uncertain, see The Supreme Court in NJA 1998 p. 204. However, in some cases a Court may potentially dismiss evidence, for instance if it has been obtained through the usage of torture, see The Supreme Court in NJA 2011 p. 638 and NJA 1986 p. 489. This view is consistent with the ECHR's practice in for instance *Jalloh v Germany,* judgment of 11th July 2006, 54810/00. The ECHR has also stated that police provocation resulting in crimes that otherwise (without the provocation) would not have been commited, breaches the defendant's right to a fair trial, see for instance *Teixeira de Castro v Portugal,* judgment of 9th June 1998, 25829/94 and *Vanyan v Russia,* judgment of 13th May 2004, 53203/99. If the crime would have been commited anyway, the provocation is not a breach, see *Stoimenov v Macedonia,* judgment of 5th April 2007, 17995/02. The meaning of the principle has also been discussed by Ekelöf, Edelstam & Heuman, *Rättegång IV*, p. 45 in relation to for instance hearsay evidence, regarding which there is no general prohibition but as Ekelöf points out such evidence would usually not have high evidentiary value. See also Diesen, *Bevisprövning i brottmål*.

[804] The legal sifting of evidence (in Swedish: legal bevisprövning) was abandoned when The Code of Judicial procedure entered into force in 1948, see The Swedish Government Official Reports, SOU 1938:44 p. 377 and The Swedish Government Bill, NJA II 1943 p. 444.

[805] The Swedish Government Official Reports SOU 1938:44 s. 377 f. See also The Swedish Government Bill, NJA II 1943 p. 445.

[806] The principle of immediacy is laid down in The Code of Judicial Procedure 30 ch. 2 §.

[807] The principle of orality is laid down in The Code of Judicial Procedure 46 ch. 5 §. For a review and discussion of different forms of procedural communication in Swedish Courts, with a primary focus on the principle of orality, see Bylander, *The Principle of Orality – A Legal Study of Procedural Communication Forms in Swedish Law*. This is the English titel of Bylander's thesis *Muntlighetsprincipen: en rättsvetenskaplig studie av processuella handläggningsformer i svensk rätt*, which is written in Swedish.

that are considered generally known or concerning the content of Swedish law,[808] shall not be taken into consideration.

The law furthermore states that the Court shall treat a defendant's confession as an evidentiary fact, meaning that it can have different evidentiary values depending on the circumstances in the case and that the Court is in no way required to convict the defendant.[809] Also, according to the legislative history, the evaluation of the evidence may not be based on arbitrariness, the judge's intuition or subjective understanding.[810] Neither may the evaluation be based on an overall impression of the material, but each piece of evidence shall be evaluated separately, promoting so-called evidentiary independence, before an overall judgment is made.[811] Another requirement is that the Court's considerations shall be reported in the reasoning of the verdict.[812]

In addition, the Supreme Court has in a few precedents explained how the Courts shall evaluate the evidence in specific cases or situations. For instance, when a criminal trial concerns partially the same evidence as in a previous trial, an independent evaluation of the evidence in the new trial shall still be made.[813] Also, a conviction shall not be based solemnly on the

[808] This is laid down in The Code of Judicial Procedure 35 ch. 2 §.

[809] This is laid down in The Code of Judicial Procedure 35 ch. 3 § 2 p. In line with the ECHR's practice in *Allan v The United Kingdom*, judgment of 12th November 2002, 48539/99, a confession obtained after an interrogation-like conversation with an undercover police informant is a breach of the defendant's right to a fair trial. In situations where the suspect has been interrogated without being informed about the right to legal counsel, what he or she says cannot be used as evidence against him or her, see Andersson & Hopman, *Rätt till försvarare före polisförhöret. Nya domar från Europadomstolen kräver lagändringar i Sverige.* JT 2010-2011, p. 795. For more on evaluations of confessions, DNA evidence etc. see Diesen, Björkman, Forssman & Jonsson, *Bevis – värdering av erkännande, konfrontationer, DNA och andra enstaka bevis* and Eklycke, *Bokrecension av Björkman, Johanna, Diesen, Christian, Forsman, Fredrik & Jonsson, Peter. Bevis – värdering av erkännande, konfrontationer, DNA och andra enstaka bevis*, pp. 813-819.

[810] The Swedish Government Official Reports SOU 1938:44 s. 377 f. See also The Swedish Government Bill, NJA II 1943 p. 445. See also *Schelin*, *Bevisvärdering av utsagor i brottmål*, p. 22.

[811] The Swedish Government Official Reports SOU 1938:44 s. 377 f. See also The Swedish Government Bill, NJA II 1943 p. 445. See also *Schelin*, *Bevisvärdering av utsagor i brottmål*, p. 22. The legislative history furthermore states that the evaluation shall be conducted in an objective manner and be based on generally known experience (in Swedish: allmänna erfarenhetsatser) and deductive rules (slutledningsregler). No more specific explanations of this are provided.

[812] The Swedish Government Official Reports, SOU 1926:32 p. 255, SOU 1938:44 pp. 377-380, The Swedish Government Bill, NJA II 1943 p. 455.

[813] The Supreme Court, NJA 2015 p. 141.

basis that the investigation does not identify any other possible perpetrator[814] or the prevalance of certain body injuries.[815]

There are several ways in which confirmation bias can produce reasoning that is prohibited during the Court's evaluation of the evidence.[816] For instance, the hypothesis of guilt can be triggered by other circumstances than the ones presented during the main hearing, in contradiction of the principles of immediacy and orality. This is apparent in for instance *Study III* where pretrial detentions resulted in that judges were more likely to convict the defendant, compared to when the defendant had not been detained (all other circumstances were exactly the same). Although the prohibition against arbitrariness as well as intuition and subjective understandings is not elaborated in the legislative history,[817] it is likely to at least partially overlap confirmation bias since the confirmatory reasoning can stem from an intuitive assessment regarding the suspect's guilt. A possible reason for such an intuitive assessment is that multiple charges have been brought against the defendant and judges therefore conclude that the defendant must have a criminal lifestyle.

Furthermore, confirmation bias can result in behaviors that contradict the requirement of evidentiary independence, as highlighted by the many studies suggesting that for instance a defendant's confession makes the remaining evidence appear as more indicative of guilt.[818] This suggests that a confession can become contagious, which is in direct contradiction of the requirement that the evidentiary value of a confession shall be assessed looking at the circumstances in the case. If a confession triggers confirmation bias, it is in fact the other way around since the confession instead influences how the

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[814] The Supreme Court, NJA 1991 p. 56. The Court furthermore stated that, as a general rule, there also has to be evidence supporting and clarifying the essential parts of the course of events which constitutes positive evidence that the defendant committed the crime. The case has been discussed by for instance Lindell, *Ett rättsfall om resning och beviskravet i brottmål*, pp. 431- 441 and Victor, *HD ger vägledning om skakvåld,* p. 699.

[815] Unless there is very strong scientific support that the injuries have been caused by someone acting in a specific criminal manner, see The Supreme Court, NJA 2014 p. 699. The Court furthermore stated that other conceivable explanations of the injuries have to be practically excluded. This judgment has its origin in the so-called Shaken baby cases. For a review see Victor, *HD ger vägledning om skakvåld,* p. 699.

[816] The question of how Courts evaluate evidence in practice has not been systematically evaluated in the Swedish setting. According to the Norweigan researcher Eivind Kolflaath, there is an incongruity between theory and practice when it comes to evaluation of evidence in Norweigan courts, see Kolflaath, *Sannsynlighetsovervekt og kumulering av tvil*, p. 163.

[817] As Lindell points out there is no definite answer as to what intuition actually is but shortened decision paths and heuristics are not unknown in the legal context, which is natural given the many legal decisions that are made every day. Over the years, judges build up a huge bank of knowledge and experience that they use for simplifying decision making processes, see Lindell, *Multi-criteria analysis in legal reasoning,* pp. 80-95.

[818] See for instance Kukucka & Kassin, *Do confessions taint perceptions of handwriting evidence? An empirical test of the the forensic confirmation bias*, pp. 256-270 and Kassin, Dror & Kukucka, *The forensic confirmation bias: problems, perspectives and proposed solutions*, pp. 42-52.

circumstances are perceived. Also, provided the subconscious nature of confirmation bias, the Court is probably not capable of providing a fair description of its considerations in the reasoning of the verdict.

In sum, the present chapter specifies how confirmation bias can result in behaviors that legal principles and rules within the Swedish criminal procedure aim to prevent. The next chapter introduces the empirical studies that examine the prevalence of confirmation bias in situations that are common during Swedish criminal case procedures.

Chapter 5. Empirical Studies on Confirmation Bias in Criminal Cases

5.1 Introduction

The present chapter will first provide an overview of the four empirical studies and how they relate to each other (5.1). This is followed by a theoretical background to the studies (5.2). Then, the empirical studies will be summarized (5.3) following the chronology of the criminal procedure, starting with the police officers (*Study I*), prosecutors (*Study II*), judges (*Study III*) and then appeals as well as petitions for new trials (*Study IV Part I and II*). The studies are also available in full, see *Paper I-V*. The relationship between the empirical studies is illustrated in Figure 2.

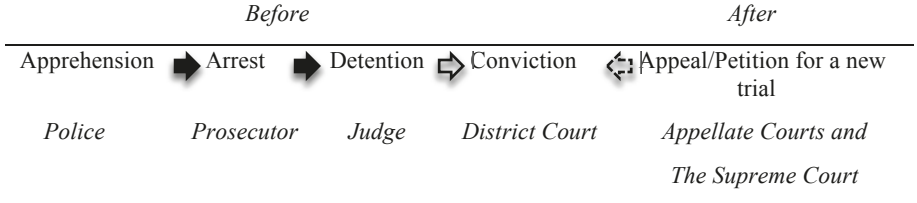

Figure 2. The relationship between apprehension, arrest, detention and conviction as well as legal remedies against a conviction.

Study I-III, that are all experimental studies, examine factors that may trigger confirmation bias during criminal investigations and proceedings. The studies are also designed to test potential debiasing techniques. These three studies all concern the time period *before* a defendant has been convicted by a District Court and *Study III,* regarding judges' decision making, also examines the conviction. As such, they correspond to the first three steps in Figure 2, that is, apprehension (*Study I*), arrest (*Study II*) and detention (*Study III*). These studies are interconnected by the legal provisions in The Code of Judicial Procedure 24 ch. 1-3, 6-7 §§. According to these provisions, a police officer may decide to apprehend a suspect provided that there are reasons for an arrest. Furthermore, a prosecutor may arrest a suspect

provided that there are reasons for a detention. Lastly, a judge may detain a suspect if it is expected that the suspect will be convicted.[819] Hence, the apprehension, arrest and detention are preliminary in relation to one another and all closely related to a hypothesis about guilt. Therefore, the experiments examine whether these decisions trigger confirmation bias in police officers', prosecutors' and judges' processing of subsequent case relevant information.

Study IV (Part I and II) has a different perspective not only because it is an archive study but also because it concerns the time period *after* a District Court has convicted the defendant (the last step in Figure 2). This study evaluates the available legal remedies that can be used to change the conviction into an acquittal, that is, the appeal and the petition for a new trial, according to The Code of Judicial Procedure 51 ch. and 58 ch. 2 §. More specifically, *Study IV* uses observed change and approval rates in the Appellate Courts and The Supreme Court as empirical estimates for a model that assesses the legal system's self correctional ability, that is, its ability to correct wrongful convictions. It also introduces the notion of a *systemic confirmation bias,* which is a metaphorical application of the original theory since it conceptualizes the bias as a characteristic of the legal system, not only the individual legal actors operating within the system. In the study, the systemic confirmation bias refers to situations in which the legal system is insufficiently skeptical towards the guilt hypothesis, which is manifested in an inability to correct wrongful convictions occurring in the lower Courts.

5.2 Theoretical Background to the Empirical Studies

This chapter provides a general theoretical background to the empirical studies and is divided into two main sections regarding 1) coercive measures as triggers of confirmation bias (5.2.1) relating to *Study I-III* and 2) legal safeguards against wrongful conviction (5.2.2) relating to *Study IV (Part I and II)*.

5.2.1 Coercive Measures as Triggers of Confirmation Bias

The term *coercive measures* refers to the use of different kinds of force against a suspect.[820] Swedish law distinguishes between *personal coercive measures*, that is, intrusions against a person such as apprehension, arrest, detention, travel prohibition and body search/examination and *real coercive measures* which encompass measures regarding property, such as seizure, search of premises and secret wire-tapping.[821]

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[819] This is implicit in the law, see for instance Bylund, *Tvångsmedel I*, pp. 88, 181.
[820] The Swedish Government Bill, Prop. 1986/87:112 p. 22.
[821] Own translation of the Swedish terms *"personella tvångsmedel"* and *"reella tvångsmedel",* Swedish Government Bill, NJA II 1989 p. 156. In the Swedish Code of Judi-

Studies I-III focus on the *personal coercive measures.*[822] One reason for this is that ECHR has identified the use of personal coercive measures (more specifically, the detention) as a potential ground for disqualifying a judge from conducting the main hearing due to partiality.[823] Other reasons are that such measures are very commonly occurring in criminal cases[824] and are also often undertaken on repeated occasions during the criminal proceedings, proposing that any bias arising as a result of such measures could be of great practical importance.

5.2.1.1 The Legal Basis for Personal Coercive Measures

The provisional relationship between apprehensions, arrests and detentions is explicit in The Code of Judicial Procedure 24 ch. 1-3, 6-7 §§. Furthermore, these decisions have an implicit relation to a conviction, which is implied by that defendants who are detained but then acquitted have a right to compensation from public funds, according to the *law (1998:714) on compensation after deprivation of liberty and other coercive measures.*[825] Even if the state's responsibility to compensate in such situations is strict and therefore does not require a fault or negligence,[826] it is apparent from the wording of The Code of Judicial Procedure 24 ch. 24 § that detentions followed by acquittals are considered wrongful.[827] As Bylund points out, if legal actors decide to deprive a suspect of his or her liberty without having continued

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cial Procedure, these measures are regulated in chapters 24-28 and involve apprehension, arrest, detention (24), travel prohibition, obligation to report (25), provisional attachment (26), seizure, secret wire-tapping etc. (27), search of premises, body search and body examination (28).

[822] Possibly, *real coercive measures* could also be relevant for studies of confirmation bias but have not been prioriotized in this thesis.

[823] *Hauschildt v Denmark,* judgment of 24th of May 1989, 10486/83.

[824] The National Council for Crime Prevention, Table appendix, *Correctional Treatment 2016*.

[825] Own translation of *lagen (1998:714) om ersättning vid frihetsberövanden och andra tvångsåtgärder.*

[826] The Office of the Chancellor of Justice, Justitiekanslern (JK), decision, 8th of May 2001, registration no. 45-01-41.

[827] In the English translation of the paragraph it says: *"There are seperate provisions concerning the treatment of arrested or detained persons and also compensation from public funds for those wrongfully arrested or detained".* The Swedish wording is somewhat different as it states that *innocent* persons that were arrested or detained shall receive compensation from public funds: *"I fråga om behandlingen av den som är anhållen eller häktad samt om ersättning av allmänna medel åt den som varit oskyldigt anhållen eller häktad finns särskilda bestämmelser."* The English translation of the article is in fact more accurate provided that the right to compensation does not require an actual statement about someone's innocence (as Swedish Courts are not expected to make such statements but only statements relating to the evidence in the case). For compensation it is sufficient that the defendant has been wholly or partially acquitted or that the final classification of a crime is less severe in terms of its range of punishment and therefore would not have justified detention, according to the *law (1998:714) on compensation after deprivation of liberty and other coercive measures*, § 2.

criminal proceedings in mind, their decisions are unwarranted and *"do not fit the system of chapter 24."*[828] Hence, a suspect shall not be detained unless it can be expected that the suspect will be convicted of the crime.[829]

Undeniably, at least some level of suspicion has to be required for deprivations of liberty to be legitimate. However, from a psychological perspective it is reasonable to ask what happens to the mindset of police officers, prosecutors and judges after having made such assessments in relation to a suspect. Decisions to apprehend, arrest and detain suspects require legal actors to hypothesize about the suspect's guilt before he or she has been convicted[830] and also, to a certain extent, assess the suspect's personal characteristics, that is, if the suspect is someone who would flee or otherwise evade legal proceedings,[831] impede the inquiry by removing evidence[832] or

[828] Bylund, *Tvångsmedel I*, p. 181.
[829] *Ibid*., p. 88.
[830] Of course, only the judges (not police officers and prosecutors) actually decide about guilt and when doing so they only have one of four votes, since there are three Lay Judges present in the District Courts, see The Code of Judicial Procedure 1 ch. 3 and 3b §§. It is possible that a judge who decides to detain someone will be more or less convinced that the defendant is guilty, even before the beginning of the main hearing. Furthermore, the judge who begins by explaining the substance of the matter at issue and also begins to vote, giving his or her reasons for holding a certain position, might affect Lay Judges' opinions on the matter and thus the final verdict. That such effects may be present is suggested by research on so-called mere exposure effects, that is, that simple knowledge about other group members' positions by itself can produce group polarization effects, Isenberg, *Group Polarization: A Critical Review and Meta-Analysis*, p. 1142. Furthermore, if the opinion of a judge who has superior legal knowledge and experience is that the defendant is guilty, Lay judges may feel resistance in expressing dissenting opinions. Aspects such as group climate and leadership qualities may affect the willingness to express dissenting opinions, according to research on group psychology. Naturally, it cannot be assumed that Lay Judges always (or even most of the time) feel resistance in expressing dissenting opinions. Conversely, it may be that Lay Judges do express dissenting opinions and manage to convince the law-learned judge to change his or her opinion. This would mean that any preconceived idea in the law-learned judge would not impact the Court's decision about the defendant's guilt. However, in a study by Kolflaath, *Bevisbedømmelse i praksis*, about evaluation of evidence in Norweigan Courts, he found that law-learned judges' tolerance towards dissenting opinions was often low. Given the similar legal traditions, it could be that similar tendencies are present in Swedish Courts. See also Posner, *How Judges Think*, who point to similar tendencies among American judges.
[831] More specifically, that there is a risk that the suspect consciously departs from the place where he lives or stays, with the aim of avoiding legal proceedings or punishment, The Swedish Government Bill, Prop. 1986/87:112 pp. 29, 32 and NJA 1974 p. 614. In general, suspects that do not have a steady residence are considered more inclined to flee than others. Detention on this ground has two functions: 1) to secure evidence by making further interrogations with the suspect possible and 2) to secure execution of a future verdict that involves deprivation of liberty, NJA II 1943 p. 320, Swedish Government Official Reports, SOU 1977:50 p. 77, SOU 1985:27 p. 76 and 129. This ground for detention is only to be used if the suspect's evasion would greatly complicate or make contact with authorities impossible, and therefore not with the sole purpose of minimizing possible administrative difficulties such as serving the suspect a summon or preventing that a hearing has to be cancelled due to the suspect's absence, SOU 1985:27 p. 130 and The Parliamentary Ombudsmen, JO 83/84 p. 56.

continue criminal activity,[833] if set free.[834] It can and has been argued that the differences in standards of proof when depriving a suspect of his or her liberty, *probable cause*[835](or *reasonable suspicion*), and when convicting

[832] If a suspect removes traces after a crime, destroys or hides objects that are significant for the inquiry or objects that have been obtained through criminal activity, it fulfils the criteria of "removing evidence", The Swedish Government Bill, Prop. 1986/87:112 p. 29. The criteria is also met if the suspect unduly influences a person who has case relevant information, such as a witness, to the disadvantage of the inquiry. The single function of detention on this ground is to secure evidence, Ekelöf, Bylund & Edelstam, *Rättegång III,* p. 58. It should therefore not be administered if the suspect has confessed the crime or if evidence has already been secured in any other way, e.g. a search of the suspect's home.[832] However, Ekelöf believes that a risk of the suspect removing evidence can be present even after a confession, if there are others whom are suspected of the crime or related crimes. Detention on this ground should not be used with the exclusive purpose of facilitating collection of evidence in general or to encourage the suspect to confess, Swedish Government Official Reports, SOU 1977:50 p. 78. A suspect who is detained in order to prevent him from removing evidence is usually restricted from contact with the outside world, after the Court's decision, according to The Code of Judicial Procedure, 24 ch. § 5a. Such restrictions can regard for instance phonecalls, sending letters and reading newspapers, according to the *law (1976:371) about the treatment of persons under detention or arrest*, 3, 6, 9-13 §§.

[833] For this criteria to be fulfilled, there are three requirements, see The Swedish Government Bill, Prop. 1986/87:112 pp. 30-31, 60, 71, 86, 100-101 and Ekelöf, Bylund & Edelstam, *Rättegång III*, p. 60. Firstly, the risk of a relapse should regard crimes that are similar to the crime that the prosecutor has referred to during the detention hearing. Secondly, the crime that the suspect is at risk of relapsing into should be such a crime that could lead to detention, that is, offences punishable by imprisonment for one year or more. A risk of offences against others' life health or property (The Penal Code, ch. 3, 4 and 8), should be weighted as particularly important. Thirdly, the prognosis regarding relapses should be limited to the time from detention to verdict. This means that the risk should not appear too distant in terms of time but instead the suspect should be in a phase of ongoing criminal activity. The function of detention on this ground is mainly that of criminal policy, to protect those who may become victims of the suspect's continued criminal activity, but also to prevent crime on an individual basis. The possibility to detain someone in order to prevent relapses in crime was according to the legislator particularly important to avoid e.g. repated burglaries. A burglary offender could relapse into crime while waiting to be sentenced, which should not be tolerated. Like Ekelöf, Bylund & Edelstam, *Rättegång III*, pp. 59-60, points out, the legislator seems to have used detention as a replacement for imprisonment, which is problematic considering that the suspect has not yet been convicted.

[834] Furthermore, for a police officer to apprehend a suspect it is required that the situation is urgent, according to The Code of Judicial Procedure 24 ch. 7 §. According to The Parliamentary Ombudsmen, JO 2003/04 p. 67 and JO decisions of 30th of January 2003, registration no. 194-2001 and of 16th of May, registration no. 2318-2002, the situation is not urgent if it allows the police officer time to communicate with the prosecutor. If a prosecutor in that communication with the police officer decides that the suspect shall be deprived of his or her liberty, the decision is formally an arrest, not an apprehension, see The Parliamentary Ombudsmen, JO 1978/79 pp. 58-59. However, it has been suggested that the requirement of urgency should be removed, see The Swedish Government Official Reports, SOU 2005:84.

[835] According to the legislator, it is not possible to describe more closely what is meant by probable cause in a fixed rule, Processlagsberedningen, NJA II 1943 p. 320. However, the suspicions should appear justified when assessing the circumstances objectively. The Supreme Court stated in NJA 1995 p. 3 that there was probable cause for a suspect's guilt concerning smuggling of goods, despite uncertainty regarding both the course of events and the suspect's role in such events. By comparison, in RH 1995:76, The Court of Appeal did not

someone *beyond all reasonable doubt*, result in that assessments prior to a detention are inherently different than assessments prior to a conviction.[836] If this is correct, a judge would not be biased by a previous detention when deciding about guilt, since the judge could separate these two assessments. This notion is understandable from a legal perspective, considering that the law not only makes frequent distinctions between different standards of proof but also places great trust in that the standards do have different meanings to the legal actors who apply them. For instance, the BARD-standard is often described as a high standard of proof[837] that functions as a safe guard since insufficient evidence will result in an acquittal, even if other standards of proof (for instance that there were *sufficient reasons* to prosecute[838]) were fulfilled.[839] If the standards of proof were not any different, this legal safeguard, as well as other similar legal safeguards, would not have their intended effect.

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consider probable cause to be fulfilled when the prosecutor had only referred to an anonymous witness who had not been interrogated during the preliminary investigation. In Ekelöf's view, probable cause requires stronger proof against the suspect than what is required for e.g. opening a preliminary investigation (*cause to believe* that a crime falling within public prosecution has been committed*),* to question a suspect for more than 6 hours (*can be suspected* and detention pending further investigation of an offence (*reasonable suspicions*), Ekelöf, Bylund & Edelstam, *Rättegång III*, p. 55 (The Code of Judicial Procedure, 23 ch. 1 and 9 §§, 24 ch. 3 §). However, probable cause does not require as strong evidence as what is required for prosecution (*sufficient reason*) or to convict the defendant for an offence (*beyond all reasonable doubt*), Ekelöf, Bylund & Edelstam, *Rättegång III*, p. 55 and Nordh, *Praktisk process IV*, p. 49 (The Code of Judicial Procedure, 23 ch. 2 § and The Supreme Court, NJA 1980 p. 725).

[836] When discussing the implications of the ECHR's verdict in *Hauschildt v. Denmark*, the Swedish legislator concludes that judges who have previously detained suspects are not incompetent to also decide about guilt since the standard of proof required for a detention is lower than the standard of proof for a conviction. Furthermore, deciding whether the suspicions against the suspect are well founded and deciding about a defendant's guilt are inherently different assessments. However, if there are specific circumstances in individual cases indicating that a judge who has detained is partial, the defendant can of course make a claim regarding the judge's non competence, see the Swedish Government Bill, Prop. 1992/93:25 pp. 13-17. In its referral response, the Faculty of Law at Uppsala University objected to the legislator's argument as it stated that the main concern is what the judge is *de facto* convinced about, that is, a judge may be convinced that the defendant is guilty, even if that is not explicit in the detention decision. In such situations, the judge probably does not want to repudiate his or her own detention decision by later on acquitting the defendant, see the Swedish Government Bill, Prop. 1992/93:25 p. 16.

[837] See for instance The Supreme Court in NJA 1986:470, NJA 1990:93 and NJA 1993:764, L. Heuman, *Bevisbörda och beviskrav i tvistemål*, p. 66 and Ekelöf, Edelstam & Heuman, *Rättegång IV*, p. 82.

[838] According to The Code of Judicial Procedure, 20 ch. 6 § and 23 ch. 2 §.

[839] See for instance Ekelöf, Edelstam & Heuman, *Rättegång IV*, pp. 150-153 and Nowak, *Oskyldighetspresumtionen*, p. 33.

In fact, some empirical studies suggest that formal standards of proof have no or very limited influence on decision making.[840] This would imply that a legal actor's view regarding a suspect's guilt is not necessarily shaped by the applicable standard of proof but other factors, such as the experienced level of certainty or uncertainty regarding guilt. In line with the theory of confirmation bias, a previous hypothesis regarding guilt is likely to result in an experience of greater certainty regarding guilt. It is possible that such a hypothesis is particularly strong if a legal actor has previously assessed that there is a risk[841] that the suspect would continue his or her criminal activity if set free. By definition, it is impossible to continue criminal activity if it has not already been started, and if it has been started, then the suspect must necessarily be guilty. The risk of having such a hypothesis in mind when processing subsequent case relevant information is well documented.[842] Also, it is unknown whether hypothesis formation and maintenance are more likely following a deprivation of liberty based on probable cause than the lower standard of proof reasonable suspicion.[843] However, statistics regard-

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[840] Glöckner & Engel, *Can we trust intuitive jurors? Standards of proof and the probative value of evidence in coherence based reasoning*, pp. 230-255 and Levine, *Do standards of proof affect decision making in child protection investigations?* pp. 341-347.

[841] Apart from probable cause, detention also requires that atleast one out of three special grounds for detention is at hand, that is, there has to be a *substantial* risk that the suspect flees, removes evidence or continues his or her criminal activity, NJA 1979 p. 425. Risk is a low standard of proof. According to Ekelöf, even the lowest standard of proof that is present in the Code of Judicial Procedure, *Rättegång III*, p. 56. Risk was approved as a new standard of proof for detention, replacing *can reasonably be expected* for fleeing and removing evidence and *reason to believe* that the suspect will continue his or her criminal activity, The Swedish Government Bill, Prop. 1986/87:112 p. 3. One of the legislator's aims of using risk as the standard of proof was to emphasize that detention should be used to interrupt ongoing series of crime and to prevent relapses into crime in general, The Swedish Government Bill, Prop. 1986/87:112 pp.71-72. According to for instance Mannerfelt, Member of The Council on Legislation, The Swedish Government Bill, Prop. 1986/87:112 p. 88, risk is a lower standard of proof than the standards it replaced and risk does not seem to demand any probabilistic preponderance that the suspect will flee, remove evidence or relapse into criminal activity. Another point of concern was the possibility that risk would be used in a careless way, since it allows for arguments like "there always is a certain risk.." that the suspect e.g. removes evidence, see the reasoning of the members of The Council on Legislation, The Swedish Government Bill, Prop. 1986/87:112 pp. 86-88.When deciding about the risk of the suspect fleeing, removing evidence or relapsing into crime, judges should consider aspects such as the nature of the offence, the suspect's circumstances and other factors. More specifically, this means considering the seriousness of the crime as well as other circumstances of the crime, the suspect's conditions regarding housing, work, family and whether the suspect has a criminal record, The Swedish Government Bill, Prop. 1986/87:112 pp. 30, 33.

[842] This research is outlined in detail in Chapter 3 but to mention a few studies: Ask & Granhag, *Motivational Bias in Criminal Investigators' Judgments Witness Reliability*, pp. 561-591, Eagly, Chen, Chaiken & Shaw-Barnes, *The Impact of Attitudes on Memory: An Affair to Remember*, pp. 64-89 and Fahsing & Ask, *Decision Making and Decisional Tipping Points in Homicide Investigations: An Interview Study of British and Norweigan Detectives*, pp. 155-165.

[843] The possibility to detain someone based on *reasonable suspicion* is regulated in The Code of Judicial Procedure 24 ch. 3 §. If the strength of the suspicions has not reached *probable*

ing the use of coercive measures in general point to a strong positive relationship between deprivations of liberty and convictions, especially when it comes to the detention, as non-conviction rates[844] (following detentions) as low as 2 % have been noted in the past.[845] In addition, there is more recent statistics available in relation to the arrest and the detention (but not conviction). For instance, looking at the 4-year period 2010-2013, prosecutors applied for a detention order considering 38.31 % of all arrested individuals and 84.76 % of these applications were approved by the Courts.[846]

As Bylund has pointed out with regard to similar statistics from previous years, it could be that the arrest is in practice used in an unauthorized way, that is, without a future detention in mind.[847] This is one possible explanation of the relatively low percentage of applications for detention orders. Another related possible explanation is that arrests are usually made at a very early stage when the inquiry is still associated with considerable insecurities. Therefore prosecutors might not feel obligated to apply for a detention order just because the suspect has been arrested, irrespective of the legal requirement that there has to be ground for detention in order to arrest a suspect. The higher percentage of approved applications for detention orders suggests that "something happens" once the prosecutor has made such an application. Presumably, the focus and results of the inquiry during the three days that the prosecutor has at his or her disposal before deciding whether to apply for a detention order,[848] are important for the outcome of the case. During these three days the prosecutor either decides to apply for a detention order and the probability of the suspect being detained is high or no such applica-

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cause within one week, detention based on this provision shall be rescinded. Also, detention on this basis is only to be used if it is of extraordinarily importance that the suspect is detained pending further investigation of the offence, see The Swedish Government Bill, Prop. 1986/87:112 p. 104. As Andersson points out, this means that a prognosis regarding the possibilities to reach probable cause within one week has to be made, see Andersson, *Skälig misstanke*, p. 59. Also, the wording of the law "extraordinarily importance" means that that there should be reasons to anticipate that probable cause will be reached within a short time period, see The Swedish Government Bill, Prop. 1986/87:112 p. 48. In the view of the author of this thesis, this regulation takes on a similar provisional nature as deprivations of liberty based on other standards of proof where a decision maker has to anticipate a certain outcome or result and as such, hypothesis formation is likely to occur.

[844] This refers to situations in which the detained suspects was not convicted, either because the charges were dropped by the prosecutor or the Court acquitted. It therefore encompasses more than formal Court acquittals, see The Swedish National Courts Administration, *DV-rapport 1995:2* p. 77 and *DV-rapport 1989:9* pp. 17-25.

[845] In 1994, only 2 % of all detained suspects were *not* convicted, because the charges were either dropped by the prosecutor or dismissed by the Court, The Swedish National Courts Administration, *DV-rapport 1995:2* p. 77 and *DV-rapport 1989:9* pp. 17-25. This would suggest that there is a strong positive correlation between a detention and a conviction, althouh more recent statistics is unavailable in this regard.

[846] The National Council for Crime Prevention, *Arrests, application for detention orders and detainees*, 1965-2013.

[847] Bylund, *Tvångsmedel I*, p. 191.

[848] According to The Code of Judicial Procedure 24 ch. 12 §.

tion is filed and the suspect has to be released. Naturally, also released suspects can be charged and their guilt tried by the Court. However, if judges' assessments of a suspect's guilt are affected by whether the suspect has been detained or not, the prosecutors' application for a detention order can in fact be a very important step towards a conviction. One indication of such an effect comes from statistics from previous years. In 1989, only 3 % of the suspects that were detained up until the sentence was delivered were acquitted by the Court.[849] Thus, 97 % of those detained suspects were convicted.

Looking only at this statistics it is impossible to tell whether a decision to detain a suspect makes judges' processing of evidence more hypothesis-consistent, compared to when no detention decision has been made. The statistics only point to a strong positive correlation, not a causal relationship, between the detention decision and the decision to convict a suspect. Thus, there may be confounding variables, such as the available evidence. If the available evidence strongly suggests that a suspect is guilty, it will fulfill the requirements of probable cause for detention and beyond all reasonable doubt for a conviction, even if the judges' processing of evidence is not biased. By contrast, in cases where the available evidence is weaker, neither the requirements for detention nor a conviction are fulfilled. Thus, the correlation might be illusory. In order to rule out this possibility, the questions of detention and guilt have to be studied experimentally, since it is possible to control for confounding variables with such a design.

5.2.1.2 Justification and Commitment

Since every citizen is protected from unwarranted deprivations of liberty by the Swedish constitution,[850] coercive measures are to be used restrictively[851]

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[849] The Swedish National Courts Administration, DV-rapport 1989 p. 21, 26 and 54.

[850] See The Instrument of Government, 2 ch. 8 § according to which: *"Every citizen shall be protected in his relations with the public institutions against deprivation of personal liberty. He shall also in other respects be guaranteed freedom of movement within the Realm and freedom to depart the Realm."*

[851] As is clear from The Instrument of Government 1 ch. 1 § and 2 ch., 20-21 §§, the personal liberty and freedom of movement may only be restricted by other statutes (*the principle of legality*) and may be imposed only to satisfy a purpose acceptable in a democratic society (*the principle of acceptable purpose*). Furthermore, the restriction may never go beyond what is necessary having regard to the purpose which occasioned it (*the principle of necessity*) and it may only be used if the reason for the coercive measure outweighs the intrusion or other detriment to the suspect or some other opposing interest (*the principle of proportionality*), in accordance with the Police law 8 § and The Code of Judicial Procedure 28 ch. 14 §, 24 ch. 1 §, 25 ch. 1 §, 26 ch. 1 §, 27 ch. 1 §, 28 ch., 1 §. Apprehensions, arrests and detentions are allowed in order to promote effective investigation and opposition of crime, Bylund, *Rättegång III,* p. 38. The police and prosecutors' possibility to use coercive measures against a suspect reflects the inequal relationship between the parties in a criminal case. In order to prevent the inquisitorial elements from becoming too dominant, the regulation of coercive measures requires that the interest of an effective investigation be balanced against the suspect's rights to be free from torture, inhuman or degrading treatment (article 3 ECHR), liberty

and legal actors are therefore required to provide proper legal justification for undertaking such measures. Such justification entails the seriousness of the offence, the level of suspicion and that no other, less interfering, measure would be sufficient.

It seems reasonable to ask whether such a justification process increases legal actors' commitment to their decisions and if that is the case, whether such commitment might also increase the risk of confirmation bias. This notion is supported by Hart and colleagues' meta-analys in which confirmation bias was larger for samples with high commitment to an attitude, belief or behavior.[852] The definition of committment varied across the included studies but some examples of high commitment conditions were that subjects chose a view freely, had to explain it publicly in a written essay or in other ways had to, or anticipated having to, justify their views.[853]

The outlined high commitment conditions are similar to the conditions in criminal case procedures. For instance, legal actors usually have a relatively extensive discretion regarding decisions to use coercion, even if the legal frames provide some boundaries. Also, as explained, the decisions have to be justified, sometimes both orally and in writing and in some situations, the expectations on the provided justification can be particularly high, for instance if a defense counsel is present and starts questioning the decision. In fact, arrested and detained suspects' rights in this regard were extended by a provision that came into effect on the 1st of June 2014.[854] According to this provision, a suspect shall not only be informed about the classification of the crime of which he or she is suspected and the legal ground for the decision but also the evidentiary basis for the decision.[855] Hence the importance of providing proper justification has been emphasized in many ways.[856]

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and security (article 5 ECHR), respect for private and family life (article 8 ECHR), Bylund, *Rättegång III*, p. 38, *Tvångsmedel I*, p. 59-61. Also, one way to accommodate the principle of proportionality is that the Court, instead of detention, decides that the suspect shall be surveilled in his or her home, in accordance with The Code of Judicial Procedure 24 ch. 4 § and this provision has applications when there are reasons (related to the suspect's personal circumstances) to spare the suspect the strain associated with a detention, see Andersson, *Skälig misstanke*, p. 58 and Lindberg, *Straffprocessuella tvångsmedel – när och hur får de användas*, p. 274.

[852] Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 555-588.

[853] *Ibid*., p. 558.

[854] See The Code of Judicial Procedure, 24 ch. 9a § and *The Decree on Preliminary Investigations* 12 a §. Through the provisions, article 7.1 in The European Parliament and Council's Directive 2012/13/EU on the right to information in criminal proceedings, of 22 May 2012, was incorporated.

[855] Furthermore, the right to insight into the investigative material is unconditional and thus not any longer limited by what is possible to communicate without impediment to the investigation (The Code of Judicial Procedure, ch. 23 ch. 18 §, The Public Access to Information and Secrecy Act 2009:400, 10 ch. 3 §), The Swedish Government Bill, Prop. 2013/14:157 p. 23. An arrested suspect has a right to insight without delay after the arrest, at the latest when he or she is taken into custody, which is an earlier point in time than the prosecution which

Thus, the described circumstances are likely to heighten legal actors' commitment to their decisions and thereby also increase their *defense motivation*, that is, a desire to defend existing attitudes, beliefs and behaviors.[857] That people are motivated to defend their attitudes, decisions, behaviors etc. is a classic assumption in selective exposure research.[858] This motivation can express itself in that supportive information is gathered whereas unsupportive information is neglected, which enables avoidance of the unpleasant state of postdecisional conflict known as cognitive dissonance.[859] Defense motivation is different from *accuracy motivation*, that is, a desire to form accurate appraisals of stimuli.[860] This emphasizes that understanding how

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previously was the starting point for the suspect's right to full insight (The Code of Judicial Procedure, 24 ch. 21 §), The Swedish Government Bill, Prop. 2013/14:157 pp. 22-23, The Parliamentary Ombudsmen, *Information om rättigheter och verkställighetens innebörd till intagna i polisarrest*, Dnr 2572-2013, p. 10. However, since the investigation can still be at a premature stage when the suspect is arrested, the prosecutor may deny the suspect insight if further investigation into a matter is required, provided that there is other material that is sufficient for the arrest, The Swedish Government Bill, Prop. 2013/14:157 p. 24.

[856] Apart from the provision that came into effect in 2014, the need to provide such justification in a state governed by law has also been put forward by for instance The Swedish Parliamentary Ombudsmen, *Information om rättigheter och verkställighetens innebörd till intagna i polisarrest*, Dnr 2572-2013, p. 1-12, The European Committee for the Prevention of Torture (CPT) and The United Nation's Subcommittee on Prevention of Torture, (SPT), CPT's 12th General Report CPT/Inf (2002) 15 and CPT/Inf (2009) 34, SPT CAT/OP/SWE/1. Ultimately, the aim of the right to information is to promote another right, namely that everyone who is deprived of his or her liberty by arrest or detention shall be entitled to take proceedings by which the lawfulness of such a measure is decided, in accordance with article 5.4 ECHR.

[857] Chaiken, Wood & Eagly, *Principles of persuasion*, pp. 361-399, Eagly, Chen, Chaiken & Shaw-Barnes, *The impact of attitudes on memory: An affair to remember*, pp. 64-89, Johnson & Eagly, *Effects of involvement on persuasion: A meta-analysis*, pp. 375-384, Prislin & Wood, *Social influence in attitudes and attitude change,* pp. 671-706 and Wyer & Albarracín, *The origins and structure of beliefs and goals*, pp. 273-322.

[858] Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 556, Festinger, *A theory of cognitive dissonance*, Festinger, *Conflict, decision, and dissonance*.

[859] According to dissonance theory, after people commit to for instance a decision, they gather supportive information and neglect unsupportive information to avoid or eliminate the unpleasant state of postdecisional conflict known as cognitive dissonance, Festinger, *A theory of cognitive dissonance*, Festinger, *Conflict, decision, and dissonance* and Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 556. Selective exposure to information enables people to defend their decisions by avoiding information likely to challenge them and seeking information likely to support them. Personal commitment to a decision is presumed to increase defense motivation because of the greater discomfort produced by holding an incorrect view on an important issue.

[860] Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 557. Acccording to the meta-analysis by Hart and colleagues, accuracy motivation can also help explain selective exposure to information but this effect is smaller than that of defense motivation. In other words, the desire to defend a decision is a better explanation of selective exposure to information than the desire to be accurate.

people strive to *feel* validated rather than to *be* correct is critical in explaining how information on an issue is selected.[861] The potential implications of these findings for the legal system should be considered and examined.

5.2.1.3 Time Pressure

> *An application for a detention order shall be made without delay and not later than 12 o'clock on the third day after the arrest order.*
>
> *If the application for a detention order is not submitted within the prescribed time limits, the prosecutor shall rescind the arrest order immediately.*
>
> (The Code of Judicial Procedure, 24 ch. 12 §)

Apart from that legal actors generally carry a heavy workload, the law prescribes several time frames as well as general efficiency demands when it comes to apprehensions, arrests and detentions.[862] The effects of time pressure on human decision making is a well-researched topic and in the present context, mainly three of these effects are relevant. Firstly, time pressure seems to increase selectivity in information processing, so-called filtering.[863] As a result, the individual focuses on information that appears to be the most relevant whereas information that is perceived as less relevant is often neglected. Secondly, time pressure causes decreased flexibility, which deteriorates the ability to generate alternative hypotheses and strategies.[864] Thirdly, people are more likely to rely on their previous views and stereotypes and less likely to assimilate new information when working under time pressure.[865] All of these effects limit the ability to reason independently of previous ideas and therefore increase the risk of confirmation bias.[866]

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[861] Hart, Albarracin, Eagly, Brechan, Lindberg & Merrill, *Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information*, p. 555.

[862] For other examples of time frames and efficiency demands see The Code of Judicial procedure 24 ch. 8, 13 and16 §§ as well as Article 5 in the ECHR. Also, assessments of whether coercion is necessary and proportionate shall be made continuously through out the time the suspect is deprived of his or her liberty, see Report from The Swedish Prosecution Authority, *Häktningstider och restriktioner,* p. 16. The longer time the suspect has been deprived of liberty, the more important are the principles of necessity and proportionality.

[863] Edland & Svensson, *Judgement and decision making under time pressure,* pp. 27-40, Pieters, Warlop & Hartog, *The effect of time pressure and task motivation on visual attention to brands*, pp. 281-287. See also Tsujii & Watanabe, *Neural correlates of belief-bias reasoning under time pressure: A near-infrared spectroscopy study*, pp. 1320-1326.

[864] Bruner & Austin, *A study of thinking,* pp. 1091-1097.

[865] Bodenhausen, *Stereotypes as judgmental heuristics: Evidence of circadian variations in discrimination*, pp. 319-322, Hulland & Kleinmuntz, *Factors influencing the use of internal summary evaluations versus external information in choice*, pp. 79-102, Kaplan, Wanshula & Zanna, *Time pressure and information integration in social judgement: The effect of need for*

The importance of time pressure has also been studied more specifically within the criminal procedure. Interview – and experimental studies of Swedish, Norwegian and British police officers indicate that time pressure undermines investigators' ability to process case relevant information in an objective manner.[867] These results might have important implications for the way that investigators search for and interpret evidence when a suspect is deprived of his or her liberty and a decision has to be made promptly regarding whether there is sufficient evidence to continue the deprivation of liberty or if the suspect has to be set free. Due to the legal deadlines concerning coercive measures and the difficulty or impossibility of carrying out exhaustive investigation within those time frames,[868] legal actors often have to make decisions based on insufficient and/or ambiguous information. A prediction from dissonance theory is that legal actors in those situations prefer supportive over unsupportive information, in order to avoid cognitive discomfort due to a postdecisional conflict.[869]

5.2.2 Legal Safeguards against Wrongful Convictions

The Code of Judicial Procedure contains several rules that have one aim in common, namely to promote materially correct verdicts.[870] Many of these are aimed at the pretrial or trial phase,[871] but through the legal possibilities to appeal or petition for a new trial, the legislator has acknowledged that the safeguards in the previous phases do not provide a foolproof protection against errors.[872] When it comes to wrongful convictions, the possibility of

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structure, pp. 255-267, Tesser & Conlee*, Some effects of time and thought on attitude polarization*, pp. 262-270.

[866] Ask & Granhag, *Psykologiska påverkansfaktorer vid utredningsarbete*, p. 166.

[867] Ask & Granhag, *Motivational Bias in Criminal Investigators' Judgments of Witness Reliability*, pp. 561-591, Fahsing & Ask, *Decision Making and Decisional Tipping Points in Homicide Investigations: An Interview Study of British and Norweigan Detectives,* pp. 155-165.

[868] In fact, this difficulty is recognized by the possibility to detain a suspect on reasonable suspicion provided that it is of extraordinarily importance that he be detained pending further investigation of the offence, according to The Code of Judicial Procedure 24 ch. 3 §. Hence, if there is a high probability that continued investigation will result in more certainty regarding the suspicions very soon, the suspect can still be detained, The Swedish Government Bill, Prop. 1986/87:112 p. 48.

[869] Festinger, *A theory of cognitive dissonance* and Festinger, *Conflict, decision, and dissonance.*

[870] Swedish Government Official Reports, SOU 1926:32 p. 232, Cars, *Om resning i rättegångsmål*, p. 173 and Welamson & Munck, *Rättegång VI: Processen i hovrätt och Högsta domstolen*, p. 189.

[871] Some examples are free production and evaluation of evidence expressed in The Code of Judicial Procedure 35 ch. 1 § and standards of proof such as beyond reasonable doubt laid down by The Supreme Court in NJA 1980 p. 725. For more on this see Klami, Marklund, Rahikainen & Sorvettula, *Ett rationellt beviskrav*, SvJT 1988, 589.

[872] Swedish Government Official Reports, SOU 1926:32 p. 232, Cars, *Om resning i rättegångsmål*, p. 173 and Welamson & Munck, *Rättegång VI: Processen i hovrätt och Högsta domstolen*, p. 189. For a more general discussion on the topic of wrongful convictions and

an appeal is regulated in The Code of Judical Procedure, 51 ch. and petitions for new trials are regulated in The Code of Judicial Procedure, 58 ch.

5.2.2.1 The Appeal as a Legal Safeguard

The effectiveness of the appeal as a legal safeguard is dependent on several factors. Firstly, it is not self-evident that all wrongfully convicted appeal. Secondly, there is no absolute right to be granted leave to appeal. Thirdly, the effectiveness is also dependent on whether the Appellate Courts' verdicts are correct, that is, to what extent appealed wrongful convictions are overturned. These factors are discussed in more detail below.

Apart from whether an individual has been wrongfully convicted, lots of other factors may affect the decision to appeal or not, for instance the possibility of receiving legal aid.[873] The convicted might also do a cost-benefit evaluation, that is, relating what he or she has to gain from an appeal to the costs in terms of time, money and possibly the mental strain associated with an appeal. For instance, in multiple offence cases the defendant might be "content" with the sentence, even if he or she has been wrongfully convicted on one of the charges.[874] Also, in accordance with the prohibition against *reformatio in pejus* expressed in The Code of Judical Procedure 51 ch. 25 §, the Court of Appeal may not change the sentence to the defendant's disadvantage, when only the defendant appeals or when the prosecutor appeals to the defendant's advantage.[875] The main purpose of the prohibition against *reformatio in pejus* is that a defendant who has a legitimate reason to appeal shall not refrain from appealing due to fear of getting a worse sentence than he or she got in the District Court.[876] However, when a defendant has appealed, the possibility of a so-called *cross-appeal*[877] is opened for the prosecutor. If the prosecutor uses this opportunity, then also a change to the defendant's disadvantage is possible. Although prosecutors have a legal possibility of cross-appealing, it seems inappropriate that the prosecutor's decision to appeal or not is regularly made dependent on the defendant's standpoint.[878] Such a course of action would in practice have the same effect as if there were no prohibition against *reformatio in pejus*.[879] It is unknown

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safeguards against them see for instance Batts, deLone & Stephens, *Policing and wrongful convictions*, pp. 1-31 and Findley, *Tunnel Vision, Conviction of the Innocent: Lessons from Psychological Research*, p. 1.

[873] Klami & Hatakka, *Wrongful convictions*, p. 49.

[874] *Ibid*.

[875] More specifically the court may not change the sentence to a more severe or interfering one, Welamson & Munck, *Processen i hovrätt och Högsta domstolen,* pp. 59 and 62.

[876] *Ibid*., p. 63.

[877] *Ibid*. *Anslutningsklagan* in Swedish. This means that one party makes the appeal dependent on whether the other party appeals.

[878] *Ibid*., p. 64.

[879] *Ibid.,* p. 63.

to what extent prosecutors cross-appeal in reality and therefore also difficult to assess what importance that risk has when the defense considers an appeal.

Even when the defendant is willing to appeal, the material law might prevent it. Although the main rule is that a leave to appeal is not required, there are exceptions for situations in which the defendant has been sentenced to a fine or was acquitted of liability for an offence in respect of which a more severe penalty than imprisonment for six months is not prescribed, in accordance with The Code of Judicial Procedure, 49 ch. 13 §. Since defendants cannot appeal acquittals,[880] it is mainly when the sentence is a fine (the first exception) that this rule is relevant for the defendant.[881] Between 2010 and 2014 the Courts of Appeal together granted leaves to appeal to 34.84 % (3339 out of 9585) of all the petitions.[882]

When a defendant is both willing and able to obtain a reassessment by the Court of Appeal, the appeal's self-correctional ability is dependent on the change rates, that is, to what extent the Courts of Appeal change the lower Courts' judgements. According to official statistics concerning the time period 2010-2014, the Courts of Appeal changed 36.30 % (3317 out of 9136) of all appealed criminal cases in some way, where a reassessment of guilt is only one possibility.[883] Although such a general change rate is informative regarding the appeal's overall potential as a self-corrector, it is less informative about the ability to self-correct wrongful convictions more specifically. Thus, *Study IV* examines the change rate for appeals that are aimed at acquittals. Although this is not necessarily the same change rate as for wrongful convictions,[884] it provides a starting point for an informed estimation.[885]

Also, the Appellate Courts' judgements do not necessarily coincide with the truth about a defendant's guilt or innocence. Regardless of whether and what change the Appellate Court makes, the truth takes precedence. As Klami and Hatakka put it: *"The problem is, however, always the same. Who knows? Heaven knows. A (re)trialcourt is not a reliable source."*[886] The emerging question is what, in the proceedings in The Court of Appeals, can guarantee or at least improve the chances of getting it right in comparison

[880] Since acquittals are not considered disadvantageous to the defendant.
[881] However, a prosecutor may of course suspect that the District Court's acquittal (the second exception) is a miss and therefore needs a leave to appeal for a review.
[882] Statistics from The Swedish National Courts Administration, extract from Vera, *Report No. 601*.
[883] Statistics from The Swedish National Courts Administration, *Courts statistics 2014,* Table 1.10 *Ändringsfrekvensen i tvistemål och brottmål 2014*, p. 18.
[884] This is because the change rate for appeals aimed at acquittals contain two subcategories, 1) wrongful acquittals (the defendant is guilty) and 2) correct acquittals (the defendant is innocent) and more specific change rates for these subcategories are unobtainable.
[885] To take the uncertainty into account, *Study IV* also entails a robustness analysis in which the consequences of a range of different change rates in the Appellate Courts are examined.
[886] Klami & Hatakka*, Wrongful convictions,* p. 52.

with the District Courts. Often, the evidentiary basis for making decisions is the same in both Courts.[887] Even though the Courts of Appeal are allowed to carry out a *de novo* evaluation of evidence,[888] it is not certain that they are better capable of evaluating it than the District Courts. For instance, it might seem reasonable to believe that the Courts of Appeal with a higher number of legally trained judges compared with the District Courts would be better capable of assessing whether a statement is true or false. However, this notion is challenged by experimental research indicating that both experts and laymen make on average 45-60 % correct assessments when deciding whether someone is lying or telling the truth.[889] The only difference between experts and laymen seems to be that experts are more confident (but not more correct) in their assessments.[890] The 45-60 % correct assessments are low frequencies considering that one has a 50 % chance of getting it right by just guessing. The ability to determine the veracity of a statement is related to the self-correctional ability since many criminal cases are wholly or partially decided on the basis of whether the defendant's or the plaintiff's statement appear more reliable to the Court. Some of the clearest examples are alleged *gross violations of a woman's integrity*, claimed to have taken place in the home without any witnesses[891] or alleged *rapes* where only the defendant and the injured party were present at the time of the claimed incident.

5.2.2.2 The New Trial as a Legal Safeguard

In the legal as well as official debate regarding the new trial as a legal safeguard, it is often pointed out that being granted a new trial is very difficult partly due to the strict legal requirements and partly due to strict Court practice (low approval rates).[892] Also, there are difficulties for private individuals

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[887] *Study IV (Part I)* contains statistics regarding how often appeals aimed at acquittals refer to new evidence.

[888] Klami & Hatakka*, Wrongful convictions,* p. 48.

[889] Bond & DePaulo, *Accuracy of deception judgments*, pp. 214-234, DePaulo, Lindsay, Malone, Muhlenbruck, Charlton & Cooper, *Cues to deception*, pp. 74-118, Köhnken, *Training police officers to detect deceptive eyewitness statements. Does it work?* pp. 1-17, Nysse-Carris, Bottoms & Salerno, *Experts' and novices' abilities to detect children's high stakes lie of omission*, pp. 76-98, Vrij, *Detecting lies and deceit: Pitfalls and opportunities* and Strömwall, Granhag & Hartwig, *Practitioners' beliefs about deception*, pp. 229-250.

[890] Köhnken, *Training police officers to detect deceptive eyewitness statements. Does it work?* pp. 1-17.

[891] Even when there are witnesses, assessments regarding the accuracy of the witness statement have to be made and the problem is therefore not in any way resolved. Importantly, the accuracy of a witness statement is not only decided by whether the witness is telling the truth or lying but also whether the witness misremembers or makes other types of unintentional errors.

[892] See for instance Sandgren*,"Klagoinstans för felaktiga domar – här har 80 procent av de nya rättegångarna lett till frikännande",* Sandgren, Dagens Juridik, *RÅ blandar bort korten istället för att lägga dem på bordet – hur är det med statistiken för resning?"*, Svärdkrona,

without any legal training to design petitions capable of persuading judges that they are wrongfully convicted, especially if they are incarcerated. However, some critical voices interpose that being granted a new trial is not supposed to be easy.[893] This argument is aligned with the so-called *principle of immobility,*[894] meaning that a legally binding judgment really is binding.[895] The main purpose of the principle of immobility in criminal cases is to enable trust in that a verdict is truly final so that the parties can adjust their lives in accordance with the verdict.[896] A person who has been acquitted shall not have to live with a ceaseless concern that the case will be reopened.[897] It is important that, especially an acquittal, is given authority and that the social harm followed by a prosecution is neutralized as far as possible.[898] When it comes to convictions, it is crucial that the verdict can be executed.[899] Naturally, this means that also wrongful convictions become legally binding.

However, the principle of immobility is not without exceptions.[900] As is usually the case with legal issues, there are opposing interests, which also have to be taken into account. In this case, the opposing interest is that of getting a materially correct verdict, the so-called *principle of truth*.[901] The provisions on new trials in Swedish law are said to be a trade-off between these two, in some instances contradictory, interests.[902] The result of this trade-off is that the law only allows new trials in certain exceptional cases, expressed by The Code of Judicial Procedure, 58 ch. 2-3 §§. Thus, in these cases the legislator has prioritized the *principle of truth* before the *principle of immobility*. For instance, if a circumstance or item of evidence that was not presented previously is invoked and its presentation probably would have led to the defendant's acquittal, had it been presented in the original proceedings, it is considered more important to change the verdict into a correct one than that the verdict remains legally binding. Also, the balancing between the principles is somewhat different when it comes to new trials to a defendant's advantage or disadvatange, as the odds of a new trial are in-

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Oskyldiga döms till fängelse, 15 advokater i öppet brev till justitieminister Thomas Bodström, Unsgaard, *Sveriges Radio, JK: Felaktigt dömda sitter i fängelse*, Lidén, *"Felaktiga brottmålsdomar är rättsstatens Akilleshäl – en genomgång av 2078 resningsansökningar"* and SVT Online News. *Forskaren: Det är väldigt svårt att beviljas resning*.

[893] See for instance Lindskog, *"Resningsärendena hör inte hemma i Högsta Domstolen"*.

[894] Own translation of *orubblighetsprincipen*. This is expressed in The Code of Judicial Procedure 30 ch. 9 §.

[895] NJA II 2012 p. 316.

[896] Ekelöf, Bylund & Edelstam, *Rättegång III*, p. 242.

[897] *Ibid*.

[898] *Ibid*.

[899] *Ibid*.

[900] See NJA II 2012 p. 317.

[901] Own translation of *sanningsprincipen*. The Swedish Government Bill, Prop. 2011/12: 156, 27.

[902] *Ibid*.

tended to be higher in the former case.[903] Whereas the *principle of immobility* is prioritized when it comes to new trials to a convicted's disadvantage, the *principle of truth* is considered more important when it comes to new trials to a convicted's advantage.[904]

Since both materially correct and materially incorrect verdicts become legally binding, there is an overlap where both principles are fulfilled, namely the materially correct legally binding verdicts. However, materially incorrect legally binding verdicts fulfil the principle of immobility but contradict the principle of truth. This does not mean that refusing a new trial will always or even most of the time contradict the principle of truth. Refusing a new trial concerning a materially correct verdict is of course consistent with the principle of truth, whereas refusing a new trial concerning a materially incorrect verdict is not. Since it is unknown how many and which verdicts are correct or incorrect, the relevant question is how the legal system perceives of and deals with the risk of a case being outside of the overlap. The possibility of being granted a new trial has been described as a safety valve[905] and the legal system's "last guarantee for the rule of law"[906] and is therefore intended as a way of minimizing the number of verdicts outside of the overlap. Taking the risk of error and the intended purpose of new trials into consideration, it seems adequate to ask just how difficult or easy it should be to get a new trial. Furthermore, it requires an assessment of how difficult or easy it is today.

A first step in understanding the prerequisites for being granted a new trial is to look closer at the meaning of the applicable legal provisions. For petitions aiming to overturn previous convictions, the legal ground that is most commonly referred to is The Code of Judicial Procedure 58 ch. 4 § 4 p according to which a new trial is granted if there is:

a circumstance or item of evidence that was not presented previously and its presentation probably would have led to the defendant's acquittal

Some examples of circumstances or evidence that can result in new trials are new expert opinions that are based on new scientific findings,[907] that statements during the trial have been wrongfully translated[908] and new witness-

[903] Cars, *Om resning i rättegångsmål*, p. 174 and Ekelöf & Edelstam, *Rättsmedlen,* p. 176.
[904] The Supreme Court, NJA 1998:53.
[905] Letser, citing Lambertz, Wersäll and Munck, in Dagens Juridik, *"Domar ska uppfattas som orubbliga"*.
[906] The Office of The Chancellor of Jusitice, *Felaktigt dömda, Rapport från JK:s rättssäkerhetsprojekt,* p. 78.
[907] The Supreme Court, NJA 1975 C 125. However, if the new expert opinion only disagrees with previously presented expert opinions regarding what conclusions can be drawn from evidence, it is more uncertain, although not completely excluded, that it will result in a new trial.
[908] The Supreme Court, NJA 1974 p. 221

es.[909] Whether the new evidentiary material probably would have resulted in an acquittal is a hypothetical assessment of what the Court who convicted the defendant would have decided, had it known about the material.[910] Also, the evidentiary value of the new material is assessed by relating it to the value of the evidence already presented in the original proceedings. The more the already presented evidence convinces of the original verdict's accuracy, the more is required of the new material for a new trial to be granted.[911]

There is also an exception from the demand that the new evidentiary material probably would have resulted in an acquittal, expressed in The Code of Judicial Procedure 58 ch. 4 § 4 p namely that:

if in view of the new matter and other circumstances, extraordinary reasons warrant a new trial on the issue whether the defendant committed the offence for which he was sentenced

According to the preparatory works, the purpose of this exception is that it should be possible to grant a new trial in some other cases as well, if the material produces uncertainty regarding the accuracy of the conviction.[912] This might come across as a significant relief for the petitioner but that is not necessarily what the legislator intended, as it is to be applied only in cases with special circumstances in relation to the nature of the crime or that there has been considerable dissent among the Courts when dealing with the case.[913] In practice, it seems that primarily the nature of the crime has been accepted as a reason to grant a new trial using this exception. [914]

Although general descriptions of the applicable law probably are necessary for an understanding of the potential of the new trial as a self-corrector, such descriptions only have limited informative value regarding the Court's more specific practice on granting new trials. Today, this practice is neither systematically nor continuously evaluated. A few different numerical evaluations have been put forward in the legal debate, for instance that, out of 2591 petitions for new trials, the Supreme Court approved 14, generating an approval rate of 0.54 %.[915] Also, Sandgren's estimations suggest approval

[909] Ekelöf & Edelstam, *Rättsmedlen*, p. 133, note 11.
[910] Welamson & Munck, *Processen i hovrätt och högsta domstolen*, *Rättegång IV*, p. 201. However, in practice there are rarely any reasons to assume that this assessment would have been any different from the Court's own assessment.
[911] Lindblom, *Process och exekution*, p. 3, Welamson & Munck, *Processen i hovrätt och högsta domstolen*, p. 200.
[912] Processlagsberedningen, NJA II 1940 nr 2, p. 575.
[913] Lindblom, *Process och exekution*, p. 3.
[914] *Ibid*., pp. 14-15. However, the case material is still insufficient for drawing safe conclusions.
[915] Wahlberg, *"Stefan Lindskog: Resningsärendena hör inte hemma i Högsta Domstolen"*.

rates between 1.15 and 1.44 %.[916] The author's own review of all petitions for new trials to The Supreme Court between 2005 and 2010 indicated an overall mean approval rate of 1.41 %.[917] There have also been claims that it is 8-10 times more difficult to be granted a new trial in Sweden than in Norway, where *Gjenopptakelsekommisjonen* granted a new trial for 14.97 % (255 out of 1703) of all petitions, between 2010 and 2014.[918] If it is assumed that the Swedish and Norwegian numbers are directly comparable, this seems quite worrisome from a Swedish perspective. Yet, the comparison is quite general and somewhat misguided since it does not, for instance, take into account that *insanity*[919] is a basis for a new trial in Norway but not in Sweden. Since a relatively large proportion of the granted Norwegian petitions concerned insanity,[920] the differences in approval rates is probably referrable both to differences in the material law and Court practice.

Although the mentioned approximations of approval rates in the Swedish context can give a hint about to what extent new trials can be used to correct wrongful convictions, it is clear that a systematic review is required. Such a review is provided in *Study IV (Part I and II)*. Together with the analysis of appeals, these figures are used as a basis for empirically estimating the legal system's self-correctional ability or inability, of which the latter is conceptualized as a systemic confirmation bias.

5.3 The Empirical Studies

This section summarizes the four empirical studies and thereby provides an overview of Papers I-V. The summaries concern primarily the research questions, methods and results as well as brief discussions of the implications of the results. However, for the full discussions, implications and conclusions, the reader is referred to *Papers I-V*. Also, the overall results as well as an overall discussion of all four empirical studies are available in Chapter 6. Below, the studies are presented in the same order as the chronology of the criminal procedure starting with police officers' apprehensions and interrogations of suspects (*Study I*), prosecutors' arrest and prosecution decisions

[916] Sandgren, "Klagoinstans för felaktiga domar – här har 80 procent av de nya rättegångarna lett till frikännande".
[917] Lidén, *Är felaktigt dömda chanslösa? En studie om enskilda individers möjligheter att driva resningsärenden framgångsrikt*.
[918] Wahlberg,*"Stefan Lindskog: Resningsärendena hör inte hemma i Högsta Domstolen"*.
[919] In Norwegian *utilregnelighet* and in Swedish *otillräknelighet*.
[920] Justis- og Beredskapsdepartementet, *Etterkontroll av kommisjonen for gjenopptakelse av straffesaker, Rapport fra arbeidsgruppe for etterkontroll av Gjenopptakelsekommisjonen*, pp. 34-35. Disregarding the petitions in Norway that were granted due to insanity or a decision from the UN Human Rights Committee regarding previously denied appeals, the overall approval rate is 5.80 %, Justis- og Beredskapsdepartementet, *Etterkontroll av kommisjonen for gjenopttakelse av straffesaker, Rapport fra arberidsgruppe for etterkontroll av Gjenopptakelsekommisjonen*, pp. 32-33.

(*Study II*), judges' detentions and guilt decisions (*Study III*) and then the appeals as well as petitions for new trials (*Study IV Part I and II*).

Study I: The Presumption of Guilt in Suspect Interrogations: Apprehension as a Trigger of Confirmation Bias and Debiasing Techniques

Research Questions

This study tested whether police officers' decisions to apprehend suspects triggered confirmation bias in the subsequent suspect interrogations, that is, in the questions posed to the suspects as well as the ratings of how trustworthy the suspects' statements were. Also, the study tested whether confirmation bias could be reduced by (1) changing decision maker between apprehension and the suspect interrogation and (2) reducing cognitive load for the interrogating police officer.

Method

The research questions were tested in a series of three experiments, Experiment 1 with a sample of Swedish police officers (N = 60), Experiment 2 with law and psychology students (N = 60) and Experiment 3 with psychology students (N = 60). In all three experiments the same web based program with 12 written scenarios, inspired by real life criminal cases, were used.[921]

For the purpose of replication, the experimental design was identical for Experiments 1 and 2, which used a 2 (decision: apprehension vs. no apprehension) x 3 (decision maker: self vs. police colleague vs. prosecutor) within subjects design. This design was used to test whether the apprehension triggered confirmation bias as well as whether such a bias could be reduced by changing decision maker between apprehension and interrogation. For Experiment 3, the design was instead a 2 (questioning mode: production and detection vs. detection) x 2 (decision: apprehension vs. no apprehension) x 3 (decision maker: self vs. colleague vs. prosecutor) mixed-subjects design. Questioning mode was varied between the groups, whereas decision and decision maker were within-subjects factors. In addition to the questions addressed through the first design, this second design was used to also test whether confirmation bias could be mitigated by reducing cognitive load for the interrogating police officer. Thus, questioning mode was used as a proxy for cognitive load where production and detection was associated with a higher cognitive load than detection.

[921] All 12 scenarios are available as online supplemental material, which is accessible through the electronic version of the full article. The same applies for the scenarios used in *Study III*. The scenarios used in *Study II* are available in *Paper II*.

In all three experiments, the participants were presented with the 12 scenarios in which they had to either decide for themselves whether to apprehend a suspect or were informed about the corresponding decision by another police officer or a prosecutor. Participants then prepared questions for a suspect interrogation and evaluated the trustworthiness of the suspect's denial or confession. In Experiment 1 and 2, the participants prepared interrogation questions in two ways, by (1) freely producing their own questions and (2) choosing questions from pre-set lists of questions.[922] In Experiment 3, half of the participants only freely produced questions whereas the other half only chose questions from the lists.

Results and Discussion

The results in Experiment 1, which were largely replicated in Experiment 2, indicate that apprehensions trigger a confirmation bias as manifested by more guilt presumptive freely generated questions (r = .59 in Experiment 1 and r = .84 in Experiment 2) and lower trustworthiness ratings (r = .28 in Experiment 1 and r = .58 in Experiment 2) in relation to apprehended, compared to non apprehended suspects. However, apprehensions did not significantly influence which questions participants chose from the pre-set lists.

Also, in both Experiment 1 and 2 overall effects of the decision maker variable on the freely generated questions were found but when using the more conservative post hoc tests, these differences failed to reach statistical significance. Hence, the level of guilt presumption only differed marginally depending on who the decision maker was, with a slightly higher level of decision-consistent questions in relation to own decisions than to the prosecutor's (p =.062 in Experiment 1) or colleague's (p =.088 in Experiment 2) decisions. For the trustworthiness ratings, the decision maker variable had significant influences as participants perceived the suspects they themselves had apprehended as less trustworthy than the suspects they had not apprehended (r =.31 in Experiment 1 and r =.28 in Experiment 2). No such differences were observed in the conditions where other decision makers (colleague/prosecutor) had decided.

Furthermore, in Experiment 3, it was found that the level of guilt presumption was lower when cognitive load was reduced, that is, when participants chose interrogation questions from a pre-set list (Detection) compared to when they produced their own questions (Production and Detection) and the size of this effect was large (r =.86).

[922] In the list, there were six pairs of questions that were randomly presented in a random order, not as pairs. In each pair, both questions were asking the same thing but one question was guilt presumptive whereas the other was more neutral and this categorization was confirmed through pre-testing.

Taken together, this implies that the apprehension may trigger a confirmation bias as expressed by higher levels of guilt presumption in relation to apprehended suspects but also that the tested debiasing techniques, primarily reducing cognitive load, hold some potential. One possible way to incorporate this in real life criminal cases is to have a nationally accepted standardized model for suspect interrogations, such as the KREATIV-model used in Norway. Combined with continuous training and evaluation, such a model could help reduce cognitive load for the interrogating police officer and thereby also mitigate the risk of guilt presumptive interrogations.

Study II: From Devil's Advocate to Crime Fighter: On Confirmation Bias and Debiasing Techniques in Prosecutorial Decision Making

Research Questions

This study examined the role of confirmation bias in prosecutorial decisions before, during and after the prosecution. It also evaluated whether confirmation bias was reduced by changing decision maker between arrest and prosecution.

Method

In Experiment 1, Swedish prosecutors (N = 40) assessed 8 scenarios where they either decided themselves or were informed about a colleague's decision to arrest or not arrest a suspect. Participants then rated how trustworthy the suspect's statement was as well as to what extent an ambiguous piece of evidence and the total evidence indicated that the suspect was guilty. They also decided whether to prosecute and if any additional investigation was necessary. If they indicated that additional investigation was necessary, they were also asked to describe what investigation they would like to undertake. In Experiment 2 the same method was used with law and psychology students (N = 60).

The design was divided into three stages: 1) before, 2) during and 3) after the prosecution. In Stage 1) a 2 (decision: arrest vs. no arrest) x 2 (decision maker: self vs. colleague) within subjects design was used in relation to the following dependent measures: the suspect's trustworthiness, ratings of ambiguous evidence and total evidence. Then, in Stage 2, the decision (about arrest), decision maker (who decided about the arrest), trustworthiness, ambiguous and total evidence were used to predict decisions about whether to prosecute or not. After this, in Stage 3, the decision about prosecution, decision about arrest, decision maker (who made the arrest), trustworthiness, ambiguous and total evidence were used to predict decisions about whether additional investigation was necessary as well as the level of guilt confirmation in the additional investigation.

Results and Discussion

The results were analyzed following the three stages of the design. Overall, the results differed both between the three stages of the experiments and between the prosecutor and student samples.

Before the prosecution, in the sample of prosecutors, the arrest had opposite effects on different measures as the prosecutors rated arrested suspects as less trustworthy (r = .74) but the total evidence was perceived as stronger in relation to non-arrested suspects (r =.49). The results for the total evidence are counterintuitive considering the theory of confirmation bias, as this predicts the opposite. One possible explanation is that prosecutors overcompensated, that is, after the arrest, prosecutors soon have to decide whether there are sufficient reasons to prosecute and if they prosecute, the evidence against the defendant has to be sound. Thus, a strong skepticism towards the available evidence could be part of a pretrial strategy whereby prosecutors try to avoid that unjustified proseuctions are initiated.

However, during the prosecution, the results signal a somewhat more closed mindset in prosecutors, as the odds of a prosecution were significantly higher if the suspect had been arrested and was rated as low in trustworthiness (whereas for non-arrests, the trustworthiness rating did not matter). The odds of a prosecution were .52 times higher for each unit with which the trustworthiness rating (1-7) decreased. Also, the odds of a prosecution increased as the perceived evidence strength increased, with 6.92 (per unit).

After having decided to press charges, prosecutors were less likely to deem additional investigation necessary and even less so when there was a previous decision about arrest. When the defendant had previously been arrested, the odds that prosecutors thought that additional investigation was necessary was 0.54 times lower. Furthermore, when the defendant had been prosecuted, the odds that prosecutors thought additional investigation was necessary was 0.13 times lower. This suggests that decisions to arrest and prosecute constituted a stop rule for acquiring more information. Also, after iniating a prosecution the suggested additional investigation had higher levels of guilt confirmation. When prosecutors had decided to prosecute, this increased the level of guilt confirmation by 4.16 units. As confirmation bias encompasses selectively searching for hypothesis consistent information, and not making many or any efforts to find hypothesis inconsistent information, the results found in the prosecutor sample for Stage 3 fit the description of confirmation bias well. These results differ from those found in the student sample, as the students displayed higher levels of guilt presumption in relation to arrested suspects consistently before, during and after a prosecution decision. Changing decision maker did not appear to be a successful debiasing technique, at least not in the prosecutor sample.

The overall findings imply that prosecutors were able to act as their own devils' advocates before the prosecution. Prosecutors' assessments while

deciding about whether to prosecute were reasonably balanced, although they signaled a somewhat more closed mindset. However, after pressing charges, they displayed a more guilt confirming mindset suggesting they then took on the role as crime fighters. This implies that, among prosecutors, the primary trigger of confirmation bias was the prosecution, not the arrest. As the results in the student sample were partially different, this might have something to do with prosecutors working experience, but this explanation needs more evaluation.

Study III: "Guilty, No Doubt": Detention Provoking Confirmation Bias in Judges' Guilt Assessments and Debiasing Techniques

Research Questions

This study examined whether judges' pretrial detention decisions triggered confirmation bias in their guilt assessments. It also tested two strategies to mitigate confirmation bias: (1) to have different judges decide about detention and guilt and (2) to reduce cognitive load by structuring the evaluation of evidence.

Method

In Experiment 1, Swedish judges ($N = 64$) read 8 scenarios where they either decide themselves about detention or were informed about a colleague's decision. Then, participants rated the defendant's trustworthiness, the strength of each piece of evidence (one guilt consistent and one ambiguous), the total evidence and decided about guilt. This experiment had a 2 (decision: detention vs. no detention) x 2 (decision maker: judge him/herself vs. colleague) within subjects design. In Experiment 2, law students ($N = 80$) either first rated each piece of evidence separately and then the total evidence (structured evaluation) or only the total evidence (unstructured evaluation), and then decided about guilt. This second experiment had a 2 (evaluation mode: structured vs. unstructured) x 2 (decision: detention vs. no detention) x 2 (decision maker: participant him/herself vs. colleague) mixed subjects design. Evaluation mode was varied between the groups whereas decision and decision maker were within-subjects factors.

Results and Discussion

Overall, judges rated detained defendants as less trustworthy ($r = .52$) and when they themselves had detained the defendant they rated the guilt consistent evidence ($r = .36$) as well as the total evidence ($r = .27$) as stronger and were 2.79 times more likely to convict compared to when a colleague had decided to detain. When judges themselves had detained, they convicted 62.50 % of the defendants, whereas when a colleague had previously detained, judges' convicted 37.37 % of the defendants. Furthermore, in Experiment 2, the students rated the total evidence as stronger after unstructured

than structured evaluations of the evidence (r =.29) but the evaluation mode did not significantly influence guilt decisions.

Overall, this study implies that the detention triggers a confirmation bias in judges' guilt assessments but also that changing the decision maker between the detention and main hearing has some potential as a debiasing technique. Possibly, own detentions trigger a mindset in judges whereby they want to convince others that their detention decision was correct, whereas a colleague's detention triggers a critical stance. Consequently, this would influence judges' guilt assessments in opposite directions. Also the other tested technique, structuring the evaluation of evidence, holds some debiasing potential but this potential appears to be more limited in relation to the decision about guilt.

Study IV: Self-Correction of Wrongful Convictions: Is there a "System-level" Confirmation Bias in the Swedish Legal System's Appeal Procedure for Criminal Cases? Part I and II

Research Questions

This study discussed whether and to what extent confirmation bias can be recognized at a "system-level" as an inability to self-correct, that is, an inability to acquit the wrongfully convicted who appeal or petition for a new trial.

Method

The evaluation of the legal system's self-correctional ability, or inability, was based on 3239 appeals (*Part I*) and 2078 petitions for new trials (*Part II*) and was conducted in the six levels illustrated in Figure 3. In *Level 1*, a very low error rate of wrongful convictions in the District Courts in 2010-2014 was tentatively assumed (0.50 %). Then, an evaluation of to what extent the available legal remedies (the appeal and the petition for a new trial) can be expected to change wrongful convictions into acquittals was conducted. In *Levels 2-4*, the following estimations were made with regard to the appeal as a self-corrector: the total number of appeals seeking to overturn convictions, the total number of appeals changed into acquittals and the total number of wrongfully convicted who were acquitted after an appeal. In *Levels 5-6* figures for the following parameters were obtained from the empirical review, in order to evaluate the new trial as a self-corrector: the total number of remaining wrongfully convicted who petitioned for and were granted new trials and the total number of wrongfully convicted that were acquitted in the new trials. Then, a robustness analysis was performed to test whether the overall conclusions were the same under a wide variety of as-

sumptions about the unknown statistics (such as the error rate of wrongful convictions in the District Courts).

Results and Discussion

The overall results, based on realistic assumptions and empirical estimates of real-world statistics, suggest that at least 34.67 % of the wrongfully convicted remained convicted despite the possibility both to appeal and petition for a new trial. The results for each level are displayed in Figure 3.

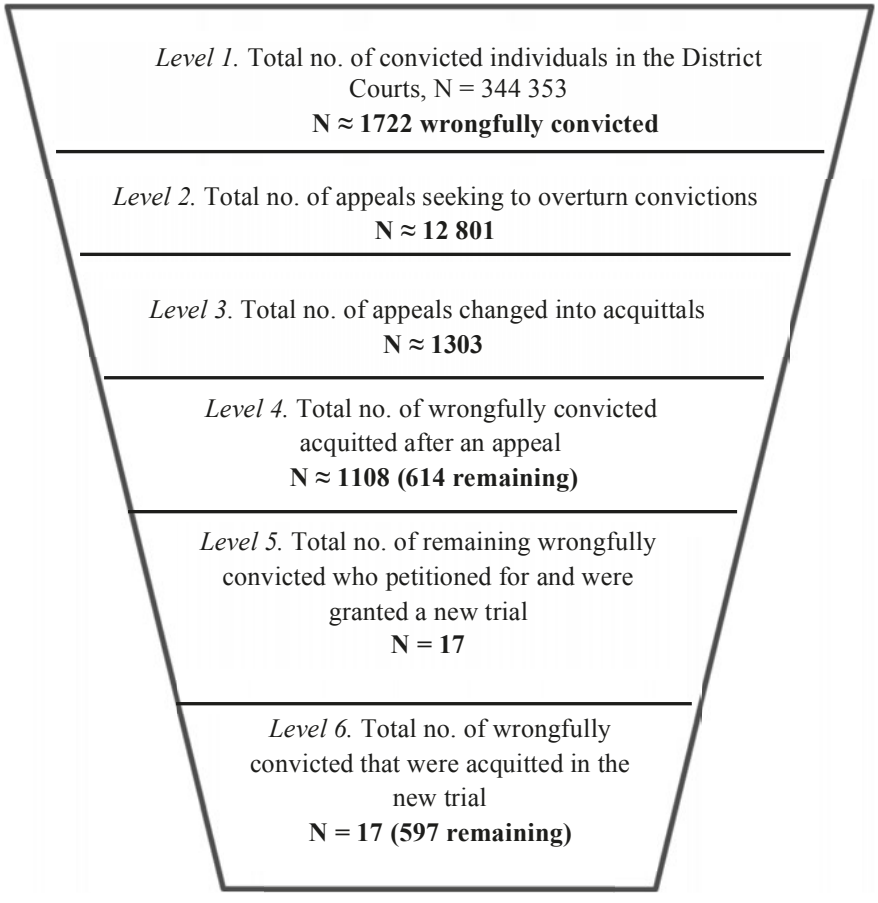

Figure 3. Wrongful convictions in six levels.

The robustness analysis suggest that the conclusions hold under a wide variety of assumptions, see Figure 4, which illustrates the rate of corrected wrongful convictions when combining different assumptions for the two

unknown parameters, the rate of wrongful convictions, *w* [0.1 %, 2 %] and the rate of innocent among those that were acquitted after an appeal, *i* [0 %, 100 %].

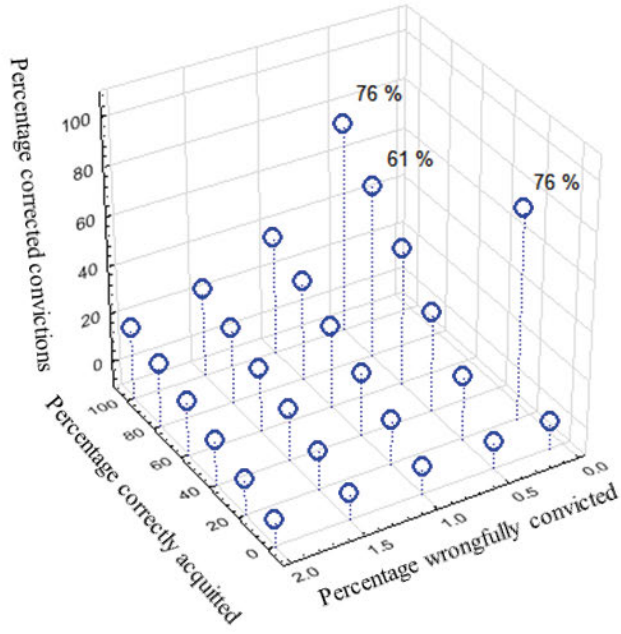

Figure 4. Corrected wrongful convictions.

NOTE: In Figure 3, five rates of wrongful convictions (0.1 %, 0.5 %, 1 %, 1.5 % and 2 %) are crossed with six proportions of innocent among those that were acquitted after an appeal (0 %, 20 %, 40 %, 60 %, 80 % and 100 %). For *0.1 %* wrongful convictions, the rate (%) of corrected wrongful convictions are 0, 75.87 (40-100 % are not possible values since the rate of wrongfully convicted among those acquitted after an appeal then exceeds the number of wrongfully convicted), for *0.5 %:*0,15.16,30.26,45.41,60.51,75.67, for *1 %:* 0,7.58,15.13,22.71,30.26,37.84, for *1.5 %:* 0,5.05,10.09,15.14,20.17,25.22 and for 2 %: 0,3.79,7.56,11.35,15.13,18.92. The three combinations of percentages of wrongfully convicted and percentages of correctly acquitted in the graph that are associated with a higher than 50 % corrected verdicts are explicitly identified by their percentages. For the other points in the graph this percentage is below 50. Note also that all combinations of percentages for wrongfully convicted and percentages of correctly acquitted are not possible, because when the percentage of wrongfully convicted is assumed to be very low, it is not logically possible that most of those known to be acquitted are correctly acquitted (innocent).

Also, according to additional analyses (in *Part I*) the odds of an acquittal were low even for appeals referring to new innocence supportive evidence

and for private individuals claiming to be innocent of e.g. assault or murder the odds of being granted new criminal trials were particularly low (*Part II*). Taken together, the findings and estimations indicate a hampered self-correctional ability, which can be depicted as a systemic confirmation bias.

Note on Collaboration

The four empirical studies, as well as this theoretical background, have been conducted and written by the author of this thesis, Moa Lidén. Thus, Moa Lidén has carried out the work associated with all the respective steps necessary for completion of the thesis, that is:

1. planned and designed the studies (including coming up with the ideas for research questions and the associated designs),
2. collected the data (including obtaining responses from research participants as well as cases from the Courts),
3. analyzed the data (including structuring the data and conducting relevant statistical tests) and
4. wrote the manuscripts for the empirical studies and also the theoretical background.

Professors Minna Gräns and Peter Juslin have provided traditional supervision of this work. Specifically, they have contributed with feedback as regards the planning and design of the studies as well as the writing of the manuscripts and the theoretical background.

Chapter 6. Linkage of Law, Psychology and Empiricism

6.1 Summary

This thesis has focused on confirmation bias in judicial decision making in criminal cases. Furthermore, the thesis has emphasized the importance of conceiving judicial decision making as a dynamic cognitive process, not only as a static end product of such a process. Also, the research questions have required usage of empirical research methods, which as such have been one of the primary contributions of the thesis.

The legal psychological research provides a detailed account of how confirmation bias can manifest itself in various contexts within the criminal procedure, resulting in a risk of wrongful convictions. Such a risk may arise as a result of a decision maker's biased judgment of the importance or relevance of a single piece of evidence, for instance when an ambiguous witness testimony or fingerprint is interpreted in a one-sided guilt presumptive way. The risk can also arise and be strengthened because such a biased judgement influences other pieces of evidence (so-called bias snowball effects or corroboration inflation). For instance, when faced with a witness statement or what appears as overwhelming scientific evidence, an alibi witness might change his or her account or a suspect may decide to falsely confess because the odds of an acquittal seem low.

Psychological research aims to explain why confirmation bias occurs and how it can be mitigated. This research suggests that confirmation bias has several possible explanations that can be mutually supportive. As such, confirmation bias can be explained by cognitive limitations in human information processing as well as motivational and social factors that lead legal actors to for instance reason with the primary or exclusive purpose of justifying a decision already made or subconsciously defend their hypotheses/previous decisions to other individuals. The respective importance of these explanations needs further examination, particularly as they are likely to vary with both the context and the individual or group of decision makers. Unfortunately, the multifaceted nature of confirmation bias also means that researchers are unlikely to find generally functioning debiasing techniques and that debiasing strategies instead have to be nuanced and adaptable in order to be successful.

Since legal requirements on judicial decision making are focused on the process of reaching a decision, not just the justification of the decision, factors influencing this process such as confirmation bias, are indeed of legal relevance. This becomes clear when considering that confirmation bias can completely turn the legally required priorities of the criminal procedure around. More specifically, confirmation bias can result in that the guilt hypothesis is given the good head start that was intended for the innocence hypothesis. As a result, the criminal procedure's sensitivity, its ability to identify the guilty as guilty, is *de facto* prioritized before its specificity, its ability to identify the innocent as innocent. This poses a serious risk of both wrongful suspicions and wrongful convictions that the criminal procedure aims to prevent. Furthermore, it means that we cannot put our trust in that the demands of objectivity and the presumption of innocence, in the meaning they are currently understood and applied, are sufficiently efficient safe guards against such risks. Nor is the current Swedish appeal system.

6.2 Overall Results and Discussion of the Empirical Studies

Table 1 summarizes the overall findings in *Study I-III*.

Table 1. Overall Results in Study I-III by Participants, Coercive Measure, Evidence for Confirmation Bias and Debiasing Effects.

Study *Experiment*	**Participants**	**Coercive measure etc.**	**Evidence for confirmation bias**	**Evidence for debiasing effects**
I				
1	Police officers (N = 60)	Apprehension	Yes: T, FG No: IQC	Yes: change DM
2	Law + Psychology students (N = 60)	Apprehension	Yes: T, FG No: IQC	Yes: change DM, reduce CL
3	Psychology students (N = 60)	Apprehension	Yes: overall GP	Yes: reduce CL
II				
1	Prosecutors (N = 40)	Arrest Prosecution	Yes: T, No: AE, TE Yes: AI	No: change DM
2	Law + Psy-	Arrest	Yes: T, AE,	Yes: change DM

	chology students (N = 60)	Prosecution	TE Yes: AI	
III				
1	Judges (N = 64)	Detention	Yes: T,GCE, TE, G No: AE	Yes: change DM
2	Law students (N = 80)	Detention	Yes: TE, G	Yes: change DM, reduce CL

Note. For all studies, T = Trustworthiness (of suspect/defendant), DM = Decision maker, CL = Cognitive load, GP = Guilt presumption. For *Study I*, FG = Freely generated questions, IQC = Interrogation Questions Checklist, For *Study II*, AE= Ambiguous evidence, TE = Total evidence, AI = Additional investigation, For *Study III*, GCE: Guilt consistent evidence, AE = Ambiguous evidence, TE = Total Evidence, G = Guilt decision. For *Study I*, Experiment 1, For *Study II* (both experiments) and *Study III*, Experiment 1: reducing CL was not tested as debiasing techniques. For *Study III* Experiment 2, only half of the participants gave ratings for T, GCE and AE and these results were not included in the analysis since the purpose of this experiment was primarily to test reducing CL as a debiasing technique.

The results of the empirical studies suggest that confirmation bias was at play to varying degrees at different stages of the criminal procedure. Yet, whether a behavior is properly described as confirmation bias or not is dependent on what definition of rationality is used. The same behavior can be considered fully rational with one definition of rationality but fully irrational using another definition. These distinctions are important in a framework where biases are generally defined as irrational behaviors. For instance, a finding that was consistent across all three experimental studies was that the use of coercive measures coincided with that the suspects/defendants were perceived as less trustworthy. In other words, police officers perceived of apprehended suspects as less trustworthy, prosecutors perceived of arrested suspects as less trustworthy and judges perceived of detained defendants as less trustworthy. It can be discussed whether this is really a manifestation of confirmation bias or instead a fully rational assessment of the trustworthiness of a person deprived of his or her liberty. For instance, if the relative frequencies of lying and truth telling individuals who are and are not deprived of their liberty were to be empirically evaluated it is likely that more lying individuals would be found in the apprehension condition. Thus, using probabilistic definitions of rationality, the lower trustworthiness ratings in relation to individuals deprived of their liberty can be considered rational. However, the same behavior may be judicially irrational considering for instance the presumption of innocence and that deprivations of liberty do not have any evidentiary value in themselves.

Furthermore, following the somewhat different conceptualizations of confirmation bias in *Study I-III*, the impact of using coercion varied across the studies. In *Study I* it was manifested in more guilt presumptive freely generated questions, that is, the search for information. In *Study II*, not the arrest but the prosecution was associated with a guilt confirming search for information, as manifested by that prosecutors were less likely to initiate additional investigation after a prosecution and the investigation they did undertake was to a greater extent aimed at confirming guilt. In this study, the evaluative components (ratings of ambiguous and total evidence) did not indicate a confirmation bias in the prosecutor sample whereas their assessments of whether there were sufficient reasons to prosecute was associated with the decisions about arrest. In the student sample, all of these evaluative components were influenced by the arrest. However, in *Study III*, judges as well as students displayed one-sided guilt confirming evaluations of the evidence and were also more likely to convict, following detentions they themselves had made.

These results do not necessarily mean that police officers only display confirmation bias when they search for information whereas judges only display it when evaluating information, since the evaluation component was not tested for police officers and the search component was not tested for judges.[923] However, the results do suggest that confirmation bias can manifest itself in different ways for different legal actors and for different stages of the criminal procedure. Furthermore, as indicated by the relative success of the tested debiasing techniques (changing decision maker and reducing cognitive load) across the samples, the results suggest that the explanations of confirmation bias may also vary for different legal actors and different stages of the procedure.

As regards *Study I*, it should be noted that apprehensions are often undertaken at very early stages of criminal inquiries, when the available evidence may still be scarce and ambiguous. A confirmation bias at this stage could be the starting point of a suspect driven investigation. The guilt presumptive mindset associated with suspect driven investigations is illustrated in the questions that police officers asked apprehended suspects and also that the statements of apprehended suspects were systematically considered less

[923] As pointed out in Chapter 3.2.4.4.1, in real life criminal cases, police officers and prosecutors are to a great extent involved in *searching* for crime relevant information during the criminal inquiry, but clearly, they also have to *evaluate* and *remember* the information in order to decide whether it is relevant, what more investigative measures to undertake etc. During Court proceedings, judges of course have to select (search) for information and remember it, because capacity limits make it impossible for them to process all available information. However, for judges, these components are probably less pronounced than the evaluative component, which is at the core of their task, that is, to establish whether the prosecutor has proven the allegations beyond reasonable doubt. Thus, it seems reasonable that for police officers and prosecutors, primarily the search component was evaluated, whereas for judges, primarily the evaluative component was tested.

trustworthy. As is indicated by previous research on bias in suspect interrogations,[924] guilt presumptive questions can result in that the suspect behaves in a way that confirms the interrogator's suspicions, adding to the already existing bias. Swedish law does not explicitly prohibit guilt presumptive questions but only the use of consciously wrongful information, promises, threats and other undue influence in order to elicit confessions, in accordance with The Code of Judicial Procedure 23 ch. 12 §.[925] Reasonably, this lack of legislation is not because guilt presumptive questions are considered appropriate but quite the contrary given that the presumption of innocence applies also to suspect interrogations. Instead, this is probably because the best way to promote sound interrogation techniques that respect the suspect's right to due process is not legislation but instead education and training.[926]

To a certain extent, it seems that avoiding situations in which the same police officer both apprehends and interrogates the suspect could help mitigate guilt presumption. Since there are no legal barriers against changing decision maker in such situations, any obstacles are probably organizational. Limited resources and efficiency demands may in practice make such changes difficult. This can be the case both in small rural police districts with relatively few police officers and large urban districts with more police officers but also, presumably, a heavier workload. Yet, even if it is recommendable that such changes are made, *Study I* suggests that reducing cognitive load for the interrogating police officer holds greater promise as a debiasing technique. This is not to say that police officers should use a pre-set list of interrogation questions, since this is merely a proxy for cognitive load employed in the experiments, but that care should be taken to reduce cognitive load in other practically feasible ways. A reasonable first step is to have a nationally accepted model for how suspect interrogations should be carried out, which is lacking today.[927] However, internationally, there are several interrogation models that are known to decrease cognitive load for the inter-

[924] Kassin, Goldstein & Savitsky, *Behavioral Confirmation in the Interrogation Room: On the Dangers of Presuming Guilt*, pp. 187-203.

[925] Of course, suspects are also protected against torture and similar measures in accordance with The Instrument of Government 2 ch. 5 § and ECHR article 3. Also, when it comes to interrogations with children (defined as a person younger than 18), the Decree on Preliminary Investigations § 17, states that the interrogation shall be planned so that the child is not harmed, especially when it comes to interrogations concerning sex crimes etc.

[926] This is confirmed by that models for suspects interrogations in other countries are primarily imposed by education and training, see Granhag, Strömwall & Cancino Montecinos, *Polisens förhör med misstänkta, svensk utbildning i internationell belysning, Rikspolisstyrelsens utvärderingsfunktion, Rapport 2013:7*, pp. 1-50.

[927] Granhag, Strömwall & Cancino Montecinos, *Polisens förhör med misstänkta, svensk utbildning i internationell belysning, Rikspolisstyrelsens utvärderingsfunktion, Rapport 2013:7*, pp. 1-50.

rogator.[928] Preferably, one of these should be adopted and combined with continuous training and evaluation. An example is the so-called KREATIV model for suspect interrogations, which is a compulsory component of Norwegian police officers' training and education.[929] Finally, although the overall findings suggest that police officers' confirmation bias in suspect interrogations have primarily cognitive explanations, this does not necessarily mean that the cognitive explanations are generally valid explanations of confirmation bias in police officers. Other explanations may be equally or more valid for other situations.

The findings in *Study II* imply that in the prosecutor sample, the main trigger of confirmation bias was the decision to prosecute (although a previous arrest added to this effect, after the prosecution) whereas for students it was triggered already by the arrest. As prosecutors primarily displayed confirmation bias after deciding to prosecute, this is probably the stage that deserves most attention in future research. Reasonably, prosecution decisions put prosecutors in a cognitively challenging situation as the decision implies that prosecutors have good reasons to expect a conviction, but they are still required to be objective. This requirement of maintained objectivity after a prosecution decision has been emphasized by the relatively recent change in The Code of Judicial Procedure 45 ch. 3 a §.[930] However, *Study II* implies that with the prosecution, prosecutors are less likely to undertake additional investigation and the investigation that they do undertake is more often aimed at confirming the suspect's guilt. As a way of accommodating the requirement of maintained objectivity also after the prosecution, it is crucial

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[928] For an outline, description and discussion of these models see Granhag, Strömwall & Cancino Montecinos, *Polisens förhör med misstänkta, svensk utbildning i internationell belysning, Rikspolisstyrelsens utvärderingsfunktion, Rapport 2013:7*, pp. 1-50.

[929] Granhag, Strömwall & Cancino Montecinos, *Polisens förhör med misstänkta, svensk utbildning i internationell belysning, Rikspolisstyrelsens utvärderingsfunktion, Rapport 2013:7*, pp. 33-35. KREATIV stands for Communication, Rule of Law, Ethics and Empathy, Active consciousness, Trust through openness, Information and Scientific Foundation and crucial components are the suspect's free reproduction of an event, the interview leader uses the evidence strategically and systematically evaluates and rules out alternative explanations to increase the evidentiary value of the interview. KREATIV builds on the well established PEACE model (Plan and Prepare, Engage and Explain, Account and Challenge, Closure and Evaluation) which in turn has its basis in cognitive psychological research and is used in for instance England and Wales. Furthermore, in England and Wales the connotation "interrogation" has been replaced with "interview", also when it comes to suspects.

[930] This was intended to convey that objectivity demands apply to all stages of law enforcement authorities' work, see The Swedish Government Bill, Prop. 2015/16:68 pp. 33, 83 and 89, Swedish Government Official Reports, SOU 2011:45 p. 95, The Parliamentary Ombudsmen, JO 2007/08 p. 87. The prosecutor's role as leader of the inquiry comprehend making decisions about *which* inquiries shall be carried out as well as *in which order* but *how* such inquiries are made is usually a question for the police, The Swedish Government Official Reports, SOU 1988:18 pp. 112-113 and 295. Even if this is the case, the prosecutor's responsibility encompasses all of those questions. The reason why prosecutors do not usually carry out the investigation is that it might endanger their objectivity, see Lindberg, *Om åklagaretik*, p. 203.

to evaluate and identify functioning debiasing techniques for this time period. One reason to believe that changing decision maker after a prosecution could be successful is that the prosecutor who then decides about additional investigation would not, or to a smaller extent, feel responsible for justifying the previous prosecution or for preparing to defend the case in Court. Thereby, the impetus for carrying out guilt confirming additional investigation may be weakened. If such a strategy would prove to be successful, it could be accommodated within the so-called *överprövningsförfarande*, whereby a superior prosecutor temporarily takes over tasks originally assigned to a subordinated prosecutor, in accordance with The Code of Judicial Procedure 7 ch. 2 and 5 §§.[931]

Yet, since the change of decision maker as a debiasing technique was only tested in the time period before a prosecution and this gave null results, the results from the prosecutor sample do not point to any particular explanation.[932] Despite this, the results can be compared to those in Experiment 2, where students not only display a guilt presumptive mindset consistently before, during and after a prosecution decision but were also more guilt presumptive after own decisions to arrest, across almost all measures. This indicates that social explanations may be viable in the student sample and furthermore, that there may be some potentially important mechanisms that can explain the differences between prosecutors' and students' responses, such as the prosecutors' working experience. Possibly, the delayed onset of confirmation bias is due to prosecutors' adaption to the previous legal demands that primarily emphasized the need for objectivity prior to a prosecution decision.[933] As a result, they may have become skilled in taking in other perspectives, for instance those anticipated to be raised by the defense. It

[931] This procedure builds on the so-called principle of devolution (devolutionsprincipen in Swedish) which refers to a superior prosecutor's right to overtake and reassess tasks originally assigned to a subordinated prosecutor, see for instance Ekelöf, *Rättegång II*, p. 159. Since neither the Government nor a superior prosecutor is allowed to dictate how an individual prosecutor is to decide in an individual case in accordance with the Instrument of Government 12 ch. 2 §, it is required that the superior prosecutor temporarily takes over the role of the subordinated prosecutor in order to make the reassessment. This procedure provides a better solution than using the non-competence provisions which for prosecutors do not currently entail previous involvement in a case. Also, since the change of decision maker after a prosecution has not been properly evaluated yet, it is clearly too early to suggest a change of law or legal practice. For more on the non-competence provisions for prosecutors, see the Swedish Government Bill, Prop. 2000/01:92 p. 37. Prosecutors may be disqualified on the bases of aspects of their private life. For instance, a prosecutor who had an intimate relationship with the plaintiff during ongoing criminal proceedings regarding the plaintiff's case was disqualified since that circumstance was likely to undermine confidence in the prosecutor's impartiality, in accordance with The Code of Judicial Procedure 4 ch. 13 § p. 10 and 7 ch. 6 §.

[932] Of course, one can only speculate regarding whether a change of decision maker after a prosecution would be a succesful debiasing technique.

[933] Or at least the maintained demand for objectivity also after a prosecution was not explicit in The Code of Judicial Procedure.

remains to be seen whether the change in law will further extend the period during which prosecutors manage to be their own devil's advocate. The cognitive aspects of prosecutors' balancing back and forth in relation to the evidence certainly deserve more attention in future research.

In *Study III* the primary finding was the interaction effect between decision and decision maker which was reoccurring and present even for the final decisions about guilt, where a (close to) reversed response pattern for own and colleagues' detention decisions was found. These results suggest that a change of decision maker after a detention would in fact make judges more skeptical towards the guilt hypothesis than the innocence hypothesis, compared to if the same judge decides. Since the detention is not supposed to be of any evidentiary value at all, in any direction, neutrality would have been more desirable. Yet, a greater skepticism in relation to the guilt hypothesis, as a result of the colleague's detention, is undoubtedly preferable before a lowered skepticism of the guilt hypothesis, as a result of the judges' own detention decision.

The question of whether a pretrial detention shall disqualify the judge who decided about detention from also conducting the main hearing under The Code of Judicial Procedure 4 ch. 13 § has already been discussed and answered negatively by the legislator.[934] However, provided the results of *Study III* and that the situations with one judge making both decisions seem very common (as common as 80 % of the cases) in some District Courts,[935] there are reasons to further discuss the arguments for and against such a legal prohibition. The primary argument against a prohibition provided by the legislator was that Swedish judges were unlikely to be effected by a previous detention decision since the Swedish standard of proof for detention is lower than the corresponding Danish standard of proof.[936] Since *Study III* does not compare the Swedish and Danish standards it cannot provide any answer as to whether there are differences between bias in Swedish and Danish judges after a detention. However, the discussion is not dependent on such an answer since the legislator used this comparison as an argument as to why Swedish judges, unlike Danish judges, would be able to maintain impartiality after a detention. The findings of *Study III* contradict this argument, as the odds of a conviction were 2.79 times higher when judges themselves had detained compared to when a colleague had detained. Even when making no assumption that judges who have previously detained defendants in real life criminal cases are always biased in such situations, the results highlight the risk of such a bias. Such a risk ought to be serious enough,

[934] The Swedish Government Bill, Prop. 1992/93:25 p. 16.
[935] The more specific estimations provided by Chief Judges are described in *Study III* (the full paper) but the variation in this regard appears to be large, as the judges estimations ranged from 1 to 80 %. However, given that these estimations are not based on any systematic review of cases, the uncertainty associated with the estimations shall be emphasized.
[936] The Swedish Government Bill, Prop. 1992/93:25 p. 16.

especially since there is no requirement of actual bias, neither in the bases for non-competence that are explicit in Swedish law, nor in the ECHR's objective requirement of partiality, that is, that the fear of partiality is objectively justified.

However, legal regulation of detention as a basis for non-competence could clearly complicate and make the dealing with criminal cases more inefficient, especially in smaller Courts where there are relatively few judges. Thus, a rigid legal requirement that a change of judge has to take place after a detention could instead put other aspects of the defendant's right to due process at risk, for instance the right to a hearing within reasonable time. Clearly, it cannot be claimed that protecting the judge's impartiality is always more important than promoting that the hearing takes place within reasonable time. However, it seems likely that many situations like these could be avoided if the Courts themselves adjusted their organization and allocation of cases to judges. Since most Courts use rotation schedules for allocating cases to judges, the risk of having the same judge deciding about both detention and guilt could probably be minimized for instance by excluding the detention judge from further dealing with the case, as far as this is possible. Another possibility is to have specific detention Courts, separate from the Courts deciding about guilt, but this would obviously require larger organizational changes than adjusting the rotation schedules. Hence, it seems reasonable that the primary responsibility for avoiding such situations is placed on the Courts. In practice, this will most probably be a trade-off with efficiency demands and depending on the outcome, situations might arise in which the same judge both detains and decides about guilt. Then, the defendant can of course put forward a claim of partiality. *Study III* provides a preliminary empirical basis for such a non-competence claim and this should, reasonably, fulfill the requirement that the fear of partiality is objectively justified, considering that non-competence claims usually cannot be made more specific than identifying such a general risk.

In comparison with the police officers and prosecutors, the judges' responses more strongly imply social explanations of confirmation bias. Possibly, this is due to a relatively greater accountability for the final decision, that is, greater pressure to justify judgments or decisions to others.[937] Furthermore, the finding that structuring the evaluation of evidence did work as a debiasing technique in regard to ratings of total evidence but not decisions about guilt deserves more attention. It suggests that the principle of evidentiary independence can have some importance in mitigating the bias. However, to understand whether this technique can be successful, a necessary first step is to examine the mechanisms whereby judges process and translate the total evidence strength into a dichotomous decision about guilt. The

[937] Siegel-Jacobs & Yates, *Effects of procedural and outcome accountability on judgment quality*, pp. 1-17.

correlational analyses in *Study III* suggest that these two assessments are significantly and positively correlated but perhaps not to the extent preferable. This indicates a risk that judges' decisions about guilt are not as firmly and directly anchored in the evidence as they should be, which undoubtedly deserves more attention in future research.

Across the three studies, the use of coercion had a more direct relationship to confirmation bias for police officers and judges, whereas for prosecutors, the coercion only increased the level of guilt confirmation after a prosecution, suggesting that the prosecution was the primary biasing factor. As regards the tested debiasing techniques, the results were largely in line with the hypotheses in the police and judge samples, as in these samples both changing decision maker and reducing cognitive load decreased the level of confirmation bias (although to different extents). Reducing cognitive load was more successful with the police officers than the judges and vice versa, changing decision maker was more successful with the judges than the police officers. However, in the prosecutor sample, where the change of decision maker was only tested for the period after an arrest (not also after the prosecution), no significant effects were found but the differences in comparison with the student sample imply that working experience might be an important factor. Furthermore, the possibility of changing decision maker after a prosecution, not just after an arrest, should also be evaluated.

The question of whether and to what extent the confirmatory reasoning displayed in Study *I-III* is rational has already been discussed in relation to the trustworthiness ratings, which can be considered rational using probabilistic definitions of rationality but at the same time judicially irrational. The question of rationality can also be discussed in relation to the other measures and in relation to the incentives created by the legal system. Such incentives are found, not only in the standards of proof for coercion which require hypothesis formation but also in the legal actors' social roles, that is, the roles that they perceive that the system expects them to take on. This could be for instance that judges are accountable for the accuracy of the guilt decision (and also that detentions followed by acquittals are considered wrongful), that prosecutors may not initiate unjustified prosecutions and that police officers who have to make quick intervening decisions on scant information still need to defend their decisions as proportionate and necessary. Following that, behaving in a way that promotes the guilt hypotheses, for instance by interpreting the evidence in guilt confirming ways, can possibly promote goal fulfilment and therefore be a rational way to accomplish both overall organizational and individual personal aims, e.g. when it comes to career opportunities. Even so, such behaviors are in direct contradiction of other incentives created by the system, for instance those stemming from the suspect's right to a fair trial. The possibility of such contradicting incentives has to be further addressed as a way of understanding bias in the legal system.

The findings in *Study I-III* shall also be seen in the light of the results of *Study IV (Part I and II)*, which suggests that the legal remedies against wrongful convictions are insufficient. The proposition of a model for evaluating and quantifying the prevalence of wrongful convictions is also the primary value of *Study IV*. This study suggests that far from all wrongful convictions are corrected through the appeal or petition for a new trial. Provided the found similarities between mechanisms in the legal system (the posttrial remedies) and how confirmation bias operates in individuals, this can be conceptualized as a *systemic confirmation bias*. An important step for future research is to more carefully examine the mechanisms by which this occurs. Some possible starting points are identified in the study, namely the limited possibility for the defense to make claims of innocence persuasive enough and that the access to legal guidance is limited in ways that prevent private individuals from even coming close to being granted new trials.

Possible ways to improve the efficiency of these legal remedies are discussed in the full papers. However, even if changes in these legal remedies are probably required, it is of course necessary to also find strategies that prevent and minimize the number of wrongful convictions that occur in the District Courts. Apart from the importance of continued research and implemention of debiasing techniques, this is also a matter of legal policy as well as routines among legal practioners. A legal political question of crucial importance is the defense's possibilitites to initiate additional investigation they find appropriate. Through the available legislation, it is clear that the legislator has considered this possibility important. Yet, to what extent the defense's requests for additional investigation are abided by in practice has not been studied systematically, even if there are indications in the testimonies of individual defense counsels that refusals are relatively common.[938] It is also problematic for the defense to carry out its own investigation for a number of reasons, such as costs (without any guarantees of compensation) as well as overall strategical and ethical considerations. According to The Code of Judicial Procedure 23 ch. 18 b and 19 §§ refusal by the leader of the investigation to undertake additional investigation requested by the defense can be reported to the Court.[939] It is unknown to what extent this possibility is used in practice but

[938] For instance, due to poor access to the state's investigative resources Björn Hurtig has hired a former police officer to conduct inquiries on his clients behalf, see Nordqvist, *Björn Hurtigs byrå anställer egen polis: "här i Sverige är advokatbyråerna naiva"*. According to Johan Eriksson, the requests are "sometimes" refused although it is more common that the requests are approved, see Eriksson, *Handbok för försvare*, p. 121. For more on this topic, see Öster, *Riskabelt att göra egna undersökningar.*

[939] This is not an appeal of the prosecutor's decision to not undertake such investation but instead an expression of the Court's responsibility to ensure that the investigation is of sufficient quality, which is expressed through The Code of Judicial Procedure 45 ch. 11 §, 46 ch. 12 § (for the District Court), 51 ch. 12 § (for the Court of Appeal), 55 ch. 15 § p. 2 (for the Supreme Court).

also in this regard there are testimonies from individual defense counsels suggesting that the Courts are unwilling to make remarks or in other similar ways get involved in the investigative work.[940] Although it should be repeated that this claim has not been evaluated empirically, the question of the Court's activity or passivity in this and similar situations is important.

In the legal doctrine it is sometimes stated that the reason for the Court to not get involved is the risk of being perceived as partial.[941] However, the more specific conditions under which it is or is not considered appropriate for the Court to get involved are far from clear. On the one hand it is stated that the Court does not necessarily have to be passive and that there is no obstacle to the Court suggesting, to the parties, what evidence could be collected.[942] On the other hand, a judge shall not himself or herself inquire or search for evidence in the same way as for instance an interrogation leader.[943] Instead, the judge shall evaluate the evidence that the parties have referred to and in this process think of possible alternative hypotheses, if such hypotheses have any support in the presented material.[944] This last addition: if such hypotheses have any support in the presented material, could possibly lead to paradoxical results if the Court is passive in relation to any claims from the defense that additional investigation is necessary. If the Court can only consider alternative hypotheses that are supported by the material presented in Court, and if the defense's requests to investigate other possible hypotheses have been disregarded, it can be questioned whether alternative hypotheses are in fact presented and evaluated sufficiently. This could clearly hamper the Court's ability to reach the truth in a given criminal case,[945] although the extent of the problem is unknown.

The available case law does not provide any more specific guidance as regards the Court's activity or passivity in cases where an omission to act is to the defendant's disadvantage.[946] However, it is clear that the incentive to

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[940] Eriksson, *Handbok för försvarare*, p. 121. Eriksson furthermore points out that, despite unwillingness from the Courts to get involved in the investigative work, there might be reason to file such a report and if it does not results in any additional inquiry, the lack thereof can be refered to during the criminal trial to underline a deficit in the evidence.

[941] Ekelöf, Edelstam & Heuman, *Rättegång IV*, pp. 55-57.

[942] *Ibid*., p. 56.

[943] *Ibid*., p. 57.

[944] *Ibid*.

[945] Compare to Ekelöf, Edelstam & Heuman, *Rättegång IV*, p. 56 who point to this risk in a more general sense and as a result of Courts' being passive due to the interest of maintaining the judges' impartiality.

[946] However, in a case concerning *failure to use a car seat belt (bilbältesförseelse)*, the defendant was acquitted in the District Court but the prosecutor then appealed and during the Appellate Court proceedings, none of the parties and not the Court either, made sure that a witness which the defendant had referred to in the District Court and which had been trusted by the District Court, was summoned again, see The Supreme Court NJA 2006 p. 457. Therefore, the Court of Appeal did not consider it possible to change the District Court's assessment of the witness in accordance with the provisions in The Code of Judicial Procedure 51 ch. 23 §. According to this provision, the District Court's verdict may only be

act in such situations is larger than in the opposite situation, since the Supreme Court has stated that the position of the party as well as the type of case are important factors to take into account.[947] Although the available case law does not provide much guidance, the described, or assumed, fear of being perceived as partial as a result of acting can be discussed on a more general level. Is it really the case that judges best protect their impartiality by being passive? Clearly, *Study III* illustrates the risk that decisions and assessments made prior to a main hearing biases judges' decision making regarding the question of guilt. In cases where this is a bias in the direction of the guilt hypothesis, increasing the likelihood of a conviction, it is problematic considering the presumption of innocence. Beforehand it is of course impossible to know what judges will decide regarding the defense's request for additional investigation. A decision that the defense's request needs to be abided by can be interpreted as the judge being on the defense's side, since he or she already sees flaws in the inquiry. Yet, a decision that the defense request does not have to be abided by could be interpreted in the opposite way, that there is no point in undertaking more investigation because the evidence indicating guilt is already sufficient for a conviction and/or that the defense's request is exaggerated or unlikely to lead to anything substantial. Another related aspect is of course the uncertainty regarding the result of any investigation, should it be undertaken. Refraining from requesting additional investigation due to such uncertainty would probably make sense for a defense counsel but does it really for a judge? Especially considering that it is the defense who requests the investigation? If judges beforehand decide to not get involved in such situations that would more accurately be described as partiality than the other way around. Also, in line with the findings in *Study III*, a remedy that potentially could prevent both actual and perceived partiality is to not have the same judge decide about the defense's request and the defendant's guilt.

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changed if there are *exceptional reasons* (synnerliga skäl) in cases where the District Court has placed trust in a witness whose trustworthiness is also important for the Appellate Court's verdict, but the witness has not been interrogated in the Appellate Court. In the case at hand, the Appellate Court did not judge that exceptional reasons where at hand and therefore considered itself prevented from changing the District Court's verdict. Thus, in this case, omission by the Appellate Court to summon the witness in fact resulted in an advantage for the defendant (since there was no other option than an acquittal). The prosecutor's claim that the Appellate Court's omission constituted a procedural error was dismissed by the Supreme Court which also stated that prosecutors generally should have sufficient knowledge to independently refer to the necessary investigation and that the Appellate Court has no duty to guide this process. The Court also states that the provision in The Code of Judicial Procedure 35 ch. 6 § only under very special circumstances can be considered to entail any type of duty for the Court to act. This is also in line with the discretionary nature of the provision.

[947] The Supreme Court refers to the Swedish Government Official Reports, SOU 1938:44 p. 386 where it is stated for instance that the Appellate Courts should to a greater extent arrange for new presentation of evidence in cases of gross crimes where the defendant denies.

Although it is a legal possibility for the defense to report omissions of requested additional investigation to Court, there are indications that the defense more often directs complaints to a superior prosecutor in accordance with the procedure referred to as *överprövningsförfarande*.[948] This procedure is not further formalized in law and, as a consequence, the Court is not required to await completion of the procedure before it initiates the main hearing.[949] There are also indications that the rate of prosecutorial decisions that are changed through this procedure is relatively low.[950] It is possible that either formalization of the procedure or greater usage of the possibility to report to the Court could help provide guiding decisions or similar that can facilitate the understanding of what is required from criminal inquiries and thereby also improve their general quality. Also after a prosecution has been initiated, the Court can order the prosecutor to undertake additional investigation, in accordance with The Code of Judicial Procedure 45 ch. 11 § and 46 ch. 12 §. However, when wrongful convictions do occur in the District Courts, the effectiveness of the appeal procedure becomes decisive. In this regard, it can be noted that not only the parties have the possibility to refer to new evidence but also the Courts of Appeal can demand additional investigation in accordance with The Code of Judicial Procedure 35 ch. 6 § and 51 ch. 12 §.

Yet, a wrongful conviction does not necessarily occur because there is something *missing* in the criminal inquiry. The wrongfulness can also be due to that the District Court has made an incorrect assessment of a complete set of evidence. This possibility is emphasized by the theory of confirmation bias where the evaluative component is at least an equally potent source of error as the search component. It can therefore not be assumed that all wrongful convictions would be corrected through measures aimed at improving the evidentiary basis for decisions about guilt, neither in the District Courts nor in the remaining Court instances. The possibility of errors in terms of evaluation of the evidence has also been acknowledged by the Chancellor of Justice who has pointed to this as an important contributing

[948] The Code of Judicial Procedure 7 ch. 2 and 5 §§. This procedure builds on the so-called principle of devolution (devolutionsprincipen in Swedish) which refers to a superior prosecutor's right to overtake and reassess tasks originally assigned to a subordinated prosecutor, see for instance Ekelöf, *Rättegång II*, p. 159. Since neither the Government nor a superior prosecutor is allowed to dictate how an individual prosecutor is to decide in an individual case in accordance with the Instrument of Government 12 ch. 2 §, it is required that the superior prosecutor temporarily takes over the role of the subordinated prosecutor in order to make the reassessment. The extent to which the överprövningsförfarande is used, as compared to filing reports to Court, has not been empirically evaluated.

[949] See Lindberg, *Rättegångsbalk* 1942:740, 7 kap. 5 §, Lexino.

[950] As low as 7-10 % during 2014-2016 according to statistics from The Prosecution Authority, *Annual Report 2016*, p. 50. Note however that this also includes other types of decisions than those concerning the defense's request to undertake additional investigation.

factor of wrongful convictions.[951] The acknowledgment of such errors is also reflected in that the Courts of Appeal have relatively extensive discretion in making other evaluations of the evidence than the District Courts.[952] Also, as illustrated by *Study IV (Part I)* the evidentiary basis in the District Courts and Appellate Courts are often identical, as 78.13 % (1297 out of 1660) of the appeals seeking to overturn convictions did not refer to any new evidence. However, for a convicted individual to be granted a new trial *(Part II)*, claims of wrongful evaluation of evidence will most often not suffice, as a new piece of evidence or circumstance is usually required, in accordance with The Code of Judicial 58 ch. 2 §. It is worthwhile to stop at this for a while. Provided the principle of free evaluation of evidence, can it really be claimed that the Courts' evaluations of evidence can be *wrongful*? And how would such claims be substantiated? Breaches against the rules described in Chapter 4.4 could probably at least in theory be used for successfully claiming that the evaluation of the evidence was wrongful. Yet, in practice, a claim that a judge has not abided by the principle of evidentiary independence or similar claims will be very difficult or even impossible to substantiate. If proving that evidence is missing is difficult, then proving that the evidence was evaluated in a wrongful way is even more difficult. This is because the only standard with which to compare is the standard that is unavailable to the Court, namely the truth. It is clear that such claims require other types of evidence to be substantiated and when it comes to confirmation bias specifically, the only perceivable type of evidence is empirical evidence. An example is experimental evaluations of suspect line-ups which illustrate whether the line-up was biased and therefore likely to lead witnesses as well as the Courts who trust the witnesses, in the wrong direction. Also other empirical evaluations relating to the reliability and implications of specific pieces of evidence are likely to be of interest in this regard, for instance evaluations of conclusions drawn by forensic analysts with and without knowledge of crime relevant information. Whether and to what extent the Courts will approve of such evidence can only be tested through referral to such evidence in real life criminal cases.

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[951] The Vice Chancellor of Justice, *Felaktigt dömda, Rapport från JK:s rättssäkerhetsprojekt,* p. 468.

[952] On a general level, the Court of Appeal is considered to be equally capable to assess the evidentiary value of for instance interrogations that are recorded in the District Courts and then presented in the Court of Appeal, see Welamson & Munck, *Processen i hovrätt och högsta domstolen*, pp. 81-82. However, in accordance with The Code of Judicial Procedure 51 ch. 23 §, if such a recording is not presented in the Court of Appeal (or alternatively referred to in accordance with The Code of Judicial Procedure 50 ch. 19 § or held anew in the Court of Appeal), a change of the evaluation of the evidence is only allowed if it is to the defendant's advantage, in cases where the credibility (Swedish: tilltro) of this evidence is at question also in the Court of Appeal (also, this prohibition to change the evaluation of the evidence comes with exceptions). For more on this see Welamson & Munck, *Processen i hovrätt och högsta domstolen*, p. 87.

6.3 Methodological Reflections

At the beginning of this thesis, two questions were posed; 1) In what way can legal scholarship benefit from using empirical, or even experimental methods and 2) what type of knowledge can be gained from using such methods? These two questions have been addressed quite extensively in Chapter 2 and also through the examples provided by the empirical studies but will now also be summarized and discussed here.

The potential gain of using empirical methods can be explained by reference to the methodological assumptions in legal scholarship, and more specifically, what in this thesis has been referred to as the assumptions of transparency and consciousness. Although these two assumptions do not limit understanding in relation to some research questions, for instance those directed at what the established law is, they do confine or even misguide other types of understanding, for instance when it comes to questions regarding the decision making process. However, experimental methods do not assume that decision makers are absolutely, and fully aware or able to communicate the reasons upon which they form their decisions. Instead, by using manipulations and the contrafactual model, these methods acknowledge and systematically test which factors influence decision making in practice. As illustrated in the results and discussion section above (6.2), the employment of experimental methodology in this thesis has enabled identifications of components of legal decisions, which could not have been identified using only traditional legal sources. It ought to be quite obvious that none of the participating legal actors would have stated that the apprehension, prosecution or detention were reasons for making certain decisions, neither in their written decisions nor in interviews. Thus, these methods have the potential of unlocking understandings of legal decision making that are out of reach with other methods. In this way, it can also provide possible explanations as to why some legal decisions are inexplicable or at least very difficult to grasp from a legal perspective. They can also provide a more substantiated framework for evaluating whether and to what extent legal actors' reasoning do in fact abide by rules and principles dictating how legal decisions should be made.

The only non-experimental study, the archive study of appeals and petitions for new trials, has enabled an empirically based estimation of how well functioning these legal safe guards really are. It has also provided quite detailed information regarding the potential importance of for instance which Court decides, whether the applicant has legal representation and which type of crime the petition concerns. This, in turn, has lots of implications. For instance, the large differences in approval rates between the different Courts can and should be discussed in relation to demands on a uniform application of law.

However, the potential benefits of using empirical methods is far wider than those illustrated by the empirical studies in this thesis. Thus, the thesis aspires to inspire other applications, for instance in other legal areas, regarding other biases or other phenomena of relevance to legal scholarship. For instance, archive studies could be of great value for legal research that aims to better understand how the Courts, in practice, apply requirements like the *precautionary principle* in environmental law, *causation* and *adequacy* in tort law or *the best interest of the child* in family law.

Hence, the author's experience of using these methods is captured very well by Slife's observation that methods can open a world of understandings.[953] As both Slife and other empirical researchers acknowledge, methods can also close off understandings and it is therefore crucial that limitations are noted and discussed, not only in empirical research but also legal research that does not use empirical methods. As regards the four empirical studies included in this thesis, the replicability should be tested.[954] The full papers provide detailed descriptions of how to go about doing this. Even so, something that also contributes to a wider understanding is of course the combination of methods. In this thesis, the legal dogmatic method has enabled an understanding of the legal relevance of confirmation bias as a general phenomenon but also the specific empirical findings in *Papers I-V*. Together, these methods provide valuable vocabulary for speaking of issues that are not the traditional topics of conversations in legal scholarship.

Since law clearly generates many empirical questions, not just those studied in this thesis, let us hope that the conversation does not end here. As implied by the concept of Evidence-Based Law (EBL), it is likely that also law in a wider sense can gain important knowledge from empirical legal research. For instance, the empirical findings in this thesis can be informative for best practice guidelines for suspect interrogations or prosecutorial decision making (*Studies I-II*), the legislative procedure (*Study III*) or for legal counseling (*Study IV Part I and II*). Reasonably, such empirical bases can be beneficial for law in similar ways as corresponding empirical bases in other scientific fields, although the more specific implications for law have to be further examined and nuanced. An interesting part of such a development could be that empirical evidence, for instance evidence suggesting that judges in certain situations are biased and therefore should be disqualified from deciding a case, is referred to in Court and considered by the Courts.

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[953] Slife, *Raising the Consciousness of Researchers: Hidden Assumptions in the Behavioral Sciences*, p. 21.

[954] This is the case even if parts of the data in the archive study concern a 5-year time period and even if the experimental studies entail multiple experiments. More detailed discussions regarding limitations, evaluation of alternative explanations etc. are found in *Papers I-IV*, see for instance the Limitations sections.

6.4 Overall Conclusions

This thesis supports both Nickerson's overall description of confirmation bias as a ubiquitous phenomenon that comes in many guises and the more specific research about confirmation bias in criminal cases. Furthermore, it reaffirms legal scholars' views of the process of decision making as something partially different from the justification process. It is quite clear that judges would never justify their decisions about guilt with any reference to that they had previously detained the defendant and corresponding statements from police officers and prosecutors are also very unlikely. Thus, studying legal decision making with the focus on the decision making process, and using empirical methods to do so, can unlock a wider understanding of the reasons upon which legal decisions are formed.

The thesis contributes to the already existing research through the identification of triggers of confirmation bias, that is, coercive measures and prosecution decisions that are inherent components of the criminal procedure. This implies that confirmation bias is not necessarily due to some relatively unusual circumstance but in fact far more common than that. Also, the thesis suggests a new perspective on the issue, namely that of a systemic confirmation bias. Since *Studies I-III* concern police officers', prosecutors' and judges' decision making, they exemplify not only how confirmation bias can operate in isolated situations in specific stages of the procedure but also its continuous influence on the procedure. More specifically, this influence may start from the point in time when a person is first apprehended (*Study 1*) up until the conviction (*Study III*). In this way, the guilt hypothesis is given an unintended preferential treatment with an associated increased risk of a wrongful conviction. This risk does not seem to be sufficiently acknowledged and incorporated in the available posttrial legal remedies against wrongful convictions *(Study IV Part I and II)*.

It could be argued that the practical implications of confirmation bias during suspect interrogations are limited, especially in comparison with such a bias in judges' decisions about the defendant's guilt. Clearly, the judges have the final say (for the moment disregarding the posttrial legal remedies) and consequently, their decisions are most closely related to the contingency of a wrongful conviction. However, this conception is greatly simplified since judges certainly would never even have to decide about guilt, unless the prosecutor had pressed charges. Furthermore, the prosecutor's charging decision is (and should be) closely related to the evidence found by the police during the criminal inquiry. Thus, all of these stages are inevitably intertwined and dependent on each other. This relationship can and is intended to have the function of monitoring decision quality in the previous stages. However, if confirmation bias is present in all of the stages, that function clearly falls flat. Instead, bias in one stage can support the formation of a bias in another stage. If police officers presume that a suspect is guilty, the

investigation may primarily produce guilt confirming evidence, which makes it more probable that the prosecutor will press charges, possibly with the addition of even more evidence that confirms the guilt hypothesis. Once in Court, the evidence will most probably appear as strong support for the defendant's guilt, increasing the likelihood of a conviction. If the convicted decides to appeal and petition for a new trial, the odds of an acquittal seem to be relatively low. This is most certainly the case when it comes to the odds of being granted a new trial. However, already when appealing, the chances are restricted by for instance poor opportunities for the defense to obtain new evidence and that evidence presented by the defense, possibly, is given less weight than what is logically justified.

The thesis furthermore contributes to an incipient framework for how to debias legal actors. As implied by the mixed findings, it is likely that such debiasing techniques are insufficient for completely eradicating confirmation bias and furthermore that the success of their usage is dependent on for instance situation specific variables. At the same time, it is both unlikely and inappropriate that the issue is solved through predominantly posttrial remedies against wrongful convictions. Rather, increasing the efficiency of both debiasing techniques (pretrial) and posttrial remedies is necessary. As regards the debiasing techniques, this appears to be a task primarily for scientific research, which should aim to elaborate on a more extensive and nuanced framework. This can then form the scientific basis of for instance best practice guidelines. However, the posttrial remedies are primarily a question of legal policy, for instance, to what extent new investigations and new trials are allowed to improve the chances of correcting wrongful convictions. Of course in practice, this question has more aspects than that of the legitimacy of the legal system, such as economical and political prioritites.

To sum up, it should be emphasized that the results of the empirical studies are not surprising. In fact, it would have been surprising if no bias at all was found. Likewise, and something that has been put forward repeatedly in this thesis, but deserves to be repeated once again, is that this influence is most probably not conscious. Since legal actors are aware of their obligations to act objectively, and thereby not be influenced by legally irrelevant circumstances, it seems reasonable to assume that they would have acted differently, if the bias was conscious. Thus, to avoid confirmation bias and thereby promote legal actors' ability to process diverse information, the issue has to be addressed further and with careful consideration of the specific characteristics of this bias. This seems like an excellent task for future empirical legal research.

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Sammanfattning på svenska (Summary in Swedish)

Den här avhandlingen handlar om s.k. confirmation bias i brottmål. Med confirmation bias avses en tendens att leta efter och/eller ge större tyngd åt argument och bevis som ger stöd för och bekräftar en tidigare skapad uppfattning. Samtidigt bortses ifrån eller omtolkas information som inte överensstämmer med hypotesen. Forskare, framförallt inom kognitionspsykologi, har studerat förekomsten av confirmation bias i en rad olika historiska och nutida kontext som t.ex. häxjakt, vetenskap och medicin. Därtill har rättspsykologer intresserat sig för förekomsten av confirmation bias inom den rättsliga kontexten och då framförallt i brottmålsprocessen.

Forskningen avseende confirmation bias i brottmål är huvudsakligen experimentell och har illustrerat hur confirmation bias kan ta sig uttryck i olika moment av brottmålsprocessen. Denna forskning kan delas in i följande fyra kategorier: 1) den övergripande inriktningen på förundersökningen, 2) identifikationer och förhör, 3) forensiska undersökningar och analyser samt 4) domstolsprocessen, och dessa sammanfattas här nedan.

Vad gäller den övergripande inriktningen på förundersökningen kan confirmation bias ta sig uttryck i att förundersökningen blir *misstänktdriven*, vilket innebär att en misstänkt person identifieras på ett tidigt stadium och därefter går utredningen ut på att hitta bevis som överensstämmer med hypotesen om den misstänktes skuld. Brottsutredarna kan även uppvisa s.k. *asymetrisk skepticism*, dvs. att de okritiskt godtar information som överensstämmer med hypotesen men kritiskt skärskådar och avfärdar information som talar däremot.

Inom ramen för en vittneskonfrontation kan en polis vetskap om den misstänktes identitet förmedlas till vittnet, utan att polisen själv är medveten om det. Detta gör det mer sannolikt att vittnet pekar ut den misstänkte (jämfört med om den misstänktes identitet varit okänd för polisen). Även när deltagare som agerade poliser följde exakt samma instruktioner steg för steg var sannolikheten för att den misstänkte blev utpekad betydligt högre bland deltagarna som kände till den misstänktes identitet, trots att ingen av dessa deltagare uttryckligen eller medvetet avslöjade identiteten för de deltagare som agerade vittnen. Att en hypotes om skuld på detta sätt läcker till ett vittne kan även vara fallet i vittnesförhör där t.ex. valet eller formuleringen

av frågor gör att hypotesen överförs till vittnet som sedan anpassar sin utsaga så att den överensstämmer med hypotesen.

Vid brottsplatsundersökningar kan förhandsinformation om t.ex. det misstänkta brottet eller gärningspersonen skapa förväntningar hos brottsplatsundersökarna. Dessa förväntningar kan leda dem till att ensidigt söka efter, säkra och tolka spår på sätt som bekräftar förhandsinformationen, trots förekomsten av spår som talar i en annan riktning. Liknande effekter beskrivs i forskningen om det s.k. forensic confirmation bias som illustrerar hur vetskap om t.ex. en misstänkt persons erkännande eller om att den misstänkte blivit identifierad av ett vittne, gör forensiker mer benägna att komma till slutsatser som överensstämmer med denna vetskap. Sådana effekter har noterats i forensiska analyser av t.ex. fingeravtryck, skoavtryck, bitmärken, spårstrukturer på vapenkulor och vid handstilsjämförelser. Det finns även indikationer på en sådan påverkan i förhållande till rättsmedicinska bedömningar om t.ex. dödsorsak även om detta behöver undersökas mer systematiskt.

Inom ramen för domstolsprocessen finns det indikationer på att domare tenderar att uppfatta bevisningen för en viss åtalspunkt som starkare t.ex. då åtalspunkten bedöms samtidigt som andra åtalspunkter (särskilt om åtalspunkterna och bevisningen är liknande). Även vetskap om den tilltalades erkännande, belastningsregister och socioekonomiska status har haft likande effekter. Därtill förefaller domares emotionella reaktioner i förhållande till en tilltalad kunna påverka deras resonemang och bedömningar av t.ex. huruvida den tilltalades agerande rättsligt sett utgör ett brott.

En distinktion som är central i avhandlingen är den mellan beskrivning och förklaring av confirmation bias. Beskrivning handlar om hur confirmation bias kan ta sig uttryck (se exempel från de fyra kategorierna) medan förklaring handlar om att försöka förstå varför confirmation bias uppstår. Teorin om confirmation bias innehåller inte i sig några förklaringar utan dessa måste hittas utanför teorin och hittills har forskningen i detta avseende belyst kognitiva, emotionella/motivationella samt sociala/organisatoriska förklaringar till beteendet. De kognitiva förklaringarna handlar om att människans begränsade kognitiva kapacitet vad gäller uppmärksamhet, arbetsminne, långtidsminne etc. gör det svårt eller till och med omöjligt att aktivt bearbeta mer än en hypotes i taget. De emotionella/motivationella förklaringarna tar sikte på bl.a. hur emotionella responser kan göra beslutsfattare motiverade att nå vissa slutsatser och denna motivation gör att de resonerar på ett ensidigt, målinriktat och hypotesbekräftande sätt. De sociala/organisatoriska förklaringarna handlar exempelvis om att närvaron av andra människor kan göra beslutsfattare benägna att resonera inte i första hand med målet att finna sanningen i en given situation, utan snarare för att övertyga andra människor om att de har rätt. Därtill kan beslutsfattare som arbetar gemensamt i en grupp bekräfta och förstärka varandras ensidiga sätt

att resonera, givet vissa gruppdynamiska faktorer. Den organisationspsykologiska forskningen beskriver även hur incitament skapade i en organisation påverkar beteendet hos de individer och grupper av individer som arbetar inom organisationen. Detta kan understödja confirmation bias t.ex. om ett ensidigt sätt att resonera främjar förverkligandet av övergripande mål inom organisationen. Att bättre förstå varför confirmation bias uppstår är ett centralt moment inom detta forskningsområde, inte minst för att sådan kunskap kan omsättas till strategier för att motverka eller förebygga confirmation bias. Potentialen i dessa s.k. debiasing techniques kan sedan utvärderas i systematisk empirisk forskning och, om de visar sig vara framgångsrika, eventuellt inkorporeras i verkliga brottmålsprocesser.

Inom ramen för avhandlingen har fyra empiriska delarbeten genomförts. Tre av dessa arbeten är experimentella studier som utvärderar förekomsten av confirmation bias, liksom möjliga sätt att motverka detta bias, hos svenska poliser (*Studie 1*), åklagare (*Studie II*) och domare (*Studie III*). Det fjärde delarbetet är en arkivstudie avseende överklaganden och resningsansökningar (*Studie IV Del I* och *Del II*) där teorin om confirmation bias används som en metafor för en bristande förmåga att självkorrigera felaktigt fällande domar.

I *Studie I* undersöktes huruvida ett gripande kan skapa ett confirmation bias som tar sig uttryck i det efterföljande förhöret med den misstänkte. Studien utvärderade också huruvida detta bias kunde motverkas genom att byta beslutsfattare mellan gripande och förhör samt genom att göra förhöret mindre kognitivt krävande för förhörsledaren. Studien bestod av en serie av tre experiment, Experiment 1 med poliser ($N = 60$) samt Experiment 2 och 3 med studenter ($N = 60$ och $N = 60$). Samtliga deltagare fick läsa 12 scenarion där de antingen skulle avgöra själva eller blev informerade om en kollegas eller åklagarens beslut om att gripa/anhålla. Därefter blev de ombedda att förbereda frågor för ett förhör, dels genom att själva formulera frågor och dels genom att välja frågor från en lista[955] samt att skatta hur tillförlitlig den misstänktes utsaga var. De övergripande resultaten visade att de individer som gripits förhördes på ett mer skuldförutsättande sätt än de som inte gripits. Resultaten indikerar att en teknik med viss potential för att motverka detta bias är att reducera hur kognitivt krävande förhöret är för förhörsledaren.

Studie II testade förekomsten av confirmation bias i åklagares beslut om anhållande och åtal. Den utvärderade även huruvida ett byte av beslutsfattare mellan anhållande och åtal kunde reducera ett sådant bias. Deltagarna var åklagare ($N = 40$) i Experiment 1 och studenter ($N = 60$) i Experiment 2. Alla deltagare läste 8 scenarion där de antingen själva skulle fatta beslut om

[955] Förhörssättet var en proxy var hur kognitivt krävande förhöret var. I Experiment 3 som hade en s.k. mellanindividsdesign fick hälften av deltagarna själva formulera frågor och den andra hälften fick välja frågor från listan.

anhållande eller blev informerade om en kollegas beslut i detta avseende. Därefter presenterades ett nytt tvetydigt bevis och deltagarna ombads att skatta hur tillförlitlig den misstänktes utsaga var, hur starkt bevisningen talade för den misstänktes skuld, huruvida det fanns tillräckliga skäl för att väcka åtal samt om någon ytterligare utredning krävdes och i sådana fall vilken. Resultaten har delats upp i tre faser, 1) innan, 2) under och 3) efter åtalsbeslutet. För åklagarna var resultaten blandade i tidsperioden 1) innan åtalsbeslutet, eftersom de skattade anhållna individer som mindre tillförlitliga men samtidigt skattade den totala bevisningen som starkare och var mer benägna att väcka åtal i förhållande till individer som inte anhållits. Åklagarna var mer benägna att 2) väcka åtal i förhållande till anhålla individer med låg tillförlitlighet, där bevisningen skattades som stark. Vad gäller tidsperioden 3) efter åtalsbeslutet, var åklagarna mindre benägna att vidta ytterligare utredningsåtgärder och de åtgärder de föreslog hade en mer skuldbekräftande karaktär, om beslutet var att åtala. Detta skilde sig delvis från studenterna som uppvisade ett mer skuldbekräftande förhållningssätt gentemot anhållna individer konsekvent genom alla tre faser. Att byta beslutsfattare verkade inte ha någon potential i att motverka detta bias bland åklagarna men tekniken behöver även testas i förhållande till perioden efter åtalsbeslutet (inte bara tidsperioden mellan ett anhållande och åtalsbeslut).

Studie III utvärderade huruvida domares häktningsbeslut innan en huvudförhandling kan skapa ett confirmation bias som tar sig uttryck i bedömningen av skuld. Studien testade även om ett sådant bias kunde motverkas genom ett byte av beslutsfattare mellan häktning och huvudförhandling. I Experiment 1 fick domare (N = 64) läsa 8 scenarion där de antingen själva fick avgöra om en misstänkt person skulle häktas eller blev informerade om en kollegas beslut. Därefter fick de information om att åklagaren väckt åtal och under huvudförhandlingen presenterades ett nytt tvetydigt bevis samt bevisningen i övrigt (ett bevis som indikerade att den tilltalade var skyldig) mer fullständigt. Domarna fick sedan skatta hur tillförlitlig den tilltalades utsaga var, hur starkt varje enskilt bevis liksom den totala bevisningen talade för den tilltalades skuld samt besluta i skuldfrågan. I Experiment 2 användes samma metod men med studenter (N = 80) som antingen fick skatta varje bevis för sig och sedan den totala bevisningen eller enbart den totala bevisningen, innan de beslutade om skuld. Överlag bedömdes tilltalade som tidigare häktats som mindre tillförlitliga, bevisningen mot dem som starkare och deltagarna var även mer benägna att finna dessa tilltalade skyldiga, ifall deltagarna själva tidigare fattat beslut om att häkta den tilltalade. I Experiment 2 bedömdes den totala bevisningen som starkare bland deltagarna som endast skattade den totala bevisningen utan att först ha skattat varje enskilt bevis men detta hade inte någon signifikant inverkan på deras beslut om skuld. Resultaten talar starkare för ett byte av beslutsfattare som ett sätt att motverka confirmation bias efter ett häktningsbeslut.

Studie IV baserades på en genomgång av 3239 överklaganden (Del I) och 2078 resningsansökningar (Del II). För att utvärdera rättsystemets förmåga (eller oförmåga) till självkorrigering användes ett mycket lågt antagande om hur många av det totala antalet fällda individer i tingsrätterna som blivit felaktigt fällda (0.50 %). Därefter uppskattades hur många av de som dömts felaktigt i tingsrätterna som blev friade efter ett överklagande eller att ha ansökt om resning, baserat på ändrings – och beviljandefrekvenser som observerats i de genomgångna överklagandena samt resningsansökningarna. Detta kompletterades med en robusthetsanalys där en rad antaganden avseende frekvensen av felaktigt fällda (0.10 – 2.00 %) samt avseende andra okända variabler testades. De övergripande resultaten talade för att åtminstone 34.67 % av dem felaktigt dömda som överklagade och ansökte om resning,[956] förblev felaktigt dömda. Robusthetsanalysen talar för att denna slutsats håller över en rad antaganden vad gäller de okända variablerna, även om den mer specifika procentsatsen förändras med olika antaganden.

Ytterligare analyser visade att oddsen för en friande dom i hovrätten var relativt låga även då överklagandet hänvisade till kombinationer av ny bevisning till stöd för att den dömde var oskyldig. Därtill var majoriteten av de som sökte resning enskilda individer utan juridiskt biträde och oddsen för att beviljas resning var särskilt låga för enskilda individer som dömts för brott mot liv och hälsa (t.ex. misshandel eller mord). Detta, tillsammans med analysen som talar för att en relativt stor andel felaktigt fällda individer förblev felaktigt dömda, kan konceptualiseras som ett systemiskt confirmation bias då information som talade emot hypotesen om skuld antingen inte kom till rättsystemets kännedom eller nedvärderades.

Sammanfattningsvis talar dessa delarbeten för att confirmation bias förekommer i olika grad och tar sig olika uttryck under brottmålsprocessens olika skeenden. Resultaten indikerar även att detta bias kan ha olika förklaringar i olika situationer. Det kan diskuteras huruvida detta konfirmatoriska sätt att resonera i själva verket är uttryck för ett, i viss bemärkelse, rationellt tankesätt. Exempelvis kan det faktum att en gripen person bedömdes som mindre tillförlitlig anses vara fullkomligt rationellt, då en definition av rationalitet som baseras på sannolikhet används. Detta eftersom det är mer sannolikt att en gripen person ljuger, t.ex. för att bli frisläppt. Det står dock klart att detta inte uppfyller den juridiska rationalitet som rättsliga aktörer förväntas iaktta i sådana eller liknande situationer. Att använda en sådan mångfacetterad definition av rationalitet nyanserar bilden av confirmation bias, vilket traditionellt sett förknippas med irrationella bedömningar och beslut. Behovet av ytterligare forskning på området är tydligt, inte minst då det gäller att identifiera fungerande sätt att motverka confirmation bias.

[956] Antagandet att felaktigt dömda både överklagar och ansöker om resning behöver naturligtvis inte vara korrekt. För att inte överskatta förekomsten av felaktiga fällda har dock detta antagande använts i studien men kompletteras genom robusthetsanalysen.

Acknowledgments

When I was done writing my student essay on the Law Programme I thought I had accomplished just about the most challenging thing possible. To celebrate and immortalize that sensation of having persevered all the way to the end, I composed the following text that I added to the foreword of that essay:

I've killed my darlings a thousand times
And tried really hard to make sure that the text rhymes
Yet I have realized what a murderer I have to be
In order to finally get my law degree

Little did I know. In fact, at that point I did not have a clue I would ever write a doctoral thesis, or even something remotely similar to a doctoral thesis. Despite my ignorance at the time, I am very glad I wrote those reflections, primarily for two reasons: 1) I can't stop laughing while reading them and laughing is a good thing, especially when you are finalizing a doctoral thesis, and 2) they provide an effective standard against which I can measure the progress I've made since then. Believe it or not, there has been some progress and this progress has both quantitative and qualitative elements. If I were to compose the corresponding text in relation to my experience of writing this doctoral thesis, it would go something like this (words indicating progress in *italics*):

I've *brutally butchered* my darlings *a zillion* times[957]
I have absolutely no idea why I would want the text *to rhyme (?)*
Yet I have *come to accept and quite like* what a *psychopathic serial killer* I have to be
Now, I really wonder if I'll still get my doctor's degree

It can be debated whether the progress is to my advantage or not but there it is - and here is the thesis.

[957] And buried some of them in the footnotes. R.I.P.

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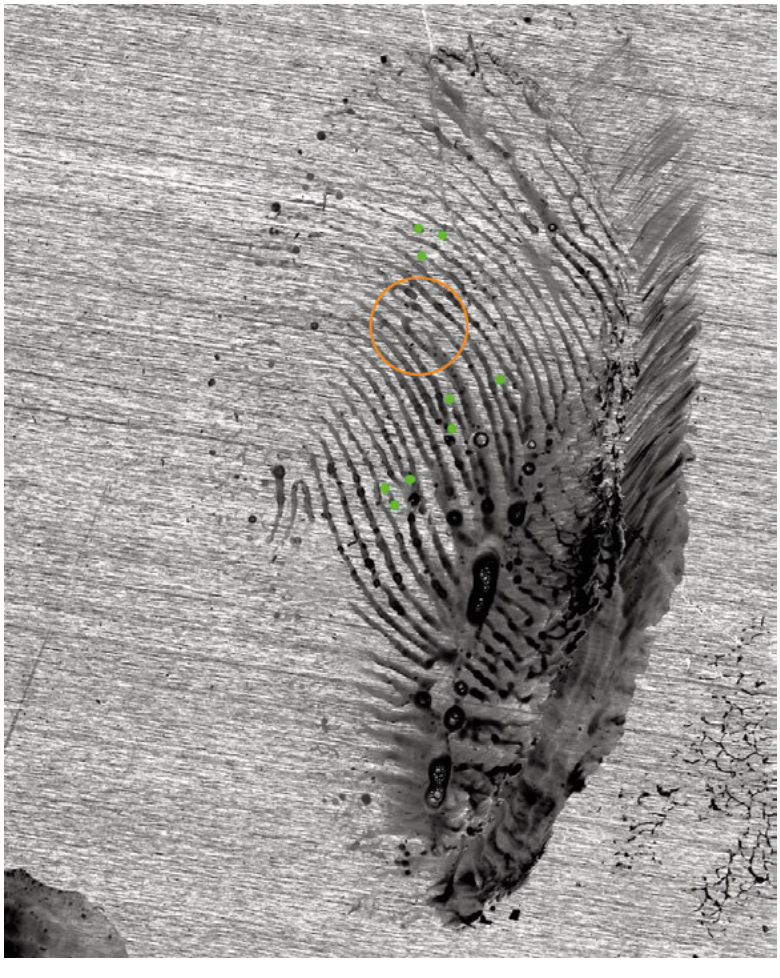
Now, maybe, there is time for Kilimanjaro, or at least Gustavbacken.

Appendix. Picture Comparison Between Ambiguous Partial Fingerprint and Target Fingerprint.

In Pictures 1 and 2, examples of consistencies are marked with green circles and examples of ambiguities with orange circles.



Picture 1. The ambiguous partial fingerprint. Reprinted with permission from the copyright holder.

Picture 2. The target fingerprint. Reprinted with permission from the copyright holder.