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Kyle Garret Mack  
*Portland State University*

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## ABSTRACT

An abstract of the thesis of Kyle Garret Mack for the Master of Science in Psychology presented February 12, 2010.

Title: Sour Grapes while You're Down and Out: Self-Serving Bias and Applicant Attributions for Test Performance

Recent research has shown that outcome favorability (Ryan & Ployhart, 2000) and perceived performance (Chan, Schmitt, Jennings, Clause, & Delbridge, 1998a) are key determinates of justice judgments, suggesting that self-serving bias is a critical mechanism in the formation of applicant reactions. However, organizational justice theory continues to be the dominant paradigm for understanding applicant reactions. Chan and Schmitt (2004) have suggested a far ranging agenda for research into reactions, which includes considering reactions in a longitudinal framework and considering the natural effect of time on reactions. The current study incorporates these theoretical approaches and addresses these gaps in the research by examining applicant reactions at four time points during and after a selection procedure. This study also uses a multi-dimensional measure of test taking motivation (TTM) based on expectancy theory which enables me to explicate the

effect of test performance, expectations, and outcome feedback on each motivational component.

Using a sample of 227 student participants, this study provides evidence that an applicant's expectations regarding the selection outcome and the selection outcome itself have strong effects on fairness perceptions and TTM. Some key findings are the following: 1) negative selection decisions and negative expectations tend to reduce fairness perceptions and TTM in applicants, while for the most part, positive expectations and positive selection decisions do little to increase these reactions and 2) valence, or the desire for the job, seems to be the motivational component most affected by the selection procedure. These findings have important implications for future research into applicant reactions.

SOUR GRAPES WHILE YOU'RE DOWN AND OUT: SELF-SERVING BIAS  
AND APPLICANT ATTRIBUTIONS FOR TEST PERFORMANCE

by

KYLE GARRET MACK

A thesis submitted in partial fulfillment of the  
requirements for the degree of

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in  
PSYCHOLOGY

Thesis Committee:  
Donald Truxillo, Chair  
Talya Bauer  
Todd Bodner

Portland State University  
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## Introduction

Since Gilliland published his 1993 model of the perceived fairness of selection systems, the study of applicant reactions to selection procedures has become a rich field of inquiry. Several studies have shown that various selection procedures can have adverse effects on applicants' perceptions of procedural justice, which in turn may negatively affect important organizational outcomes, such as intention to continue the application process (McFarland & Ryan, 2006), intention to litigate (Bauer, Truxillo, Sanchez, Craig, Ferrara, & Campion, 2001), and intention to recommend the organization to other applicants (Truxillo & Bauer, 1999; Truxillo, Steiner, & Gilliland, 2004). While many published studies examine applicant reactions from an organizational perspective, focusing on outcomes that directly or indirectly affect the firm's reputation or attractiveness to applicants, a lesser number of studies have examined the persistent effects of applicant reactions to selection procedures on the applicants themselves. Recently, however, two separate but related research streams have emerged that have begun to examine these types of effects and suggest novel ways of theorizing reaction mechanisms. First, Chan and Schmitt (2004) have suggested a far-ranging agenda for future research into applicant reactions. Among other things, they recommend that researchers give increased attention to the effects of the selection process on applicants longitudinally and investigate the role of individual differences in the formation of reactions. Second, Ployhart and Harold (2004) have proposed the Applicant Attribution-Reaction Theory (AART), a theoretical mechanism that integrates traditional social psychological

attributional principles with organizational justice theory. The current study contributes to the literature by addressing three areas noted by Chan and Schmitt (2004) as under-researched in the applicant reactions literature, and examining AART as a potential explanation for some of the psychological mechanisms involved.

First, Chan and Schmitt (2004) note that almost no studies have examined changes in applicant reactions over time, and those that do (e.g., Bauer, Maertz, Dolen, & Campion, 1998; Ployhart & Ryan, 1997; Sanchez, Truxillo, & Bauer, 2000) generally use a pre-test / post-test design, measuring the same reaction at only two time points. Chan and Schmitt explicitly call for studies that measure reactions in a more longitudinal framework. While a handful of studies have used longitudinal designs to examine applicant reactions, these studies tend to focus on outcomes rather than reactions. For example, Truxillo, Bauer, Campion, and Paronto (2002) used a longitudinal framework to examine the relationship between reactions and outcomes in two cohorts of police applicants, but the study focused on changes in applicant outcomes over time rather than changes in applicant reactions over time. I am aware of only one study that has investigated quantitative changes in individual reactions at more than two time points. In that study, van Vianen, Taris, Scholten and Schinkel (2004) examined applicant reactions at three time points throughout the selection process and found that perceived performance directly affected post-feedback fairness perceptions, rather than affecting fairness through perceptions of job relatedness. They thus suggested that self-serving bias was in effect and called for

more research into the specific elements and processes that provide the basis for self-serving bias effects.

Moreover, Chan and Schmitt (2004) note that no studies have considered “naturalistic” changes in applicant reactions (i.e. changes due to time and distance from the event that caused the reaction) and suggest that future studies examine these changes. The current study measures reactions at four time points: before the selection test, after the selection test, after test feedback, and after two weeks have passed. As such, it will be the first study that I am aware of in the applicant reactions literature to use a longitudinal design that includes an examination of events in the selection procedure as well as the natural effects of time.

Second, Chan and Schmitt (2004) have called for a taking a construct-oriented approach to research on applicant reactions, suggesting that future studies pay attention to the temporal placement of the antecedents and subsequent reactions throughout the procedure. For example, certain reactions such as attitudes toward testing are logically prior to the specific testing experience, whereas other reactions such as distributive justice perceptions and perceived performance are likely formed after the testing experience. Moreover, although reactions are often measured with scales designed to tap justice perceptions, the antecedents of these reactions are likely to be different depending on when they are measured (Gilliland, 1993; Hausknecht et al., 2004). With this view in mind, the current study examines fairness variables using an organizational justice framework (e.g. opportunity to perform) but also includes a multi-dimensional measure of test-taking motivation and several attributional and

perceptual measures, including negative affect, locus of control, perceived stability, and perceived controllability. By considering both specific and more general reactions from both justice theory and attributional theory at several points in time, it was hoped that I could explicate the trajectory of these different constructs throughout the selection process. The current study thus contributes to a greater understanding of the antecedents, consequences and mechanisms of each reaction.

Third, Chan and Schmitt (2004) note that many studies have focused on the effects of test type on applicant reactions, but very few have focused on the effects of individual differences on reactions. Moreover, they note that most research on applicant individual differences is limited to race or other demographic variables. Since the Chan and Schmitt (2004) review was published, a handful of studies (e.g. Truxillo, Bauer, Campion & Paronto, 2006; Van Vianen et al., 2004; Viswesvaran & Ones, 2004) have emerged that examine the effect of individual differences in personality variables on reactions, but I am aware of no study that has attempted to link pre-existing attitudes, such as locus of control, with a propensity for specific post-test and post-feedback reactions in an attribution framework. To continue this growing trend in the applicant reactions literature, the current study examines attributions as an explanatory mechanism for applicant reactions, and attempts to link attributions to pre-existing attributional styles. As such, this study helps to provide insight into the mechanisms by which test reactions are formed in applicants by theoretically linking individual differences with the self-serving bias response believed to be responsible for producing many reactions to tests.

Finally, and perhaps most importantly, recent research has shown that outcome favorability (Ryan & Ployhart, 2000) and perceived performance (Chan, Schmitt, Jennings, Clause, & Delbridge, 1998a) are key determinates of justice judgments and post-test motivation, suggesting that self-serving bias is a critical mechanism in the formation of many applicant reactions. The current study continues this vein of research by examining the effects of both expected outcome and actual outcome on justice judgments and test-taking motivation.



### Theoretical Background

In their 2004 review of applicant reactions literature, Chan and Schmitt note that one of the most pervasive findings throughout recent research into the antecedents and consequences of applicant reactions is that justice perceptions and self serving bias are both predictive of applicant reactions. Furthermore, there is meta-analytic evidence that reactions in turn predict important outcomes for both the applicant and the organization (Hausknecht et al., 2004). However, the vast majority of studies continue to use justice perceptions as exclusive antecedents to applicant reactions (Hausknecht et al., 2004). In other words, while several studies (e.g. Chan, Schmitt, DeShon, Clause, & Delbridge, 1997; Chan et al., 1998a; Chan, Schmitt, Saco, & DeShon, 1998b, Ployhart & Ryan, 1997; Schleicher, Venkataramani, Morgeson, & Campion, 2006) have shown that self-serving bias and other motivational mechanisms are important antecedents to applicant reactions, much extant research continues to view applicant reactions as merely consequences of rational decisions regarding justice.

The most popular model of applicant reactions continues to be Gilliland's (1993) model, which is one of the rational, cognitive-based theories of justice. This model was based on previous organizational justice research and focused on procedural justice (Leventhal, 1980; Thibaut & Walker, 1975), which concerns characteristics of the selection procedure such as job relatedness, opportunity to perform, and freedom from bias; distributive justice (Adams, 1965; Cohen, 1987), which concerns the fairness of the distribution of outcomes based on equity and social

comparisons; and interactional justice (Bies & Moag, 1986), which concerns the quality of the interpersonal treatment received during the selection procedure. While studies based on the organizational justice model have enhanced our understanding of applicant reactions and have produced a wide array of insights into the effect of perceived fairness and organizational intentions and outcomes (e.g., Hausknecht et al., 2004; Truxillo et al., 2002; Truxillo, Bauer, Campion, & Paronto, 2006), Ployhart and Harold (2004) have noted that justice theory has not been as successful in explaining the mechanisms behind the formation of justice judgments. Recent organizational justice models, such as fairness heuristic theory (Lind, Kray & Thompson, 2001) and fairness theory (Folger & Cropanzano, 2001), have provided insights into the formation of justice judgments and have helped explain the relationship between justice judgments and behavioral outcomes of interest to the organization. They have not, however, been as effective in explaining the effect of selection procedures on the applicants' own perceptions of their performance and subsequent behavior in future selection contexts. Moreover, while it is clear that procedural justice judgments are an important category of applicant reactions and that they have direct effects on attitudinal and behavioral outcomes, not enough is currently understood about the effect of self-serving bias on justice judgments and subsequent outcomes (Greenberg, 2001).

One promising research stream in the applicant reactions literature, primarily championed by Ployhart and colleagues, has been the use of attributional theories in applicant reactions research. They have developed the applicant attribution reaction

theory (AART; Ployhart & Harold, 2004), which is a model of applicant reactions that integrates justice-based theories with attributional mechanisms. Gilliland's (1993) model of applicant reactions focuses on organizational justice theory, and explains applicant attitudinal and behavioral outcomes as *reactions to the observed fairness or unfairness* of selection procedures and distributions. Theories based on attributional processes such as AART, however, explain applicant attitudinal and behavioral outcomes as *reactions to the perceived cause of the outcome*. As such, they provide a more general framework for understanding a wider range of effects of selection procedures on applicants. Although more recent organizational justice frameworks have obliquely considered affect and attribution in the formation of justice judgments, they do not treat them as central processes. For example, Fairness Theory (Folger & Cropanzano, 1998) proposes an affective pathway to justice judgments and implies attributional processes although the mechanisms for these attributions are not explicitly included in the theory.

### *Self-Serving Bias*

In their review of applicant reactions research, Ryan and Ployhart (2000) cite a wide array of studies that show outcome favorability as a primary determinant of applicant reactions. In other words, applicants who do not receive the job generally perceive the selection process as less fair than those who do receive the job. For example, Bauer et al. (1998) found that outcome favorability predicted organizational attractiveness, intentions toward the organization and general perceptions of test fairness more consistently than procedural aspects of the selection system. Similarly,

Ryan and Chan (1999) found that applicants who failed a licensure exam had more negative attitudes toward the test than those who passed it. Self-serving bias is a logical explanation for these findings.

Self-serving bias reflects the tendency to attribute the causes of a specific event in either a self-protective or self-enhancing way (Fiske & Taylor, 1991). In the context of selection procedures, some examples of the event may include performance on a test or feedback regarding a selection decision. For example, a successful applicant would be more likely to attribute their performance to internal and/or stable factors (such as intelligence or ability), while failure to get the job may be attributed to external and/or unstable factors such as test unfairness (Ployhart & Harold, 2004). The attributional mechanism through which self-serving bias takes place will be addressed more fully below, but for now it is enough to note that self-serving bias functions as a threat-reducing mechanism, protecting the self from a sense of failure in a situation that presents a potential threat to one's self-concept (Fiske & Taylor, 1991). Selection contexts in which cognitive ability tests are used represent such a threat to one's self concept because they offer two potential threats to the self: the external threat of not receiving a desired outcome (the job) and the internal threat of "failing" an intelligence test. According to the logic of self-serving bias, in order to protect themselves from these threats, applicants who believe they have performed poorly or who do not receive a desired outcome will be more likely to attribute their poor performance to self-protective external factors such as a lack of test fairness or to self protective internal factors, such as low motivation.

Chan and colleagues have provided empirical support for the role of self-serving bias in the formation of applicant reactions. Chan et al. (1998a) found that perceived performance mediated the effect of actual performance on aspects of procedural fairness. Similarly, Chan et al. (1997) and Chan et al. (1998b) found that knowledge of test performance affected motivation such that knowledge of poor performance resulted in lower reported test-taking motivation when measured after the fact. In both cases, the authors concluded that the effects were due to self-serving bias. In the present study, I expected that specific motivational aspects and fairness related reactions to selection procedures will change in response to events during the selection process (e.g. taking the test, receiving hire or reject decisions) and attenuate with time, and that these changes can be explained through a self-serving bias mechanism. In particular, I expected that perceived opportunity to perform and test-taking motivation would be associated with both perceived performance and hire / reject results.

#### *Opportunity to Perform and Self Serving Bias*

Opportunity to perform (OTP) is a procedural rule specific to selection situations based on the voice element of procedural justice. In the context of applicant selection, OTP is interpreted as having an opportunity to display one's abilities in relation to the job for which one is applying (Gilliland, 1993). Chan and Schmitt (2004) have noted the overall lack of attention paid to the temporal placement of justice measures throughout the selection procedure. Whereas many procedural justice variables and virtually all distributive justice and distributive satisfaction

variables cannot be meaningfully measured before an applicant is exposed to the selection procedure, OTP can be meaningfully measured at any point in the procedure. For example, once an applicant is aware of the test or procedure that will be used, they are likely to form expectations both about their performance and the opportunity they will have to perform well, based on previous experience. Once they have been exposed to the test or procedure, they will also form perceptions about how well they have performed on the test and how much opportunity they had to show their skills and abilities for the job, and these perceptions may or may not be similar to their pre-test expectations. Finally, when provided with hire / reject feedback, applicants will likely form new perceptions of OTP that may or may not be consistent with previous perceptions.

OTP is also one of the most important procedural rules in the context of selection because it encompasses the individual's sense of how well the procedure allows him or her to perform at levels that are representative of his or her ability (Ployhart & Harold, 2004). Recently, Schleicher et al. (2006) found that OTP was the most salient fairness variable in predicting overall fairness perceptions in the selection context. They also found evidence that applicants who received negative feedback on selection tests perceived the test as more unfair than those who received positive feedback, and suggested that OTP provides "the most 'self-serving' explanation for failure" (p. 581). Most importantly, they found significant differences between OTP measured before and after feedback such that those who failed tended to perceive the test as providing *less* OTP at time 2 than at time 1, and those who

succeeded tended to perceive the test as providing *more* OTP at time 2 than at time 1. These findings suggest that applicants mentally adjust their perceptions of fairness based on their own performance in a self-serving way. Moreover, the findings show that distributional aspects of the selection situation (e.g. whether or not one gets the job) influence key elements of procedural justice perceptions, such as OTP and overall fairness perceptions.

These findings regarding the effect of distributions on procedural justice perceptions, however, appear contradictory to some other findings in the justice literature. For example, van den Bos, Vermunt, and Wilke (1997) found evidence for a primacy effect in justice judgments such that whatever information is received first, whether it be procedural or distributive in nature, will be more salient in forming fairness perceptions. According to the primacy effect, applicants' perceptions of fairness should be more influenced by procedural aspects of the situation than distributions because they receive information about procedural aspects of the testing situation before they receive their outcome. In a similar vein, van den Bos, Lind, Vermunt, and Wilke (1997) found evidence that procedural justice perceptions had a larger effect on attitudinal outcomes and overall fairness perceptions when the distributions received by others were not known. Their logic is that procedural justice has a greater effect on overall fairness perceptions and satisfaction when the outcomes of others are not known because there is no concrete criterion with which distributive judgments can be formed. Again, according to this observed fair process effect, procedural justice perceptions should have a greater impact on overall fairness



and attitudinal outcomes than distributions in selection situations because most applicants lack knowledge about the distributions received by others.

While these results appear contradictory to those found by Schleicher et al. (2006), the inconsistencies may be explained by the unique ego-threatening nature of performance situations, which may be further magnified in the selection context by the high valence associated with a desirable job. In the van den Bos et al. studies (1997a, 1997b), procedural fairness was manipulated such that unfair distributions were a direct result of unfair procedures, and thus could be attributed to external and uncontrollable causes. There was therefore virtually nothing about the process, whether fair or unfair, that would threaten the self-concept of the participant because the outcome was directly related to the arbitrary fairness of the procedure. It makes sense then that procedural justice would be more salient to the individual in understanding the reasons behind the unfair distributions.

In contrast, the Schleicher et al. (2006) study was conducted within a selection context in which only 20% of applicants would achieve scores high enough on a battery of tests to move to the next phase of assessment. This context results in a direct threat to the self-concept of the applicant because it leaves open the possibility that some stable internal factor—such as ability—is causing a negative outcome in 80% of people applying for the job. In such a situation, rejected applicants can conclude that their rejection is due to some internal and stable cause such as ability (“I am not smart enough”) or an internal and unstable cause such as motivation (“I didn’t want the job”). They can also attribute the rejection to an external and stable



cause (“The organization discriminates against people like me”) or an external and unstable cause (“I wasn’t able to perform my best on this test”). The first explanation tends to diminish the self-concept and thus is inconsistent with the self-serving bias. However, the other three explanations attribute poor test performance to reasons that do not diminish self-concept, and are thus consistent with the self-serving bias. It is thus not surprising that Schleicher et al. (2006) found that negative distributional outcomes resulted in negative appraisals of OTP. Based on the logic of self-serving bias, I would presume that similar effects on motivation and perceptions of discrimination would be observed in this context, although the latter is not directly addressed by this study. In short, self-serving bias suggests that in order to preserve their self-image, applicants must find some causal alternative for poor performance that does not include internal and stable explanations, and OTP provides such a target.

While Schleicher et al. (2006) show that both negative and positive outcomes affect OTP and global procedural fairness perceptions in a field selection context, their study has an important limitation that inhibits further conclusions about the relationship between self-serving bias and justice perceptions. Because they only measured fairness at two points in time—immediately after the test and 2 months later after feedback—the effect of negative outcomes on OTP is completely confounded with the naturalistic effect of time and other variables such as perceived test performance. As such, it is impossible to disentangle distributive justice and distributive satisfaction effects, which fall into the organizational justice paradigm,

from effects resulting from the applicant's own internal perceptions of performance, which are better explained through the self-serving bias mechanism. It is thus unclear whether the observed effect of feedback on OTP is due to distributional fairness perceptions, internal self-serving bias, or some combination of both. By including perceived performance and adding measurements at two extra time points, it was hoped that the current study would enable us to tease apart these possible explanations for the observed effects of selection events on OTP.

In accordance with the findings of Schleicher et al. (2006), I expected that the actual selection outcome would be associated with OTP such that those who are rejected will have lower perceptions of OTP when measured after the hiring decision than those who are accepted. However, the association between OTP and performance should not be limited to the actual selection outcome. In a separate but related vein, Chan et al. (1998a, 1998b) found that perceived performance affects applicant motivation and concluded that self-serving bias was responsible for the association between perceived performance and motivation. In other words, the applicants' sense of how well they performed affected test-taking motivation, even when controlling for their actual performance. Consistent with the findings of Chan et al. (1998a, 1998b) regarding the effects of perceived performance on motivation, I predicted that perceived performance would interact with the selection decision to affect OTP. Specifically, applicants who expect a positive selection decision will show a significant reduction in OTP if a negative selection decision is received. This self-protective bias is expected because the greatest threat to self-concept occurs in

applicants who believe that they will do well on the test but do not receive a favorable outcome. Applicants who do not have high expectations will experience less of a threat to their self-concept if a negative selection decision is received because the outcome is more in line with their expectations. The magnitude of the negative effect of rejection on OTP is thus dependent upon the applicants' expectations regarding their performance.

For applicants who are hired, we would expect the self-serving bias mechanism to work in a self-enhancing rather than self-protective way. While expectations will still interact with the selection decision to affect OTP, we should see an increase in OTP when applicants receive a positive outcome that was not in line with their expected performance. Specifically, expectations of a negative decision will be associated with an increase in OTP if a positive selection decision is received. This interaction can be more formally stated as follows:

*Hypothesis 1: There will be a significant interaction of expected performance and selection decision on changes in OTP. Specifically, expectations of failure will be associated with an increase in OTP after a positive selection decision is received, while expectations of success will be associated with a reduction in OTP after a negative selection decision is received.*

#### *Test-Taking Motivation (TTM)*

OTP and other fairness variables tend to be of interest to researchers concerned with organizational outcomes because they have been shown to predict negative behavioral intentions toward the organization such as intention to litigate,

and to a lesser extent, negative behaviors directed toward the organization (Hausknecht et al., 2004; Truxillo, Bodner, Bertolino, Bauer, & Yonce, 2009). Test-taking motivation (TTM) is of interest, however, because it likely affects individual test performance, especially on cognitive ability tests, and the negative effects of reduced motivation on test performance may persist into other tests and other selection situations if an applicant engages in self-protection by reducing motivation. For example, Arvey, Strickland, Drauden, and Martin (1990) asserted that differences in performance on cognitive ability tests between Whites and African-Americans may be due to motivation. This assertion was supported by Chan et al. (1997), who found that higher TTM predicted better test performance while controlling for both ethnicity and previous performance. Sanchez et al. (2000) also found a relationship between perceived test performance and measures of post-test motivation. Moreover, Schmitt & Ryan (1992) found evidence suggesting that individual differences in TTM may impact test validity. Finally, a recent meta-analysis by Truxillo et al. (2009) showed that TTM mediated the relationship between explanations provided to applicants before testing and applicant performance on cognitive ability tests. In short, TTM has a number of important implications in the context of personnel selection.

There are currently two empirically supported and well validated measures of test-taking motivation: the Valence, Instrumentality, Expectancy Motivation Scale (VIEMS; Sanchez et al., 2000) and the Motivation subscale of the Test Attitudes Survey (TAS-M; Arvey et al., 1990). Sanchez et al. (2000) found evidence that the VIEMS explained variance above and beyond the TAS-M. They also found evidence

that the valence factor of the VIEMS was more highly correlated with the TAS-M than either the instrumentality or expectancy factor. Finally, they found that the VIEMS accounted for more variance in test scores (7%) in a field sample than did the TAS-M (3%). The VIEMS would thus appear to be a more nuanced and predictive measure of test-taking motivation than the TAS-M. Moreover, the dimensionality of the VIEMS scale lends itself to the examination of more narrow attributional targets for self-serving bias effects, although these effects are not hypothesized in the study proposed for this thesis.

In terms of self-serving bias, TTM provides a cognitive pathway for self-serving perceptions, in addition to fairness perceptions. Consistent with the self-serving bias, applicants may attribute the cause of poor performance to an external source such as test-fairness or OTP, thus reducing their perceptions of fairness (Schleicher et al., 2006). However, if they are unable or unwilling to attribute poor performance to an external source, they may instead attribute poor performance to a source that is internal to themselves, such as TTM. TTM thus becomes a self-serving attributional target because although it is internal, it is also unstable and controllable. Whereas ability or other trait-like attributions are threatening to the self-concept in the face of poor performance because they are perceived as stable, it is consistent with self-serving bias to attribute performance to a controllable internal state, such as motivation. In other words, the applicant may decide that he or she performed poorly because “the test wasn’t fair” or because “I didn’t try.”

Similar to the predicted three-way interaction of perceived performance, time, and selection decision on OTP, I expected that the magnitude and direction of changes in TTM when measured before and after the selection decision would depend upon the selection decision received and the applicants' perceptions regarding their performance. As a point of clarification, I am not predicting that perceived performance or selection outcome necessarily affects future motivation, although research has suggested that possibility (e.g. Chan et al., 1997, Truxillo et al., 2009). Instead I am suggesting that applicants "recalibrate" their memory of pre-test motivation in a self-serving manner according to events that occur during the selection process. Because TTM provides another reasonable target on which self-serving bias can operate, I expect that applicants' expectations regarding the selection outcome will interact with the actual selection outcome to affect TTM in much the same way as it affects OTP.

*Hypothesis 2: There will be a significant interaction effect of expected performance and selection decision on changes in TTM. Specifically expectations of failure will be associated with an increase in TTM after a positive selection decision is received, while expectations of success will be associated with a reduction in TTM after a negative selection decision is received.*

#### *Attribution Theory*

While Chan et al. (1997; 1998a) and Schleicher et al. (2006) have provided empirical support for the role of self-serving bias in the formation of applicant reactions, none of these studies included any measures that directly reflect

psychological mechanisms associated with self-serving bias, which are necessary to explain the self-serving mechanism. For example, Chan et al. (1997) found that perceived performance mediated the effect of actual performance on aspects of procedural fairness, suggesting that self-serving bias was in operation. However, the self-serving mechanism is inferred, not directly tested. Moreover, there is little empirical research in the applicant reactions literature that directly measures and examines variables that are indicative of self-serving processes. The notable exceptions are Ployhart and colleagues who have explicitly tested some of the tenets of attributional theory as applied to applicant reactions (Ployhart, Erhart, & Hayes, 2005; Ployhart, McFarland, & Ryan, 2002; Ployhart & Ryan, 1997) and have developed a theoretical model to explain the attribution process in applicants (Ployhart & Harold, 2004). In order to merge the findings of Chan et al. (1997, 1998a, 1998b) and Schleicher et al. (2006) with those of Ployhart and colleagues, the present study measures variables related to self-serving bias in order to present a mechanism by which the performance affects OTP and motivation in a self-serving manner.

The key concern of attribution theory is understanding how individuals infer causality in situations they encounter, that is, whether they attribute the cause of an event to internal (and often stable) factors or external (and often unstable) factors (Ployhart & Harold, 2004). The study of attributions in psychology has a long tradition, ranging from Heider's theory of naïve psychology in the 1940s to modern formulations such as Weiner's (1986) theory of attributions (Fiske & Taylor, 1991). While a full review of attributional theory is outside the scope of this paper (see Fiske



& Taylor, 1991; and Forsterling, 1988 for a thorough treatment), two models in particular have been used by organizational researchers to understand the attribution process in the selection context: Kelley's covariation model (1967, 1972) and Weiner's attributional model (1985, 1986).

*Kelley's covariation model.* The covariation model is so named because it assumes that cause will be attributed to entities or elements that covary with the observed outcome. The covariation model is primarily concerned with explaining the mechanism by which specific types of attributions are formed, and assumes that the process is both normative and universal across individuals. According to Fisk and Taylor (1991), Kelley's model predicts that people tend to judge the causes of outcomes as either internal or external, or as a combination of both. Moreover, the external attribution can be further broken down into a consistent or circumstantial external aspect. In Kelley's terms, cause can be attributed to the *person* (i.e. the self), an *entity* (which can be either another person or object), or a *circumstance* (i.e. an inconsistent aspect of the situation). Kelley asserts that these attributions are formed by comparing information received about an event in the present with similar events in the past along three dimensions: distinctiveness, consistency, and consensus. According to Ployhart and Harold (2004), *distinctiveness* refers to whether the observed event is specific to the situation or whether it occurs in many situations. *Consensus* refers to whether the event is consistent across people (i.e. everyone is treated the same) or if the event is specific to the person (the self). And finally, *consistency* refers to the consistency of the event over time, that is, high consistency



indicates that the event happens whenever the other person or entity is present and low consistency indicates the event happens infrequently.

The model asserts that certain attributions can only be made confidently with specific combinations of consistency, consensus, and distinctiveness. External situation-related attributions are a result of high distinctiveness, low consistency, and low consensus. In contrast, internal trait-related attributions result from the combination of low distinctiveness, high consistency, and low consensus (Fisk & Taylor, 1991). For example, in the context of a selection test, an external situation-related attribution for poor test performance would be made under the following conditions: the applicant does not perform poorly on most tests (high distinctiveness), in the past the applicant has performed well on selection tests (low consistency), and hardly anyone else performed poorly on the tests (low consensus). Similarly, an internal trait-related attribution will be made when the applicant usually performs poorly on tests (low distinctiveness), the applicant has performed poorly on selection tests in the past (high consistency), and hardly anyone else performed poorly on the test (low consensus).

While the Kelley model is useful for understanding many attributions with respect to social interaction, it has been little used in applicant reactions research and it lacks an explanatory framework for the attribution of self-perceptions. However, Ployhart, Ehrhart, and Hayes (2005) did apply Kelley's covariation model in a selection context, and found that it was useful in explaining the effect of explanations for selection decisions on fairness, organizational attractiveness, and self-perceptions.

In spite of these findings, it would appear difficult to apply the covariation principle to low base-rate events (such as selection situations, in most cases) because there is often little information regarding consensus, consistency and distinctiveness available to the applicant with which to infer causality. Nevertheless, the covariation model may provide a useful avenue for the further integration of justice theory and attribution models.

*Weiner's attribution theory.* Bernard Weiner and colleagues offer a different but related theory of attribution that applies specifically to achievement-related situations, such as selection testing. As such, it is an ideal model for attribution-based applicant reactions research. Weiner's (1985) model has been both popular and widely supported with empirical evidence in the social psychology literature (Fiske & Taylor, 1991), and has recently been rediscovered by organizational researchers (e.g. Ployhart & Harold, 2004; Ployhart & Ryan, 1997) as a useful framework for understanding applicant reactions. Although there are only a few studies that apply attributional theory to selection contexts, several tenets of the theory have received empirical support. For example, research has suggested that selection decisions produced negative or positive affect in applicants (Kluger & Rothstein, 1993), and that attributions for selection decisions are related to intentions and self-perceptions (Ployhart & Ryan, 1997). The Weiner model of attributions is ideal for applicant reactions research because it posits that people form attributions after a search for a causal explanation for their success or failure at a task (Fiske & Taylor, 1991). In other words, whereas Kelley's model is concerned with addressing *how* internal and

external attributions are formed, Weiner's model is more concerned with *why* they are formed.

Weiner (1985) posits that attributions are formed via both cognitive and affective pathways based on three dimensions of causality: locus, stability and controllability. Briefly, *locus* differentiates between causes that are attributed to internal factors (e.g., intelligence) and external factors (e.g. test fairness). *Stability* refers to the inherent changeability of the cause and differentiates between stable (e.g., ability) and unstable (e.g., situational motivation) characteristics. Finally, *controllability* differentiates between causes that are controllable by the person (e.g. effort) and those that are uncontrollable (e.g. mood). Mood would thus be considered internal, unstable and uncontrollable while test difficulty would be considered external, stable, and uncontrollable. Table 1 shows a matrix containing examples of causal attributions for negative selection outcomes for each combination of the three dimensions. Observe that certain combinations of dimensions do not relate directly to the selection context. For example, it would be difficult to attribute outcomes in the selection process to causes that are external and controllable by the individual.

Figure 1 shows a simplified version of Weiner's 1985 model and includes only those elements related to selection situations. The process of attribution begins when the individual receives information about the outcome of their task (1), which for the purposes of the proposed study, is their perceived performance on a cognitive ability test or the outcome of a selection decision. This knowledge results in either a generalized and undifferentiated positive or negative affect, which Weiner called

*outcome-generated emotion* (2). If the result is perceived as either unexpected, negative, or important, the individual will search for a causal explanation for the outcome (3). The information is then processed by the individual to form a causal attribution for the outcome, but not before being manipulated by several possible heuristics and biases frequently studied in cognitive and social psychology (4). These include the fundamental attribution error, actor-observer effects, self-serving biases, and several other biases, heuristics and errors (see Fisk & Taylor, 1991 for an overview of these concepts). Causal attributions (e.g. ability, fairness, mood) are then formed for the outcome, which can be described using the dimensions of locus, stability, and controllability (5). The dimensionality of the attribution then results in predictable and specific emotional responses and self-perceptions, which Weiner called *dimension-related emotions* (6). For example, an internal and stable attribution (e.g. ability) for a positive outcome will result in pride and increased self-efficacy while an external and unstable attribution (e.g. noisy testing environment) for a negative outcome will result in negative emotions such as frustration and anger. These dimension-related emotions then interact with the motivational components of expectancy (i.e. predictions about future performance) and value (i.e. the subjective value of the outcome to the individual) and lead to behavioral outcomes (7). In this formulation, it is important to note that the “outcome” of a task does not necessarily denote a distribution such as obtaining or failing to obtain a desired job. The meaning of outcome is more general and can include perception related outcomes such as perceived performance.

*Applicant Attribution-Reaction Theory (AART)*

Ployhart and Harold (2004) have proposed an integrated model of applicant reactions that combines organizational justice theory with Weiner's (1985) model of attributional processing, thus satisfying the need for a framework that allows the examination of self-interest and attributional processing as a driver in justice judgment formation. Unlike most theories in the applicant reactions literature, AART proposes that the formation of justice judgments is driven primarily via an affective and attributional pathway rather than a judgmental and cognitive pathway, as in applicant reaction models based on organizational justice theories (e.g. Gilliland, 1993). While AART holds a lot of promise for applicant reactions research, I am aware of no study that has attempted to empirically validate the theory. In a recent review of cognitive research on organizations, Hodgekinson and Healy (2008) note that in spite of its promise, AART has yet to be empirically validated and that further work on "the integration of justice theory with attribution theory is now urgently required (p. 392)." However, Ployhart and Ryan (2004) note that several studies in the applicant reactions literature (e.g. Arvey et al., 1990; Gilliland, 1994; Kluger & Rothstein, 1993; Ployhart, Ryan, & Bennett, 1999) have either examined attributions directly or have found results consistent with those expected by attributional theories.

AART provides a general framework for understanding the mechanism by which objective events in the selection procedure affect applicant justice perceptions and behavioral outcomes, and its goal is to integrate the organizational justice and attribution frameworks into applicant reactions theory. As such, it focuses on

generalized objective events, which include selection outcomes and test performance outcomes as well as procedural elements of the selection process, and suggests that applicants may form causal attributions for *any* of these processes under certain conditions. Although an applicant's propensity to form causal attributions for procedural aspects of the selection situation is yet to be tested, the integration of attribution theory with justice-based models of applicant reactions is consistent with the findings of Chan et al. (1998b) and Schleicher et al. (2006) with respect to the effect of self serving bias on applicant reactions, and provides a framework by which the effect may be explained. The implication of AART is that while justice judgments may be formed in part via cognitive pathways, they also serve as convenient vehicles for self-serving bias, and provide attributional "targets" that can be used by the applicant to explain his or her test performance.

I proposed that reductions in OTP and test-taking motivation would be associated with a specific pattern of applicant attributions for the selection decision. For example, a reduction in OTP should occur when an individual makes a causal attribution for a no hire decision that is external and uncontrollable (e.g. I was not hired because they did not give me a chance to perform to the best of my ability). Also, a reduction in applicants' perceptions of their initial test-taking motivation should occur when an individual makes a causal attribution for a no hire decision that is internal and controllable (e.g. I was not hired because I did not try very hard on the test).

In sum, if self-serving bias is in effect, participants who receive a no hire decision should have lower perceptions of OTP than those who receive a hire decision. Additionally, according to Weiner's (1985) model of attributions, participants in the no-hire condition should be more likely to attribute the cause of the decision to external, uncontrollable, and unstable causes than those in the hire condition. However, it is similarly consistent with self-serving bias for an applicant to attribute a negative selection decision to a lack of pre-test motivation, which would be consistent with an attributional pattern that is internal, unstable, and controllable. While there are likely to be several individual and situational variables that can help predict which attributional pattern will result from poor performance, I propose that participants will make attributions that are in line with their general beliefs about their locus of control at work.

*Hypothesis 3: Among applicants who are not hired, work locus of control will be correlated with internal, controllable, and unstable causal attributions.*

Although the selection decision provides a likely stimulus for a causal search because the information is most likely important, applicants may also perform a causal search based on other events during the selection process. For example, Chan et al. (1998b) found evidence that perceived performance was associated with test fairness, thus indicating the presence of self-serving bias. Consistent with these findings, if the Weiner (1985) model of attributions explains the effect of hire / no hire feedback, it is logical that the relationship between *perceived performance* and OTP could also be explained by a pattern of attributions indicating an external and



uncontrollable cause. It would also be consistent with the theory if perceived performance caused reductions in perceptions of pre-test TTM. However, in order to limit the scope of this thesis, and because the proposed manipulation of hire / no hire feedback enables causal inference, I have chosen to focus on applicant's attributions for receiving a hire / no hire outcome only.

### *Naturalistic Changes*

Chan and Schmitt (2004) identify longitudinal designs as a key aspect lacking in extant applicant reactions research and posit that reactions may change in both magnitude (i.e., quantitatively) and nature (i.e., qualitatively) over time. In terms of magnitude, they speculate that both positive and negative reactions to a specific test may diminish in intensity over time. To my knowledge, no study has attempted to trace the naturalistic effect of time in reactions after the procedure. However, this speculation is consistent with research that shows that while applicant reactions appear to have significant effects on applicant intentions when reactions are measured concurrently with the procedure, the effects are not as intense when measured after the procedure (Hausknecht et al., 2004; Truxillo et al., 2002). Hausknecht et al. have suggested several possible reasons for the change in applicant reaction intensity. First they suggest that when applicants receive information regarding outcome favorability, they will be more influenced by the outcome rather than the procedures used during the selection process. This effect was consistent with the findings of Bauer et al. (1998), who found that the predictive power of procedural perceptions in explaining behavioral outcomes declined once the outcome was known by the applicant. This



effect has also been theoretically explained by the distributive dominance model in justice theory (Colquitt, Conlon, Wessen, Porter, & Ng, 2001). Second, Hausknecht et al. suggest that common method bias may inflate the correlations between applicants' self-reported perceptions of the process and self-attitudes when measured at the same point in the process. While the meta-analysis provided evidence that correlations were inflated when perceptions and outcomes were measured concurrently, the analysis also ruled out the possibility that the relationship between perceptions and outcomes were artifacts of the measurement process.

Attribution theory provides another possible explanation for the inflation of correlations between outcomes and justice perceptions when measured concurrently. Weiner's (1985) attribution model posits that upon receiving unexpected, negative, and/or important information, individuals first experience generalized positive or negative affect, which drives the resulting intensity and direction of the causal attributions and invokes one of several biases and heuristics, such as self-serving bias. For example, a negative selection outcome will result in a generalized negative affective response in the applicant, which will invoke the self-serving bias and cause diminished perceptions of OTP and overall fairness. However, if the negative affective state tends to lower OTP perceptions and perceptions of overall fairness, the effects should decrease as the intensity of the affective response decreases naturally with time. I thus predict that the observed effects of the selection outcome on negative affect, OTP, and overall fairness will diminish after some time has elapsed. Furthermore, research suggests that positive and negative decisions may interact with

fairness to produce different effects on self perceptions (Ployhart & Ryan, 1998). Consistent with this research, I predicted that the selection decision would interact with time to produce different effects on negative affect, OTP and overall fairness in hired and unhired applicants. Specifically, reactions associated with a negative selection decision such as increased negative affect, decreased perceptions of OTP and decreased overall fairness judgments should attenuate as time passes. I did not expect to observe attenuation on these reactions in applicants who receive a positive selection decision, primarily because a positive selection decision should not detrimentally affect them in the first place. Stated more formally, these hypotheses are:

*Hypothesis 4: Negative affect in unhired applicants will decrease over time after the selection procedure, while negative affect in hired applicants will remain unchanged.*

*Hypothesis 5: OTP in unhired applicants will increase over time after the selection procedure, while OTP in hired applicants will remain unchanged.*

*Hypothesis 6: Overall fairness perceptions in unhired applicants will increase over time after the selection procedure, while overall fairness in hired applicants will remain unchanged.*

#### *Test Performance and Test Taking Motivation (TTM)*

Several researchers have provided evidence of a link between TTM and test performance. For example, Arvey and colleagues (1990) suggested that higher TTM was predictive of better performance on cognitive ability tests, although they did not

find a significant association between the two. However, Chan and colleagues (1997) showed that racial and ethnic differences on cognitive ability tests may be mediated by TTM, suggesting that test performance was impacted by TTM. This mediational role of TTM was supported by Truxillo, Bodner, Bertolino, Bauer, and Yonce (2009) who provided meta-analytic evidence that the effect of explanations on performance was fully mediated by TTM. While the effect of TTM on performance has been well documented, it is also possible that the relationship is bidirectional. In other words, it is possible that actual test performance may also be predictive of TTM after an applicant has formed perceptions of their own performance, which is consistent with self-serving bias. Because of researchers' differing findings on the role of TTM and the possible directionality, it is thus important to understand the relationship between test performance and TTM at several points throughout the selection process. It is also important to examine the unique variance in test performance associated with each VIE component at each time point. Because the expected relationship between TTM and performance at each time point was unclear, I made no specific hypothesis.

*Research Question 1: What is the relationship between test performance and test-taking motivation--as expressed in Valence, Instrumentality, and Expectancy—a) before taking a selection test, b) after taking the test, c) after the selection outcome has been received, and d) after some time has passed?*

*Research Question 2: Do Valence, Instrumentality, and Expectancy account for unique variance in test performance at each time point?*

## Method

### *Design Overview*

The study used an experimental design, and participants were randomly assigned to receive either a positive or negative selection decision. Data were collected in three waves. The first wave involved the collection of demographic and individual differences variables, a single instance of the Wonderlic Personnel Test, and data collection for Time 1 (T1) and Time 2 (T2). T1 data were collected before the Wonderlic test, and T2 data were collected after the Wonderlic test. For Wave 2, approximately 2 days later, participants were notified of their selection outcome and Time 3 (T3) data were collected. Finally, for Wave 3, Time 4 (T4) data were collected approximately 7 days after T3. T1 and T2 data were collected in the participants' classrooms and T3 and T4 data were collected online. An illustration of the study design is presented in Figure 2.

### *Participants*

Participants were students drawn from undergraduate classes from a large university in the Western United States. Because I used all available data for the time points included in a given analysis, I reported demographics for each wave of data collection. Table 3 provides the number of participants in each gender, ethnicity and education level at each study time point. Two-hundred thirty participants provided T1 and T2 data during the first wave. The participant population who completed the first wave was 36% male with an average of 24.83 (SD=6.86). Fifty-eight percent indicated that they were currently working, of which the average number of hours

worked was 17.03 (SD=13.61), and 93.4% indicated that they had some sort of work experience with an average of 6.91 years (SD = 6.01). Seventy percent of the participant population was Caucasian, 11.7 % was Asian/Pacific Islander, 5.6% was Hispanic, 2.6% was African American and 7.4% answered “other.” Filipinos and Native Americans made up less than 1% of the participant population. A total of 187 participants provided T3 data during the second sitting, which resulted in 187 cases of matched data containing T1 – T3. The participant population who completed the second wave was 34% male with an average age of 25 (SD=6.63). Fifty-eight percent indicated that they were currently working, of which the average number of hours worked was 16.66 (SD=12.67), and 94.7 % indicated that they had some sort of work experience. For those with work experience, the average was 7.13 years (SD = 6.14). In terms of ethnicity, 73.8% of the participant population was Caucasian, 11.2 % was Asian / Pacific Islander, 5.3% was Hispanic, 1.1% was African American and 7.5% answered “other.” Filipinos and Native Americans each made up less than 1% of the participant population. Finally, a total of 168 participants provided T4 data during the third sitting, which resulted in 159 cases of matched data containing T1 – T4. The participant population of the final matched data set was 33% male with an average age of 25.28 (SD=6.74). Fifty-eight percent indicated that they were currently working, of which the average number of hours worked was 17.08 (SD=12.46), and 96.9 % indicated that they had some sort of work experience with an average of 7.48 years (SD = 6.29) In terms of ethnicity, 78% of the participant population was Caucasian, 10.1 % was Asian/Pacific Islander, 5% was Hispanic, and 7.5% answered

“other.” Filipinos, Native Americans and African Americans each made up less than 1% of the participant population.

### *Power Analysis*

Because several different relationships are hypothesized using several analytical strategies, I based the power analysis on the ability to detect changes in OTP from Time 2 to Time 3. This relationship was selected because the power to detect changes in OTP is critical to the overall contribution of the proposed study. I used G\*Power 3 software (Faul, Erdfelder, & Lang, 2007) to calculate the sample size necessary to detect mean differences in matched samples. I used a desired power value of 0.8 and the conventional significance level ( $\alpha = .05$ ). Next, the effect size  $d_z$  was determined using sample means and standard deviations reported in a previous published study (i.e. Schleicher et al., 2006). The parameters were as follows: Mean OTP before taking a selection test was 4.15 (SD = .56), Mean OTP after taking the selection test for those who failed was 3.89 (SD = .75). Because the correlation between the two measures was not available, I used a conservative estimate of .2 in order to minimize the estimated effect size. The calculated effect size was  $d_z = .31$  and the software estimated that 84 participants would be needed to detect the effect using an  $F$ -test with one degree of freedom. Because the current study needed the power to detect this effect size in two separate cells in the research design, it was determined that a total of 168 participants were needed.

### *Procedure*

Participants were asked during a normal class period if they were willing to take part in a research project on selection testing, and were notified of any possible risks associated with the study. Those who agreed to take part in the study received a packet containing: 1) an informed consent letter; 2) demographic, individual differences, T1 and T2 surveys; 3) a scenario describing a desirable job (See Appendix A for a copy of the scenario) and 4) a copy of the Wonderlic Personnel Test. First, participants were asked to complete the demographic and individual differences surveys. Second, the participants were asked to read the scenario and to keep it in mind as they completed the remainder of the study. The scenario asked participants to imagine they were applying for a highly desirable job by their own standards, and notified them that they would be taking a screening test that would determine if they moved on in the selection process. In order to simulate an application situation, participants were also notified that the top 25% of performers on the test were entered into a drawing to win an iPod Shuffle. Third, participants completed the T1 measures. Fourth, the participants were read the instructions for the Wonderlic Personnel Test and were given 12 minutes to complete it according to test instructions. Fifth, the participants completed the T2 measures, and were notified that they would receive an email with instructions on how to view their selection outcome, thus ending the in-class portion of the study.

Approximately 2 days later participants were sent an email asking them to log in to a website to receive the results of their test and to complete the T3 measures. At that time, participants were randomly assigned a “pass” or “fail” selection outcome

condition and were notified of the outcome via a form letter on the Web site. A copy of the text can be found in Appendix B. They then completed the T3 measures.

Approximately 7 days after T3, participants who responded to the T3 measures were sent an email asking them to complete the final survey. They then logged onto a Web site and completed the T4 measures.

All participants were compensated with extra-credit points for participating in the study.

### *Measures*

Table 2 shows a complete list of measures by each study time point. Individual items were modified to be consistent in verb tense with the time of measurement for all measures that were used at multiple time points. For example, an item from the perceived performance scale was “I am confident that I *will perform* well on the test” at T1 and “I am confident that I *performed* well on the test” at T2. A complete list of all items used in the study used for this thesis can be found in Appendix C.

*Test-taking motivation.* Test taking motivation was assessed at T1, T2, T3 and T4 using the Valence, Instrumentality, Expectancy Motivation Scale (VIEMS; Sanchez, Truxillo, & Bauer, 2000), modified for use in the present context. The scale uses five point Likert items with response options ranging from (1) *strongly disagree* to (5) *strongly agree*, and contains the three subscales of valence, instrumentality and expectancy based on VIE theory (Vroom, 1964). A sample item for the valence sub-scale is “I would like to be hired for this job”, for the instrumentality sub-scale is “If



you do well on this test you have good chance to get the interview,” and for the expectancy sub-scale is “If you do your best on this test, you can get a high score.” Alpha coefficients across times of measurement for VALENCE ranged from .72 - .93, for I ranged from .82 - .88, and for E ranged from .86 - .94.

*Procedural justice variables.* OTP was assessed at all four time points using a 4-item measure adapted for the time points based on the Selection Procedural Justice Scale (SPJS) developed by Bauer et al. (2001). The SPJS uses five point Likert items with response options ranging from (1) *strongly disagree* to (5) *strongly agree*. An example of an item is “I will be/was able to show my skills and abilities through this test.” Overall procedural justice was also assessed at all four time points using a 3 item measure from the SPJS (e.g. “Overall, the method of testing used was fair”). Alpha coefficients across times of measurement for OTP ranged from .92 to .94. The alpha coefficient for overall procedural justice was .88 at T3 and .85 at T4.

*Locus of control.* Locus of control was measured with the Work Locus of Control Scale (WLCS; Spector, 1988) prior to T1. The scale uses 16 items (e.g. “getting the job you want is mostly a matter of luck”) with Likert responses. Higher scores indicate a more external locus of control. The alpha coefficient was .79.

*Negative affect.* Negative affect was measured at T3 and T4 with the Short Positive Affect-Negative Affect Schedule (SPANAS; Mackinnon, Jorm, Christensen, Korten, Jacomb, & Rogers, 1999). The measure consists of five adjectives that measure positive affect (e.g. excited) and five items that measure negative affect (e.g. upset), and participants are asked to rate their agreement on a five-point Likert scale

ranging from strongly agree to strongly disagree. The alpha coefficient for the negative affect portion of the scale was .83 at T3 and .86 at T4.

*Attribution variables.* The dimensions of *locus*, *stability*, and *self-controllability* were measured at T2, T3, and T4 using the Revised Causal Dimension Scale (CDSII; McCauley, Duncan & Russel, 1992). Ployhart and Ryan (1997) used the original Causal Dimension Scale (CDS; Russel, 1982) in a study similar to this thesis; however, the CDSII is a better choice for a number of reasons. Although the original CDS was considered to have strong psychometric properties (Hau & Salilli, 1993) and was considered to be the most valid measure of attributions at the time (Ployhart & Ryan, 1997), the discriminant validity of the original CDS has been challenged due to the high correlation between the locus and control dimensions, and the low internal consistency of items in the control dimension (McCauley, Duncan & Russel, 1992; Russel, McCauley & Tarico, 1987). The CDSII altered items in the controllability scale to improve reliability and incorporated the differences between external controllability, which indicates that the cause is controllable by someone, and internal controllability, which indicates that the cause is controllable by the individual. These changes resulted in higher reliability for the controllability scales (McCauley, Duncan & Russel, 1992). Although the introduction of the external controllability scale deviates slightly from Weiner's attribution model, the logic behind the change is sound.

The CDSII measures the dimensionality of causal attributions rather than specific causes. The scale starts by asking the participants to write down the

perceived cause of their performance or the outcome they have received. The dimensionality of the causal attribution is then assessed using three items for each of the four factors: locus, stability, personal control and external control. Each item uses a nine-point scale with anchors at points one and nine representing the two attributional possibilities for the factor. For example, an item from the locus sub-scale uses “inside of you” and “outside of you” as anchors representing the two poles of internal vs. external locus. Other examples are “permanent” vs. “temporary” for stability, “over which you have power” vs. “over which you have no power” for personal controllability, and “under the power of other people” vs. “not under the power of other people” for external controllability. Although the CDS-II contains four subscales, only the locus, stability, and self-controllability subscales were used for this study in order to remain consistent with Weiner’s (1985) attribution model. Higher scores indicate internal for the locus factor, stable for the stability factor, and under personal control for the personal controllability factor. Alpha coefficients were .73 for locus, .75 for stability, and .88 for self-controllability.

*Expected outcome.* Expected outcome was measured at T1 and T2 with a single “yes” or “no” question designed for this study. At T1 the question was, “Based on the way I will perform on this test, I expect to be selected for the interview.” At T2 the question was “Based on my test performance, I expect to be selected for the interview.”

*Wonderlic Personnel Test.* The Wonderlic Personnel Test is a test of cognitive ability, consisting of 50 items that increase in difficulty testing verbal,

quantitative and spatial intelligence. Participants are given 12 minutes to complete as many items as possible, and the test is scored as the number of questions correctly answered in that time. The test shows a high correlation with the Wechsler Adult Intelligence Scale ( $r = .92$ ), thus demonstrating construct validity as a measure of general mental ability (Dodrill & Warner, 1988).

## Results

Intercorrelations and alpha reliability statistics among all study variables are presented in Table 4. Means and Standard Deviations for all study variables are presented in Table 5. In the results that follow, Time 1 (T1) indicates variables measured before the test was given, Time 2 (T2) indicates variables measured after the test but before feedback was received, Time 3 (T3) indicates variables measured after feedback was received, and Time 4 (T4) indicates variables measured 7 days after feedback was received.

### *Response/Non-Response Analysis.*

In order to determine whether participants who left the study early differed from those who completed it, I compared those who provided complete data for all study time points with those who dropped out of the study before completing it on several key study variables using *t*-tests and chi-square tests. There were no differences between the two groups in terms of Wonderlic score, OTP across all time points, T2 motivation variables or T3 motivation variables. There were also no differences in T1 expectancy and valence scores. However, T1 I scores were lower for those who did not complete the study,  $t(227) = 2.44, p < .02, d = .32$  although the difference in means was small (.218). The two groups were also compared on key demographic variables. There were no significant differences between groups in terms of gender, education, present work status or number of hours worked per week. However, there were differences in terms of age,  $t(130.27) = 2.44, p < .05, d = .42$  and work experience,  $t(227) = 2.42, p < .05, d = .32$ . Those who completed the study

were an average of 2.02 years older, and had an average of 2.14 years more work experience. The personality factor of conscientiousness provides one possible explanation for the differences between those who completed the study and those who did not, with those higher in conscientiousness possibly being more likely to stay in the study, although conscientiousness was not measured as part of this study. While these differences between those who completed the test and those who did not complete it are statistically significant, they did not appear to be practically significant. Thus, although it is important to be aware of them when considering the results of this study, they were not taken into account in analyzing the results.

#### *Confirmatory Factor Analysis of Motivation Components*

Previous research has indicated that the VIEMS scale contains three distinct factors (Sanchez et al., 2000). However, other research in the field (e.g. Chan et al., 1997) conceptualizes TTM as a single factor. Therefore, prior to analyzing the hypotheses related to motivation, I performed a confirmatory factor analysis (CFA) to test the hypothesized three-factor model of motivation, which includes valence (V), instrumentality (I), and expectancy (E) as individual correlated factors. I used the AMOS 16 statistical package (Arbuckle, 1997) and entered the 10 items of the VIEMS scale into the three-factor model using T1 (pre-test) data. Data from T1 was selected because it provided the largest sample size. The chi-square test was significant,  $\chi^2(32, N = 231) = 61.14, p < .001$ , indicating a poor fit to the data. However, the chi-square statistic is problematic as an index of model fit because it is sensitive to sample size (Joreskog & Sorbom, 1989). Other model fit statistics were

thus used to evaluate the fit of the model to the data. Hu and Bentler (1999) suggest that comparative fit index (CFI) values above .95 and root mean square error of approximation (RMSEA) values of .06 or less are indicative of good model fit. The three-factor model had a CFI value of .97 and a RMSEA value of .06, thus indicating good model fit.

I then tested the one factor model, which does not differentiate among the components of V, I and E. The chi-square test was significant,  $\chi^2(35, N = 231) = 495.43, p < .001$ , indicating a poor fit to the data. The CFI value was .49 and RMSEA was .24. Both model fit statistics suggest that the one-factor model fits the data poorly. The results therefore indicate that a three-factor model should be used in subsequent analyses of TTM. It should be noted, however, that a higher order factor structure with a single factor at the highest level and the factors of V, I, and E at the second level would have the same fit statistics as the three factor model, although the results of the study, which will be discussed more fully below, suggest that TTM should be conceptualized as a three factor model.

#### *Correlations among Study Variables*

An initial examination of the correlation table (Table 4) for all study variables showed several interesting associations, although many were not hypothesized in the current study. First, scores on the Wonderlic Personnel Test (WPT) were positively and significantly associated with the expectations about being hired, the motivational component of V at each time point, and overall fairness at T3 and T4. This pattern suggests that those who did well on the WPT expected to get the job more, wanted

the job more, and found the testing procedure to be more fair. WPT scores were also positively correlated with being male ( $r = .241, p < .01$ ) and being white vs. being black ( $r = .329, p < .01$ ). The latter should be viewed with caution, however, because African-Americans made up only 2.6% of the total study population. Second, being male was associated with higher OTP at T2-T4, higher overall fairness at T3 and T4, higher E at T2-T4, and higher V at T2 and T4, with correlations ranging from .17 to .30. This pattern suggests that men tended to have higher perceptions of fairness and higher TTM after the test. However, it is unclear whether this observed effect is due to the fact that men had significantly higher WPT scores than women,  $t(227) = 3.73, p < .001$ , mean difference = 2.87). Third, although not hypothesized, it is interesting to note that locus of control was significantly and negatively correlated with Wonderlic score ( $r = -.18$ ), applicants' expectations that they would be hired, T1 E, T2 V, T2 I, T4 V, and T4 overall fairness, with correlations ranging from -.14 to -.18. This pattern of negative associations suggests that people who tend to attribute work outcomes externally (i.e. to chance or luck) show a pattern of lower test scores, lower expectations regarding hiring, lower TTM, and lower perceptions of fairness at several points throughout the selection process. Fourth, negative affect measured after the selection outcome was negatively associated with the selection outcome ( $r = -.31, p < .01$ ), that is, people who were not hired had higher levels of negative affect. Negative affect at T3 was also negatively associated with T3 overall fairness, T3 OTP, T3 V and T3 I with correlations ranging from -.19 to -.31. This pattern of correlations suggests that people who had negative affect regarding the selection



outcome had lower TTM and found the test less fair. Negative affect at T3 was also positively associated with the attribution variables of locus and controllability, suggesting that people who attributed the outcome to internal and controllable causes had more negative affect regarding the outcome. Fifth, T3 and T4 measures of the same variable (e.g. OTP, V, I, E) were generally strongly correlated, with coefficients ranging from .61 for I to .79 for OTP.

### *Analysis of Hypotheses*

Hypotheses 1 predicted that selection outcome (pass/fail) and expected selection outcome (pass/fail) would interact to predict the change in OTP as measured at T2 (before the selection outcome was received) and at T3 (after the selection outcome was received). Hypothesis 1 was tested using a 2 X 2 X 2 mixed factorial ANOVA with expected selection outcome and selection outcome as between-subjects factors and T2-T3 OTP as the repeated measures variable. Only cases with complete data for T2 and T3 were used ( $N = 186$ ), which amounts to 86% of cases in the dataset. Sample sizes were reasonably well balanced across the four cells of the research design. Table 6 shows the means, standard deviations, and sample sizes for each cell. Table 7 shows the degrees of freedom,  $F$  statistics, and effect size estimates (eta-squared) for all main effects and interactions. The main effect of expected outcome was significant. Those who expected to be hired had higher perceptions of OTP ( $M = 2.25$ ) when averaged across time of measurement and actual selection outcome than those who did not expect to be hired ( $M = 1.86$ ). The main effect of actual outcome was also significant. Those who were actually hired had higher

perceptions of OTP ( $M = 2.23$ ) when averaged across time of measurement and expected selection outcome than those who were not hired ( $M = 1.89$ ). However, neither the between-subjects interaction nor any of the within-subjects effects were significant. Hypothesis 1 was therefore not supported.

Hypothesis 2 predicted that selection outcome (pass/fail) and expected selection outcome (pass/fail) would interact to predict the change in TTM as measured at T2 (before the selection decision was received) and T3 (after the selection outcome was received). Based on the results of the CFA, the motivational components of a) valence (V), b) instrumentality (I), and c) expectancy (E) were analyzed separately using individual 2 X 2 X 2 mixed factorial ANOVAs with expected selection outcome (fail/pass) and selection outcome (fail/pass) as between-subjects factors and T2-T3 V, I, and E as the repeated measures variables. Only cases with complete data for T2 and T3 were used ( $N = 186$ ), which amounts to 86% of cases in the dataset. Sample sizes were reasonably well balanced across the four cells of the research design. Table 8 shows the means, standards deviations, and sample sizes for all cells in the research design. Estimated marginal means that are not contained in this table are included in the text. Table 9 shows the degrees of freedom,  $F$  statistics and effect size estimates for all main effects and interactions.

When V was used as the dependant variable (Hypothesis 2a), the main between-subjects effects of expected outcome and actual outcome were significant, but the interaction between the two was not significant. The main within-subject effect of time was not significant. However, the Time X Expected Outcome and Time

X Actual Outcome interactions were significant, as was the three-way interaction among Time, Expected Outcome, and Actual Outcome. Figure 2 depicts the significant three-way interaction. In order to explore the interaction further, I ran separate 2 (Actual outcome) X 2 (Time) mixed factorial ANOVAs conditioned on the expected selection outcome. For those who did not expect to be hired, the interaction between actual outcome and time was significant,  $F(1, 86) = 27.4, p < .001$ , partial  $\eta^2 = .24$ . Follow up pairwise comparisons showed that the increase in V from T2 ( $M = 3.82$ ) to T3 ( $M = 4.42$ ) for those who were actually hired was significant,  $t(39) = 5.35, p < .001$ . The decrease in V from T2 ( $M = 3.91$ ) to T3 ( $M = 3.60$ ) for those who were not actually hired was also significant,  $t(47) = 2.43, p < .05$ . For those who expected to be hired, the interaction was also significant,  $F(1, 95) = 8.5, p < .01$ , partial  $\eta^2 = .08$ . Follow up pairwise comparisons showed that the difference in V from T2 ( $M = 4.35$ ) to T3 ( $M = 3.99$ ) was significant for those who were not hired,  $t(43) = 3.25, p < .01$ . However there was no significant difference for those who were hired.

In summation, the relationship between actual outcome and V as measured at T3 depended upon the participant's expectations regarding the outcome. For those who did not expect to be hired, a hire decision led to an increase in V, while a no hire decision led to a roughly symmetrical decrease in V. For those who expected to be hired, a hire decision led to no change in V, while a no hire decision led to a decrease in V. Hypothesis 2a was therefore supported.

When I was used as the dependant variable (Hypothesis 2b), the three-way interaction was not significant. However, the main between-subjects effect of

expected outcome was significant. Averaged across actual outcome and time of measurement, those who expected to be hired had higher I ( $M = 3.86$ ) than those who did not expect to be hired ( $M = 3.78$ ). There was also a significant interaction between actual outcome and time. In order to further explore this two way interaction, I ran a separate 2 (Actual Outcome) X 2 (Time) mixed factorial ANOVA, which is graphed in Figure 3. The main effects of time,  $F(1, 187) = 28.57, p < .001$ , partial  $\eta^2 = .13$ , and selection outcome,  $F(1, 187) = 6.16, p < .05$ , partial  $\eta^2 = .03$ , were significant, although they are qualified by the actual outcome by time interaction,  $F(1, 187) = 6.16, p < .05$ , partial  $\eta^2 = .03$ . Follow up pairwise comparisons showed that the decrease in means between T2 and T3 for those who were not hired (.44) was significant,  $t(92) = 4.68, p < .001$ . The decrease in means for those who were hired (.16) was also significant,  $t(95) = 2.56, p < .05$ . In other words, while I decreased for both groups, it decreased more for those who were not hired than those who were hired. Hypothesis 2b was therefore partially supported.

When E was used as the dependant variable (Hypothesis 2c), the main between-subjects effect of expected outcome was significant when averaged across times of measurement and actual outcome. In general, those who expected to pass had higher levels of E as measured at T3 ( $M = 3.43$ ) than those who expected to fail ( $M = 2.88$ ). There was also a significant time by actual outcome interaction. No other effects were significant. In order to explore this two way interaction further, I ran a separate 2 (Actual Outcome) X 2 (Time) mixed ANOVA, which is graphed in Figure 4. The main effects of time,  $F(1, 187) = 19.72, p < .001$ , partial  $\eta^2 = .10$ , and selection

outcome,  $F(1, 187) = 22.61, p < .001$ , partial  $\eta^2 = .11$ , were significant, although they are qualified by the time by actual outcome interaction,  $F(1, 187) = 24.86, p < .001$ , partial  $\eta^2 = .12$ . Follow-up pairwise comparisons showed that the change in means between T2 and T3 for those who were not hired (.57) was significant,  $t(92) = 5.89, p < .001$ . However, the change in means for those who were hired was not significant. In other words, E for those who were hired did not change after the selection outcome was received, while E for those who were not hired decreased substantially. Hypothesis 2c was therefore partially supported.

In sum, Hypothesis 2 predicted that expected selection outcome and actual outcome would interact to predict changes in TTM. However, the CFA suggested it would be more appropriate to analyze Hypothesis 2 for a) V, b) I, and c) E individually. The results indicate support for Hypothesis 2a, and partial support for Hypotheses 2b and 2c. Hypothesis 2 was therefore partially supported.

Hypothesis 3 predicted that internal work locus of control would be correlated with the attributional dimensions of locus, stability, and self-control in those applicants who were not selected for hire at T3 (after feedback). All cases with T3 data were used in the analysis ( $N = 186$ ). Results indicated that locus of control was not significantly correlated with T3 measures of internality ( $r = .007, p > .05$ ), controllability ( $r = .03, p > .05$ ), or stability ( $r = .06, p > .05$ ). Hypothesis 3 was therefore not supported.

Hypothesis 4 predicted that negative affect in unhired applicants would decrease between T3 (measured after the selection decision) and T4 (approximately

seven days later), while negative affect in those who are hired would remain constant. Hypotheses 4 was analyzed using a 2 X 2 mixed ANOVA with selection outcome as the between-subjects variable and negative affect as the repeated measures variable. Table 10 contains means and standard deviations for each cell used to evaluate Hypothesis 4. Results of the ANOVA for Hypothesis 4 indicated that there was a significant main effect of selection decision on negative affect averaged over the two times of measurement,  $F(1, 160) = 8.19, p < .01$ , partial  $\eta^2 = .05$ . Those who were hired had lower levels of negative affect ( $M = 2.30$ ) than those who were not ( $M = 2.62$ ). However, neither the within-subject main effect,  $F(1, 160) = 1.23, p > .05$ , partial  $\eta^2 = .008$ , nor the interaction,  $F(1, 160) = 2.73, p > .05$ , partial  $\eta^2 = .017$ , were significant. Hypothesis 4 was therefore not supported.

Hypothesis 5 and 6 were similar to Hypothesis 4, although OTP and overall fairness were used as the repeated measures variables, and it was predicted that OTP and overall fairness would increase from T3 (after feedback) to T4 (approximately 7 days later) for unhired applicants as the detrimental effect of a negative selection outcome on these variables diminished over time. Hypotheses 5 and 6 were analyzed using 2 X 2 mixed ANOVAs with selection outcome as the between-subjects variable and either overall fairness or OTP as the repeated measures variable. Table 10 contains means and standard deviations for each cell used to evaluate Hypothesis 5 and 6. Results of the ANOVA for Hypothesis 5 indicated that there was a significant main effect of selection decision on OTP across the two times of measurement,  $F(1, 160) = 9.01, p < .01$ , partial  $\eta^2 = .05$ . Those who were hired had higher levels of OTP

( $M = 2.22$ ) than those who were not ( $M = 1.83$ ). However, neither the within-subject main effects,  $F(1, 160) = .28, p > .05$ , partial  $\eta^2 = .002$ , nor the interaction,  $F(1, 160) = 2.47, p > .05$ , partial  $\eta^2 = .015$ , were significant. Hypothesis 5 was therefore not supported. Results of the ANOVA for Hypothesis 6 indicated that there was a significant main effect of selection decision on overall fairness across the two times of measurement,  $F(1, 160) = 9.15, p < .01$ , partial  $\eta^2 = .05$ , and a significant effect of time of measurement on overall fairness across selection decisions,  $F(1, 160) = 4.52, p < .05$ , partial  $\eta^2 = .03$ . Those who were hired had higher levels of overall fairness ( $M = 2.92$ ) than those who were not hired ( $M = 2.48$ ), and overall fairness increased from T3 ( $M = 2.65$ ) to T4 ( $M = 2.75$ ). However, the interaction was not significant,  $F(1, 160) = 1.46, p > .05$ , partial  $\eta^2 = .01$ . Therefore, Hypothesis 6 was not supported.

#### *Supplemental Analysis for Hypothesis 2*

Because the Analyses for hypotheses 2 suggested that negative selection decisions were detrimental to TTM, I performed supplemental analyses to see if the effects of outcome feedback on V, I and E would attenuate with time, as had been predicted for negative affect, OTP and overall fairness in Hypotheses 4 – 6. I only used data for those who were not hired ( $N = 79$ ), and performed paired samples  $t$ -tests to examine the difference between scores on each motivational component as measured at T3 (post-feedback) and T4 (7 days post-procedure). The results for V were not significant,  $t(78) = 1.62, p > .05, d = .36$ , and neither were the results for I,  $t(78) = -.13, p > .05, d = .03$ . The results for E, however, were significant,  $t(78) = -$



2.06,  $p < .05$ ,  $d = .47$ , indicating that the detrimental effect of a negative selection on E may attenuate with time.

#### *Supplemental Analysis for Hypotheses 4 - 6*

Hypothesis 4 - 6 predicted interactions between the selection decision and negative affect, OTP and overall fairness, respectively. However, for these hypotheses, no change was predicted for applicants that were hired. I thus performed supplemental analyses using paired samples  $t$ -tests to test the change from T3 (after feedback) to T4 (7 days later) for the group that was not hired. Table 10 contains means and standard deviations for negative affect, OTP and overall fairness.

Hypothesis 4 predicted that negative affect would decrease from T3 (after feedback) to T4 (7 days after the procedure) for those who were not hired, but the result was not significant,  $t(79) = 0.34$ ,  $p > .05$ ,  $d = .07$ . Hypothesis 5 predicted that OTP would increase from T3 to T4 for those who were not hired and the result was also not significant  $t(79) = -1.30$ ,  $p > .05$ ,  $d = .29$ . However, as Hypothesis 6 predicted, T4 overall fairness was significantly higher than T3 overall fairness,  $t(79) = -2.34$ ,  $p < .05$ ,  $d = .53$ , for those who were not hired. The negative effect of selection outcome on overall fairness thus appears to attenuate with time.

#### *Analysis of Research Questions*

Research Question 1 asked what the relationship was between test performance and the three motivational factors of V, I and E at each of the time points throughout the study. In order to answer Research Question 1, I examined the correlations between test score and V, I, and E at each time point in order to



determine which of the 12 motivational variables (3 motivation components X 4 time points) were associated with actual test performance. These correlations are presented in Table 11. Test score was measured once at T2, while the motivational variables were measured at each time point (T1 – T4). V was significantly and positively correlated with test performance at each time point (T1:  $r(229) = .23, p < .001$ ; T2:  $r(230) = .35, p < .001$ ; T3:  $r(187) = .28, p < .001$ ; T4:  $r(169) = .26, p < .01$ .) T2 I was also positively associated with test performance,  $r(230) = .23, p < .05$ . None of the other motivational variables were significantly associated with test performance

However, it could be argued that some of the correlations were artificially created due to the random assignment of participants to hire or no hire groups before the T3 measures. To test for this possibility, I ran correlations between test score and V, I, and E at T3 and T4 for both the hired and unhired groups. Table 12 shows these correlations. The pattern for V was largely consistent with the correlations calculated for the total sample, and the relationship between E and test score remained non-significant in both groups. However, there was a difference between the two groups in terms of I. For the group that was not hired, test score was negatively and significantly associated with I at with T3 and T4, while the associations were not significant in the group that was hired.

Research Question 2 asked whether each motivational component accounts for unique variance in test performance at each time point. However, because the analysis for Research Question 1 indicated that only T1 – T4 V and T2 I were significantly correlated with test performance, I only used these variables in the

analysis. In order to test this research question, I performed a series of hierarchical regressions. For the V variables, T1 V was entered in step 1, T2 V was entered in step 2, T3 V was entered in step 3 and T4 V was entered in step 4. Because test score was only measured once, occurring before the motivation measures at T2, it cannot be affected by applicant motivation as measured at T2, T3, and T4. The logic was that a significant change in  $R^2$  would suggest that the relationship between motivation and test performance is changing across time.

Statistics for interpreting the hierarchical regression analysis are presented in Table 13. The regression of test score on T1 V was significant. The addition of T2 V in step 2 resulted in a significant increase in  $R^2$ . The addition of T3 V in the third step also resulted in a significant increase in  $R^2$ . However, adding T4 V in step 4 did not result in a significant increase in  $R^2$ . Next, T2 V and T2 I were entered into two hierarchical regression equations. This analysis was used to determine if I would maintain its association with test performance at T2 when T2 V was used as a control. First, T2 I was entered in step 1 predicting WPT score, and the result was significant,  $F(1, 228) = 5.58, p < .05, R^2 = .024$ . T2 V was then entered in step 2. The addition of T2 V resulted in a significant increase in variance accounted for,  $F(1, 227) = 25.81, p < .001, R^2 = .124, \Delta R^2 = .1$ , indicating that T2 V explained additional variance above T2 I. However, when T2 V was entered in step 1, and T2 I was entered in step 2, no significant change in  $R^2$  occurred,  $F(1, 227) < .001, p > .05, \Delta R^2 < .001$ , indicating that T2 I does not explain additional variance above T2 V.

#### *Gender as a Control Variable*

An examination of the correlations in Table 4 indicates that gender was correlated with experimental group ( $r = .14$ ), and WPT score ( $r = .24$ ), as well as OTP, E, and Overall Fairness with correlations ranging from (.19 to .30). In order to examine whether using gender as a control would change the statistical or practical significance of the study outcomes, I performed the analyses for Hypotheses 1, 2, 4, 5 and 6 as ANCOVAs using gender as a covariate. I also performed the hierarchical regressions for Research Question 2 using gender as a control. No study outcomes were changed when using gender as a covariate, except in Hypothesis 2b, which predicted a three-way Expected Outcome X Actual Outcome X Time interaction. In this case, the three-way interaction, which approached significance when performed as an ANOVA,  $F(1, 182) = 3.39, p = .067$ , became significant when analyzed as an ANCOVA using gender as a control,  $F(1, 182) = 3.97, p = .048$ . The three-way interaction was made salient by the differences in means from T2 to T3 between those who expected to be hired but were not actually hired (mean difference = .65), and those who expected to be hired and were actually hired (mean difference = .12).

## Discussion

The study described in this thesis has several implications for the field of applicant reactions. The findings are thoroughly consistent with a self-serving explanation in applicant reactions and indicate that both the actual selection outcome and applicant's expectations regarding the outcome have strong effects on motivation and OTP. Moreover, the findings suggest that the self-serving bias effect on motivation tends to display itself in terms of  $V$ . That is, applicants retrospectively adjust motivation by adjusting their level of desire for the job in accordance with their expectations regarding the outcome and with the outcome itself. Third, the results provide some initial evidence that the effects of pass/fail information may last beyond initial reactions, persisting at time points beyond the time of feedback, which could have implications for future applicant reactions research.

### *Hypotheses and Research Questions*

*Findings related to OTP.* Hypotheses 1 predicted that an applicant's expectations regarding the selection outcome would interact with the actual selection outcome to influence perceptions of OTP across measurements in a self serving manner. Although the interaction was not significant for Hypothesis 1, there were significant main effects for expected outcome and actual outcome. The finding that negative selection outcomes tend to reduce OTP and that positive outcomes tend to increase OTP is consistent with previous research both in terms of OTP (e.g. Schleicher et al., 2006) and in terms of the overall effect of selection decisions on applicant reactions in general (e.g. Bauer et al., 1998; Chan, 1997; Gilliland, 1993).

However, the current study also extends the literature by suggesting that applicants' expectations regarding the outcome influence their perceptions of OTP in much the same manner as the actual outcome, which is consistent with a self-serving bias explanation for applicant reactions. This finding is also consistent with previous research into the effect of expected performance on motivation (Chan et al., 1997, 1998a, 1998b).

*Findings related to applicant attributions.* The hypotheses related to applicant attributions were generally not supported. Hypothesis 3 predicted that applicants' general attitudes about their locus of control at work would result in specific patterns of causal attributions among applicants who were not hired, but there were no significant correlations between locus of control and any of the attribution variables. However, selection outcome was highly correlated with locus ( $r = -.39, p < .01$ ), stability ( $r = -.37, p < .01$ ) and controllability ( $r = -.44, p < .01$ ). This pattern of correlations suggests that applicants do indeed tend to attribute the cause of negative selection outcomes in a predictable way. Specifically, the data suggest that applicants who receive a negative selection decision tend to make causal attributions that are external (i.e. the cause does not reflect an aspect of themselves), uncontrollable (i.e. they have no control over the cause) and unstable (i.e. the cause can change over time.) Furthermore, negative affect was correlated with locus ( $r = .22, p < .01$ ) and controllability ( $r = .39, p < .01$ ), although not with stability ( $r = .08, p > .05$ ), suggesting that those who have negative affect regarding the selection decision tended to attribute the outcome to unstable and uncontrollable causes. While not

directly hypothesized, these patterns are largely consistent with self-serving bias explanations for applicant reactions and with AART.

Finally, locus, controllability and stability were negatively correlated with several of the fairness variables and motivational components, with significant correlations ranging from  $-.14$  to  $-.34$  (refer to Table 4 for these correlations). This pattern of correlations suggests that applicant attributions are linked to fairness and motivation outcomes, although it is difficult to disentangle these effects from the association between selection outcome and the attribution dimensions mentioned above. Clearly more research is needed to establish the causal flow of these relationships, to establish whether specific patterns of attributions lead to specific effects on motivation and fairness perceptions, and to examine the mechanism through which these effects occur.

Hypotheses 4, 5 and 6 predicted that OTP, negative affect, and overall fairness in applicants who were not hired would increase after some time had passed while staying the same for those who were hired. The logic was that negative reactions driven by self serving bias may attenuate with time. The interactions were not supported. As a supplemental analysis, I performed comparisons between T3 and T4 measurements of these variables only for the group that was not hired. The results showed a significant increase in overall fairness from T3 to T4, which was consistent with Hypothesis 6. Moreover, although not significant, changes in OTP and negative affect were in the hypothesized direction. Based on the observed trends in the data, it is thus possible that a significant change would have occurred if OTP and negative

affect were measured after more time had passed, although the mean differences were quite small at  $-.09$  and  $.03$ , respectively. Clearly, more research is needed in this area to more fully develop and test the basic psychological mechanisms underlying self-serving bias.

*Findings related to test-taking motivation.* Results for Hypothesis 2a showed the predicted three-way interaction between expected outcome and actual outcome on the motivational component of V across time. A graph of this interaction is shown in Figure 3. Specifically, for applicants who expected to be hired, a negative selection decision resulted in a strong drop in V while a positive selection decision had no effect. However, for applicants who expected not to be hired, a positive selection decision resulted in a strong increase to V, while a negative selection decision resulted in drop to V. To interpret the interaction another way, it appears that a negative selection decision results in a substantial drop to V regardless of the applicant's expectations, while a positive selection decision only increases V in those who did not expect to be hired.

Results for Hypothesis 2b and 2c were partially supported. Although the three-way interaction was not present when I and E were used as dependant variables, the significant main effect of expected outcome and a significant interaction between time and actual outcome in both cases tell a similar story to that of OTP. In general, people who expected to be hired after taking the test had higher levels of motivation as expressed in I and E than those who did not. Moreover, changes in I and E were moderated by the actual selection outcome. Graphs of these interactions are shown in

Figure 4 and Figure 5. I and E decreased substantially for those who were not hired but did not change for those who were hired. These findings suggest that the effect of the selection outcome on I and E is asymmetric -- negative information appears to have a strong effect on these elements of motivation while positive information has no effect. The lack of a significant three-way interaction suggests that this pattern holds regardless of an applicant's expectations regarding the outcome. It should be noted, however, that the three-way Expected Outcome X Actual Outcome X Time interaction was present for I when gender was used as a control in a supplementary analysis. While the three-way interaction does not change any of the previous interpretations, it enriches the interpretation of the effect of expected outcome and selection decision on I. Specifically, I decreased slightly for those who expected to pass but were hired and decreased substantially more for those who expected to pass but were not hired. In other words, while I was reduced for both groups, a negative selection decision resulted in a far greater drop.

Furthermore, results from the CFA suggested that the VIEMS measure (Sanchez et al., 2000) is best conceptualized using a three factor model consisting of separate factors for V, I and E rather than a single factor model which would use a composite measure of V, I and E to represent TTM. However, a higher-order factor model would provide identical fit statistics thus making it difficult to draw conclusions about the proper factor structure. Taken together, the results related to V, I, and E discussed above and the sensitivity with which the VIE subscales detected



differences related to the experimental manipulation allow us to cautiously conclude that a three- factor model provides the best conceptualization of TTM.

Figures 6, 7, and 8 trace the descriptive trajectory of V, I, and E across the four study time points for the four combinations of expected outcomes and selection outcomes. Because the random assignment of selection outcomes did not occur until T3, any differences between those who received a “hire” selection decision and those who received a “no-hire” selection decision are the result of chance. Figure 6 shows a substantial drop in V from T1 (pre-test) to T2 (post-test) for those who did not expect to be hired, and a less substantial drop in V for those who expected to be hired, and is consistent with the effect of hiring expectation on V discussed above. The three-way interaction found in Hypothesis 2a can then be seen from T2 to T3 (post-feedback) with a slight reduction in V across all groups from T3 to T4 (7 days later). Figure 7 shows the trajectory of I. Once again, there is a drop in I for all study groups from T1 to T2. The two-way interaction found in Hypothesis 2b can then be seen from T2 to T3. Finally, Figure 8 shows the trajectory of E. The two-way interaction found in Hypothesis 2c can be observed between T2 and T3. Interestingly, the trends in means across study time points for E were similar for those who did and did not expect to be hired, although those who expected to be hired generally had higher levels of E at all study time points than those who did not expect to be hired.

Analyses of the research questions further enhance the findings related to motivation. Research Question 1 asked which motivational components were associated with cognitive ability test performance at each time point, and the zero-

order correlations suggest that T1 V (pre-test), T2 V (post-test), T3 V (post-outcome), and T2 I are the only components related to test performance. The results were largely consistent when I examined the correlations for the hired and unhired groups separately, except the association between I and test performance was negative at T3 and T4 for the group that was not hired. In other words, those who had higher test scores tended to have lower I at T3 and T4 in the group that was not hired. This difference between groups makes sense because participants were randomly assigned into hire and no-hire groups at T3. It is thus probable that participants with high test scores would tend to believe—and rightly so—that the test was not actually instrumental in determining their hire status.

RQ 2 asked whether each motivational component explains incremental variance in test performance over pre-test V. The results of the hierarchical regression analysis suggests that T2 V accounts for unique variance in test score when controlling for T1 V, and T3 V accounts for unique variance when controlling for T1 V and T2 V. However, T4 V did not explain additional variance over T1 – T3 V, and T2 I did not explain additional variance over T2 V. In other words, V as measured after the test has a different meaning for the applicant depending on whether it is measured before the selection decision or after the selection decision. This finding may seem counter-intuitive because the observed test performance is invariant over time, and thus cannot be affected by motivation as measured after performance. However, Chan et al. (1997) have shown that the association between motivation and performance is causal in both directions. That is, pre-test TTM influences

performance on cognitive ability tests, and prior performance on cognitive ability tests can influence post-test TTM. The current study replicates these findings but also suggests that not only the test but the actual selection outcome may influence motivation as described by the test-taker after the test.

Moreover, it appears that the association between motivation and test performance is occurring primarily in the V domain. In other words, those who want the job before the test tend to do well, and those who performed well tend to want the job after the test and after the selection outcome. Similarly, those who do not want the job (or tell themselves such) do not tend to perform as well on the test, and those who do not perform well on the test tend to report that they did not want the job. It also appears that neither I nor E have associations with test performance beyond the variance accounted for by V.

#### *Implications for Research*

Taken together, these findings extend the literature on motivation in applicant reactions in several ways. First, this study conceptualizes motivation using a multi-dimensional scale that considers V, I, and E as separate motivational components. Although previous research has used the VIEMS scale to examine test motivation (Sanchez et al. 2000), this is the first study that I am aware of to consider both the effect of expected outcome and actual outcome on these individual motivational components. It is also the first to examine how these three components of TTM are described by applicants after the test and then after receiving an outcome. As such it merges the work of Sanchez and colleagues with previous research on self-serving

bias and test-taking motivation (e.g. Chan et al., 1997, 1998a, 1998b). It goes further by examining how TTM is experienced by test-takers at multiple points throughout the selection process, assessing how test-takers experience motivation after having taken the test and after having received an outcome. As such, it delves into how the actual test experience and outcome feedback may affect how applicants experience and describe their motivation.

Second, the current study shows that, for the most part, the relationship between motivation and test performance is primarily driven by the motivational component of V. This finding seems somewhat contradictory to the findings of Sanchez et al. (2000), in which test performance was related to pre- and post-test I, but not V. However, the difference may be due to the contexts in which the two studies were conducted. The current study used a simulated application context and although an incentive to perform well on the test was given, it most likely did not approximate the V of obtaining a desirable job. As such, V presented an easily adjustable motivational target for the operation of self-serving bias. The Sanchez et al. study, on the other hand, was performed in a field setting, where it is assumed that almost everyone applying for the job truly wanted it. As such, I, or the belief that performance will lead to the desired outcome may have presented a more easily adjustable target in that setting. Taken together, these separate but related findings suggest that events that occur throughout the selection process have differential effects on applicants depending on the context in which they are encountered.

#### *Practical Implications*

Although the major contributions of this study are primarily to research, there are at least three important practical implications. First, the findings suggest that fairness perceptions can be impacted by both actual outcome—as in Schleicher et al. (2000)—and the applicant's own expectations regarding the outcome. These findings suggest that while process fairness remains an important consideration in developing effective selection procedures, some effects on fairness perceptions may be outside the control of test makers and selection professionals, as applicants come in with their own expectations, and many applicants, by design, will not achieve a sufficient score to be hired. Second, the findings show that both expected outcome and actual outcome affect applicant TTM, and that these effects tend to be asymmetrical. That is, a negative selection decision or the expectation of one tends to reduce TTM, while positive expectations and positive selection decisions generally have negligible effects on TTM.

Third, for some reactions such as negative affect, OTP, V, and I there appeared to be little difference between reactions measured just after the selection outcome was received and reactions measured seven days later. However, other reactions such as overall fairness and E appear to attenuate with time. It is thus difficult to make strong inferences from these findings. What remains to be seen is whether the effects on fairness and motivation are persistent and lasting beyond a few days after the test, which could impact applicants' future performance on selection tests and could also impact test validity. Third, the findings suggest that the effect of test performance on motivation may be largely driven by changes in V, or the

applicant's desire for the job. Practitioners should pay heed to these effects because reductions in  $V$  based on negative expectations or a negative selection may spill over into important organizational outcomes such as job pursuit intentions and organizational attraction.

### *Potential Limitations*

The proposed study does have some potential limitations. First, it uses a group of participants currently enrolled in a university. Aside from issues of generalizability when using a convenience sample, the participants may be both more familiar and more comfortable with cognitive ability testing in general, which may limit some of the effects of testing on fairness perceptions, motivation and affect. However, the student population from which the participants are drawn represents individuals who are likely to encounter selection testing as they enter the job market. Moreover, 93% of participants had past work experience and 58% were currently working. Furthermore, it is possible that some participants may not have believed that their scores on the test are consistent with their randomly assigned accept/reject status, which may have limited the effect of the manipulation on fairness, motivation and negative affect. This may provide a partial explanation for some of the non-significant findings. However, past research suggests that test-takers are not very good at assessing their actual performance without the aid of feedback (e.g., Ryan & Ployhart, 2000). To test this possibility, I examined the correlations between test scores and two measures of post-test expected performance. The first measure was the dichotomous (yes/no) hire expectations variable used elsewhere in the current

study, and the second was a Likert based subjective measure of expectations. The correlations show that WPT score was significantly and positively associated with both measures, although the correlations were not particularly high ( $r(225) = .178, p < .01$  and  $r(229) = .234, p < .01$ , respectively), suggesting that for many participants, their expectations did not match their performance.

In spite of the potential limitations based on the research design, an experimental framework using a student sample makes sense for the current study because it enabled a random assignment of selection outcome, thus helping to isolate the actual selection outcome from the expected selection outcome and enabling an examination of the interaction between the two.

Second, the incentive provided for doing well on the test may not have been adequate to simulate the  $V$  associated with an applicant's desire for a job in the research sample. However, one would expect the lack of incentive to minimize the effect of expected and actual selection outcomes on motivation and fairness perceptions, especially on measures of the motivational component of  $V$ . Because significant effects were found, it could be argued that the effects would be even larger if the  $V$  of obtaining a job was adequately simulated.

Third, several research hypotheses were concerned with changes in fairness and negative affect in the seven days after the simulated procedure ended, and it is impossible to separate these effects from possible confounds related to history. However, participants began the study in staggered groups, which should have minimized history effects. Finally, the time elapsed between the end of the selection



procedure and the follow-up (T4) measures may not have been adequate to show changes in negative affect, OTP and overall fairness.

Fourth, some observed differences between T2 and T3 data collections may be due to changing from a paper-based self report data collection method to an online self-report data collection method. However, it can be argued that this helped reduce common method variance. In addition, the longitudinal design and the experimental framework both contributed to the minimization of common method variance, thus reducing the potential for spurious research findings.

#### *Avenues for Future Research*

The current study opens several avenues for future research. First, Chan and Schmitt (2004) have noted that no study has yet examined self-serving bias and distributive justice simultaneously. While the current study gestures in that direction by showing that both expected outcome and actual outcome affect OTP and TTM, future studies should explicitly consider distributive justice perceptions and variables related to self-serving bias. Moreover, moderators of the effect of perceived and actual test performance, expected outcome and actual outcome on OTP and test-taking motivation should be considered in the future. For example, moderators such as the attribution style of the applicant, attitudes toward testing, test taking self efficacy, and test type (i.e. cognitive ability, honesty, personality) should be considered in the future.

Second, the combination of the findings of the current study with those of Sanchez et al. (2000) suggest that elements of the selection procedure affect TTM,



and that V, I and E may be differentially affected depending on context. Future research should attempt to identify individual differences and elements of the selection procedure that increase or decrease salience in each motivational component. For example, Ployhart and Ryan (1997) used measures of the attributional factors locus, stability and controllability to hypothesize specific attributional mediators for the effect of fairness perceptions on self attitudes. A more thorough investigation of the relationship between motivation as expressed in V, I, and E and attributions should thus be conducted to determine if specific attributions drive the effects on motivation. For example, some causal attributions for poor performance (e.g. internal and unstable) may affect perceptions of the V associated with the job ("I decided I didn't want the job after all"), while others (e.g. external and stable) may affect the perceived I of the test ("They probably don't even use these test scores in making a decision.")

Third, Truxillo et al. (2009) provided meta-analytic evidence that test-taking motivation mediated the relationship between explanations given to applicants and performance on cognitive ability tests, suggesting that some reactions may impact test performance (and thus selection) through reducing or increasing motivation in applicants. The current study suggests that applicants' expectations regarding the expected outcome and the actual outcome received also affect TTM. A critical area for future study would thus be to examine whether reductions in motivation are persistent and whether they may affect future test performance. For example, a future study could test whether the effects on TTM from one test carry over to affect test

performance on tests taken in the future. Another useful direction would be to examine the relationship between test-taking self efficacy and TTM both during and after the selection process.

### *Conclusion*

In conclusion, the current study suggests that applicant expectations regarding the outcome of a selection procedure and the selection outcome itself have strong effects on applicant test-taking motivation and fairness perceptions, such that negative expectations and outcomes reduce TTM and fairness perceptions. Moreover, the findings suggest that the effects of these variables on test-taking motivation tend to display themselves in terms of  $V$  – or an applicants' desire for the job. Finally, the results suggest that applicant expectations and actual outcome interact to affect  $V$ , and that this effect is asymmetrical. Specifically, negative selection decisions are detrimental to  $V$  whether the applicant expects to be hired or not. However, positive selection decisions only increase  $V$  in applicants who do not expect to be hired. These effects of selection outcome also appear to last over time, although more research is needed in this area.

## Tables and Figures

Table 1

*Some Examples of Attributions for Negative Performance on a Selection Test*

	Controllable by individual		Uncontrollable by individual	
	Stable	Unstable	Stable	Unstable
Internal	Lack of Preparation	<i>Lack of Test-Taking Motivation</i>	Low Ability	Low Mood, Fatigue
External	N/A	N/A	<i>Unfair Test; affects OTP</i>	<i>Noisy Testing Environment; affects OTP</i>

Table 2  
*List of Thesis Study Variables Measured at Each Time.*

Measures	T0 Pre- Procedure	T1 Pre- Test	T2 Post-Test / Pre-Feedback	T3 Post- Feedback	T4 Post- Procedure
Demographic Variables	✓				
Locus of Control at Work	✓				
Test-Taking Motivation (VIEMS)		✓	✓	✓	✓
Opportunity to Perform (SPJS)		✓	✓	✓	✓
Overall Procedural Justice (SPJS)			✓	✓	✓
<i>Attribution Variables</i>					
Negative Affect			✓	✓	✓
Locus			✓	✓	
Stability			✓	✓	
Controllability			✓	✓	
Expected Outcome		✓	✓		

Table 3  
*Demographic Make-up of Participant Population at Each Study Time Point*

Demographic Variable	Number of Participants			
	T1	T2	T3	T4
<i>Gender</i>				
Men	149	149	123	106
Women	81	81	64	53
<i>Ethnicity</i>				
African American	6	6	2	0
Asian / Pacific Islander	27	27	21	16
Caucasian	162	162	138	124
Filipino	2	2	0	0
Hispanic	13	13	10	8
Native American	2	2	1	1
Other	17	17	14	10
<i>Education</i>				
Less than high school	1	1	1	1
High School	106	106	83	69
Associates Degree	99	99	83	73
Bachelors Degree	20	20	17	15
Masters Degree	3	3	2	1
<i>Total Participants</i>	231	231	186	159

Table 4  
Intercorrelations and Alpha Reliability Statistics for Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Hire Expectation																
2. Selection Outcome	.09															
3. Age	-.04	-.10														
4. Gender	.26†	.14*	.05													
5. Ethnicity	-.05	-.11	-.01	.07												
6. Education	.03	.06	.30†	-.05	-.04											
7. Work Status	.08	.12	-.06	-.13*	-.02	-.02										
8. Locus of Control	-.14*	-.08	-.02	-.09	-.09	-.08	-.06									
9. WPT Score	.18†	.05	.04	.24†	.33†	.01	.01	-.18†								
10. T1 OTP	.05	.08	.15*	.02	.17*	.18†	.06	.07	.02	.23†	.00	.72)				
11. T1 V	.15*	.04	.10	.10	.23†	.08	.08	-.10	.23†	.00	.72)					
12. T1 I	-.07	-.04	.20†	-.03	.16*	.03	.07	-.08	-.05	.17*	.39†	.82)				
13. T1 E	.05	.08	.07	.06	.00	.00	.08	-.14*	-.01	.27†	.13*	.23†	.86)			
14. T2 OTP	.20†	.15*	.10	.19†	-.13	.10	-.02	.03	-.05	.50†	-.11	.01	.15*	.92)		
15. T2 V	.28†	.06	.13*	.17*	.35†	.10	.08	-.17*	.35†	.15*	.46†	.23†	.14*	.01	.91)	
16. T2 I	.05	.06	.13	.02	.29†	.09	.00	-.18†	.15*	.19†	.26†	.47†	.26†	-.02	.44†	.84)

Note. N = 230 at T1 and T2; N = 187 at T3; N = 159 at T4. Values in parenthesis are Alpha statistics. For Selection Outcome, 1 = Hired, 0 = Not Hired. For Gender, Males = 1, Females = 0. For ethnicity, 1 = White, 0 = African American. For Work Status, 1 = Yes, 2 = No. For Work Locus of Control, 1 = Internal, 2 = External. OTP = Opportunity to Perform; V = Valence; I = Instrumentality; E = Expectancy; WPT = Wonderlic Personnel Test; OF = Overall Fairness; NA = Negative Affect. T1 = Pre-Test; T2 = Post-Test; T3 = Post-Test/Pre-Feedback; T4 = 7 Days Post Procedure. \* $p < .05$ . † $p < .01$ .

Table 4 (continued)  
Means, Standard Deviations, and Intercorrelations for Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17. T2 E	.30†	.15*	.00	.20†	.02	.00	-.05	-.11	.10	.25†	.00	.02	.52†	.30†	.21†	.29†
18. T3 OTP	.23†	.27†	.11	.24†	.05	.15*	-.05	.03	.03	.48†	-.16*	-.07	.13	.65†	-.01	.10
19. T3 V	.19†	.44†	.09	.14	.02	.13	.13	-.12	.28†	.14	.36†	.24†	.12	.12	.53†	.23†
20. T3 I	.01	.22†	.04	-.05	.04	.07	.08	-.08	-.11	.11	.13	.31†	.07	.05	.10	.47†
21. T3 E	.27†	.43†	.06	.23†	-.12	.06	.01	.02	-.06	.31†	-.12	-.08	.38†	.35†	.01	.07
22. T4 OTP	.26†	.18*	.07	.24†	.02	.08	.07	-.08	.01	.38†	-.24†	-.06	.13	.55†	-.05	.11
23. T4 V	.21†	.36†	.00	.20*	-.07	.01	.11	-.18*	.26†	.10	.29†	.16*	.18*	.04	.48†	.30†
24. T4 I	.08	.12	.00	.06	-.06	.08	.08	-.07	-.14	.10	.13	.40†	.11	.10	.08	.39†
25. T4 E	.25†	.22†	-.06	.26†	-.08	.04	.15*	.02	-.03	.29†	-.20†	-.03	.30†	.43†	.02	.07
26. T3 Locus	-.12	-.39†	.06	-.08	-.03	-.11	-.08	.01	-.04	-.12	-.04	-.06	-.04	-.14	-.11	-.24†
27. T3 Stability	-.08	-.37†	.05	-.10	-.11	-.07	-.07	.08	-.04	-.01	-.18*	-.09	-.01	-.04	-.17*	-.14
28. T3 Control	-.22†	-.44†	.13	-.16*	-.06	.02	-.13	.06	-.07	-.18*	.03	-.02	-.07	-.26†	-.12	-.19†
29. T3 OF	.32†	.29†	.11	.30†	.03	.09	-.02	-.07	.18*	.34†	-.05	.00	.13	.48†	.15*	.17*
30. T4 OF	.32†	.19*	.02	.24†	.04	.03	.02	-.18*	.18*	.23†	-.04	-.05	.13	.34†	.18*	.24†
31. T3 NA	-.17*	-.31†	-.03	-.16*	-.23*	.02	-.01	.05	-.13	-.03	-.04	.12	.04	-.14	-.16*	.01
32. T4 NA	-.07	-.14	-.03	-.03	-.10	-.02	-.02	.12	-.15*	.01	-.02	.02	.07	.06	-.12	-.03

Note. N = 230 at T1 and T2; N = 187 at T3; N = 159 at T4. Values in parenthesis are Alpha statistics. For Selection Outcome, 1 = Hired, 0 = Not Hired. For Gender, Males = 1, Females = 0. For ethnicity, 1 = White, 0 = African American. For Work Status, 1 = Yes, 2 = No. For Work Locus of Control, 1 = Internal, 2 = External. OTP = Opportunity to Perform; V = Valence; I = Instrumentality; E = Expectancy; WPT = Wonderlic Personnel Test; OF = Overall Fairness; NA = Negative Affect. T1 = Pre-Test; T2 = Post-Test/Pre-Feedback; T3 = Post-Test/Pre-Feedback; T4 = 7 Days Post Procedure.

\* $p < .05$ . † $p < .01$ .

Table 4 (continued)  
Means, Standard Deviations, and Intercorrelations for Study Variables

Variable	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
17. T2 E	(.92)															
18. T3 OTP	.33†	(.94)														
19. T3 V	.16*	.18†	(.91)													
20. T3 I	.07	.20†	.36†	(.88)												
21. T3 E	.63†	.48†	.24†	.22†	(.94)											
22. T4 OTP	.37†	.79†	.00	.09	.41†	(.94)										
23. T4 V	.20*	.10	.69†	.24†	.19*	.00	(.93)									
24. T4 I	.11	.13	.29†	.61†	.13	.05	.31†	(.87)								
25. T4 E	.54†	.44†	.06	.09	.65†	.45†	.10	.24†	(.92)							
26. T3 Locus	-.17*	-.32†	-.34†	-.33†	-.24†	-.24†	-.20*	-.27†	-.16*	(.73)						
27. T3 Stability	-.10	-.16*	-.23†	-.14	-.09	-.07	-.21†	-.22†	-.10	.34†	(.75)					
28. T3 Control	-.29†	-.33†	-.34†	-.30†	-.31†	-.31†	-.22†	-.19*	-.28†	.69†	.15*	(.88)				
29. T3 OF	.34†	.68†	.40†	.20†	.39†	.54†	.27†	.22†	.29†	-.36†	-.15*	-.42†	(.88)			
30. T4 OF	.38†	.58†	.26†	.14	.31†	.62†	.24†	.19*	.31†	-.32†	-.08	-.41†	.81†	(.85)		
31. T3 NA	-.07	-.19*	-.22†	-.01	-.20†	-.09	-.13	-.08	-.08	.22†	.08	.29†	-.31†	-.23†	(.83)	
32. T4 NA	.09	.03	-.14	.01	-.06	.04	-.05	.03	.00	.06	-.04	.161*	-.15	-.17*	.60†	(.86)

Note. N = 230 at T1 and T2; N = 187 at T3; N = 159 at T4. Values in parenthesis are Alpha statistics. For Selection Outcome, 1 = Hired, 0 = Not Hired. For Gender, Males = 1, Females = 0. For ethnicity, 1 = White, 0 = African American. For Work Status, 1 = Yes, 2 = No. For Work Locus of Control, 1 = Internal, 2 = External. OTP = Opportunity to Perform; V = Valence; I = Instrumentality; E = Expectancy; WPT = Wonderlic Personnel Test; OF = Overall Fairness; NA = Negative Affect. T1 = Pre-Test; T2 = Post-Test/Pre-Feedback; T3 = Post-Feedback; T4 = 7 Days Post Procedure. \* $p < .05$ . † $p < .01$ .



Table 5  
Means and Standard Deviations for Study Variables

Variable	<i>M</i>	<i>SD</i>	Variable	<i>M</i>	<i>SD</i>
Age	24.83	6.86	T3 V	4.13	0.80
Gender	0.35	0.48	T3 I	3.67	0.83
Years of Education	2.64	0.70	T3 E	3.04	1.05
Work Status	0.58	0.49	T4 OTP	2.02	0.87
Locus of Control	2.39	0.45	T4 V	3.94	0.89
WPT Score	23.73	5.72	T4 I	3.56	0.80
T1 OTP	2.63	0.90	T4 E	3.00	0.93
T1 V	4.74	0.39	T3 Locus	4.31	1.85
T1 I	4.30	0.60	T3 Stability	5.38	1.89
T1 E	3.86	0.82	T3 Control	4.40	2.09
T2 OTP	2.11	0.89	T3 Fairness	2.65	1.03
T2 V	4.11	0.89	T4 Fairness	2.71	0.99
T2 I	3.91	0.74	T3 NA	2.51	0.85
T2 E	3.29	0.99	T4 NA	2.51	0.83
T3 OTP	2.03	0.89			

*Note.* N = 230 at T1; N = 187 at T2; N = 159 at T3. For Gender, Males = 1, Females = 0. For ethnicity, White = 1, African American = 0. For Work Status, 1 = Yes, 2 = No. For Work Locus of Control, 1 = Internal, 2 = External. OTP = Opportunity to Perform; V = Valence; I = Instrumentality; E = Expectancy; WPT = Wonderlic Personnel Test; T = Time; OF = Overall Fairness; NA = Negative Affect.

Table 6  
*Cell Sizes, Means and Standard Deviations for T2 and T3 OTP*

Group	n	T2 OTP		T3 OTP	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Actual hire					
Expected hire	53	2.43	0.91	2.49	0.92
Expected not hire	41	1.98	0.85	2.02	0.80
Actual not hire					
Expected hire	44	2.16	0.90	1.94	0.83
Expected not hire	48	1.78	0.74	1.68	0.78

*Note.* OTP = Opportunity to Perform. T2 = Post-Test; T3 = Post-Feedback.

Table 7

*Degrees of Freedom, F Statistics, and Effect Sizes for Evaluating Hypothesis 1, that Actual and Expected Outcome Would Interact to Affect OTP*

Source	<i>df</i>	<i>F</i>	$\eta^2$
Between subject effects			
Expected Outcome (E)	1	12.3**	0.06
Actual Outcome (A)	1	9.19**	0.05
E x A	1	0.36	0.002
Within subject effects			
Time (T)	1	1.06	0.006
T x E	1	0.28	0.002
T x A	1	3.83	0.02
T x E x A	1	0.411	0.002

*Note.* E = Expected Outcome; A = Actual Outcome; T = Time.

\*\* $p < .01$

Table 8  
*Cell Sizes, Means and Standard Deviations for T2 and T3 Valence, Instrumentality  
 and Expectancy*

Group	n	T2 Score		T3 Score	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Valence					
Expected hire					
Actual hire	53	4.52	0.58	4.52	0.53
Actual not hire	44	4.35	0.61	4.00	0.84
Expected not hire					
Actual hire	40	3.82	0.81	4.42	0.52
Actual not hire	48	3.91	1.11	3.60	0.88
Instrumentality					
Expected hire					
Actual hire	53	4.10	0.70	3.94	0.66
Actual not hire	44	4.00	0.63	3.38	0.97
Expected not hire					
Actual hire	41	3.95	0.58	3.76	0.60
Actual not hire	48	3.90	0.78	3.60	0.98
Expectancy					
Expected hire					
Actual hire	53	3.64	0.83	3.70	0.88
Actual not hire	44	3.57	0.80	2.85	0.89
Expected not hire					
Actual hire	41	3.18	1.07	3.23	0.90
Actual not hire	48	2.80	1.04	2.34	1.01

*Note.* T2 = Post-Test; T3 = Post-Feedback.

Table 9

*Degrees of Freedom, F statistics, and Effect Sizes for Evaluating Hypothesis 2 that Expected Outcome and Actual Outcome would Interact to Affect Valence, Instrumentality and Expectancy.*

Source	df	F	$\eta^2$
Between subject effects			
<i>Valence</i>			
Expected Outcome (E)	1	17.22***	0.09
Actual Outcome (A)	1	13.27***	0.07
E x A	1	0.002	<.001
<i>Instrumentality</i>			
E	1	5.64*	0.03
A	1	0.55	0.003
E x A	1	0.9	0.005
<i>Expectancy</i>			
E	1	20.46***	0.1
A	1	19.90***	0.1
E x A	1	0.5	0.003
Within subject effects			
<i>Valence</i>			
Time (T)	1	0.13	0.001
T x E	1	36.43***	0.17
T x A	1	9.45**	0.05
T x E x A	1	6.74*	0.04
<i>Instrumentality</i>			
T	1	30.31***	0.14
T x E	1	2.37	0.01
T x A	1	6.31*	0.03
T x E x A	1	3.4	0.02
<i>Expectancy</i>			
T	1	18.10***	0.09
T x E	1	1.01	0.006
T x A	1	27.2***	0.13
T x E x A	1	1.19	0.006

Note. E = Expected Outcome; A = Actual Outcome; T = Time.

\* $p < .05$ . \*\* $p < .01$ . \*\*\*  $p < .001$ .

Table 10  
*Cell Sizes, Means and Standard Deviations for Negative Affect (Hypothesis 4), OTP (Hypothesis 5), and Overall Fairness (Hypothesis 6)*

Group	n	T3		T4	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Negative Affect					
Actual hire	82	2.22	0.64	2.38	0.78
Actual not hire	78	2.64	0.85	2.61	0.88
Opportunity to Perform					
Actual hire	82	2.24	0.88	2.19	0.82
Actual not hire	80	1.79	0.78	1.88	0.92
Overall Fairness					
Actual hire	82	2.89	0.96	2.94	0.98
Actual not hire	80	2.40	1.01	2.56	0.95

*Note.* T3 = Post-Feedback; T4 = 7 Days Post Procedure.

Table 11  
*Correlations between Test Score and Valence (V), Instrumentality (I) and Expectancy (E) across Time Points*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. WPT Score	1												
2. T1 V	.23**	1											
3. T2 V	.35**	.46**	1										
4. T3 V	.28**	.36**	.53**	1									
5. T4 V	.26**	.29**	.48**	.69**	1								
6. T1 I	-.05	.39**	.23**	.24**	.16*	1							
7. T2 I	.15*	.26**	.44**	.23**	.30**	.47**	1						
8. T3 I	-.11	.13	.10	.36**	.24**	.31**	.47**	1					
9. T4 I	-.14	.13	.08	.29**	.31**	.40**	.39**	.61**	1				
10. T1 E	-.01	.13*	.14*	.12	.18*	.23**	.26**	.07	.11	1			
11. T2 E	.10	.00	.21**	.16*	.20*	.02	.29**	.07	.11	.52**	1		
12. T3 E	-.06	-.12	.01	.24**	.19*	-.08	.07	.22**	.13	.38**	.63**	1	
13. T4 E	-.03	-.20**	.02	.06	.10	-.03	.07	.09	.24**	.30**	.54**	.65**	1

Note. OTP = Opportunity to Perform; V = Valence; I = Instrumentality; E = Expectancy; WPT = Wonderlic Personnel Test. T1 = Pre-Test; T2 = Post-Test/Pre-Feedback; T3 = Post-Feedback; T4 = 7 Days Post Procedure.

\* $p < .05$ . \*\* $p < .01$ .

Table 12  
*Correlations between Test Score and Valence (V), Instrumentality (I) and Expectancy (E) at Time 3 and Time 4 for Those who Were Hired and Those who Were Not Hired*

Selection Outcome	Variable	T3 V	T4 V	T3 I	T4 I	T3 E	T4 E
Not Hired	WPTScore	.29**	.25*	-.24*	-.24*	-.11	-.01
Hired	WPTScore	.27**	.36**	.07	.10	-.07	-.02

Note. N = 187 at T3; N = 159 at T4. T3 = Post-Feedback; T4 = 7 Days Post Procedure.

\* $p < .05$ . \*\* $p < .01$ .



Table 13  
 $R^2$  and  $\Delta R^2$  Statistics for WPT Regressed on Valence across Study Time Points

Variable	WPT Score	
	$R^2$	$\Delta R^2$
Step 1		
T1 V	.053**	
Step 2		
T2 V	.099***	.047**
Step 3		
T3 V	.124***	.025*
Step 4		
T4 V	.126***	.002

Note. N = 230 at T1 and T2; N = 187 at T3; N = 159 at T4. T1 = Pre-Test; T2 = Post-Test/Pre-Feedback; T3 = Post-Feedback; T4 = 7 Days Post Procedure.

\* $p < .05$ . † $p < .01$

Figure 1. Weiner's (1985) model of attributions adapted for the selection context.

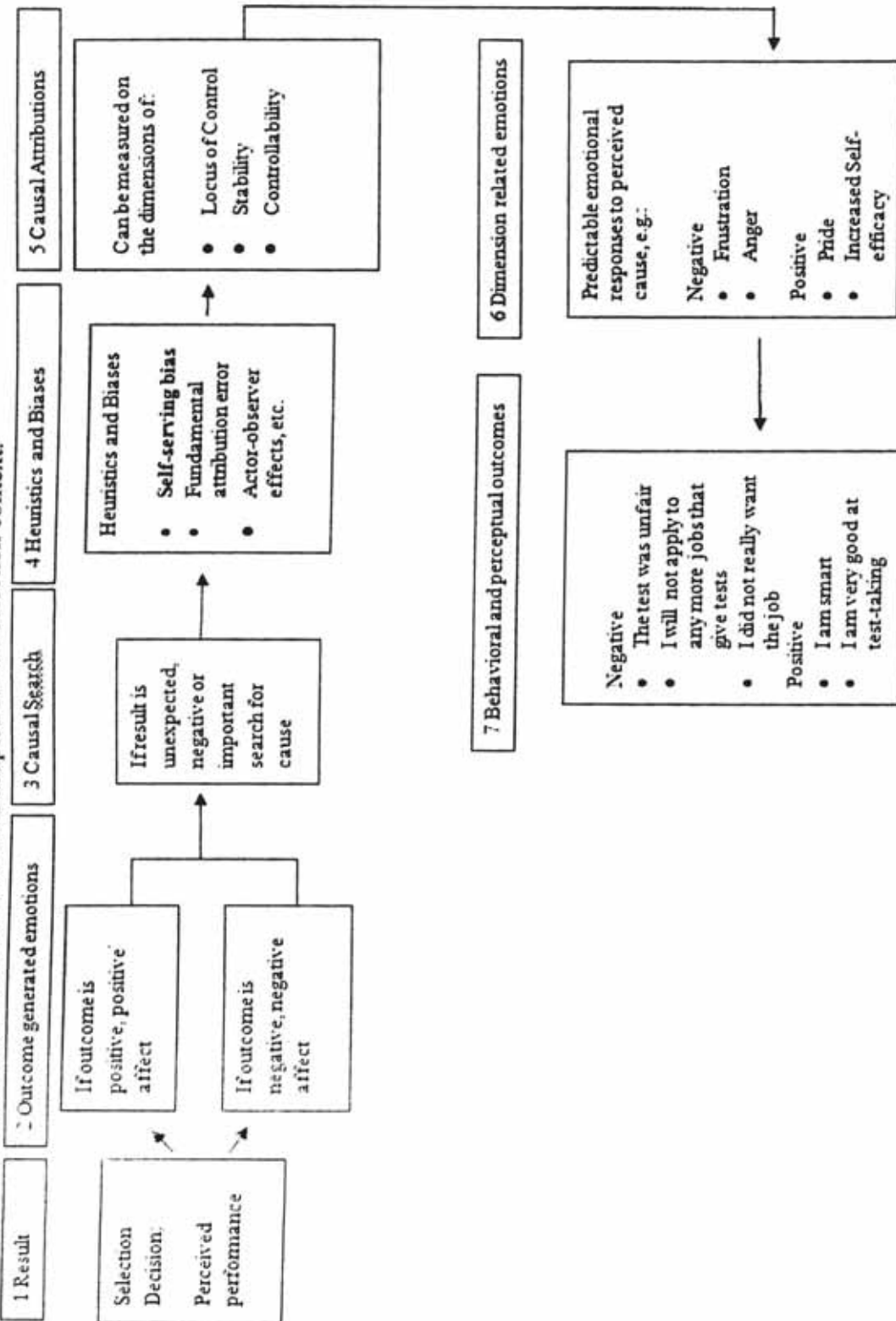


Figure 2. Overview of study design.

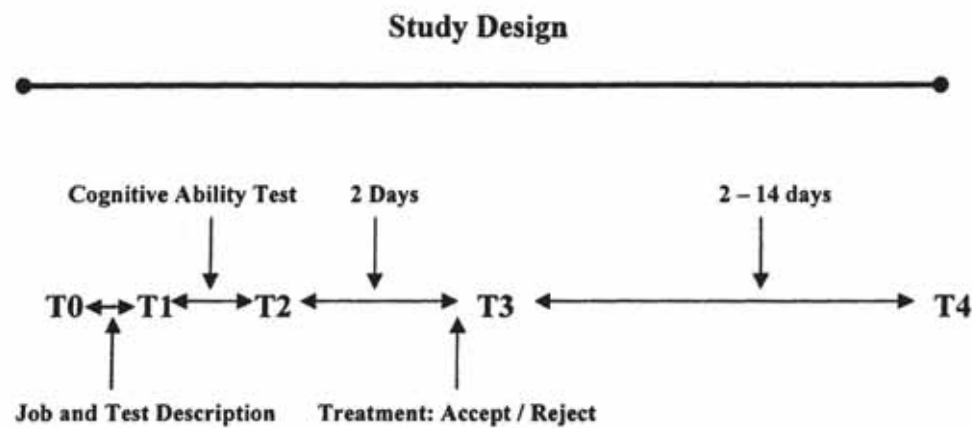


Figure 3. Three-way interaction effect of time of measurement, expected outcome and actual outcome on T2 (post-test) and T3 (post-feedback) valence.

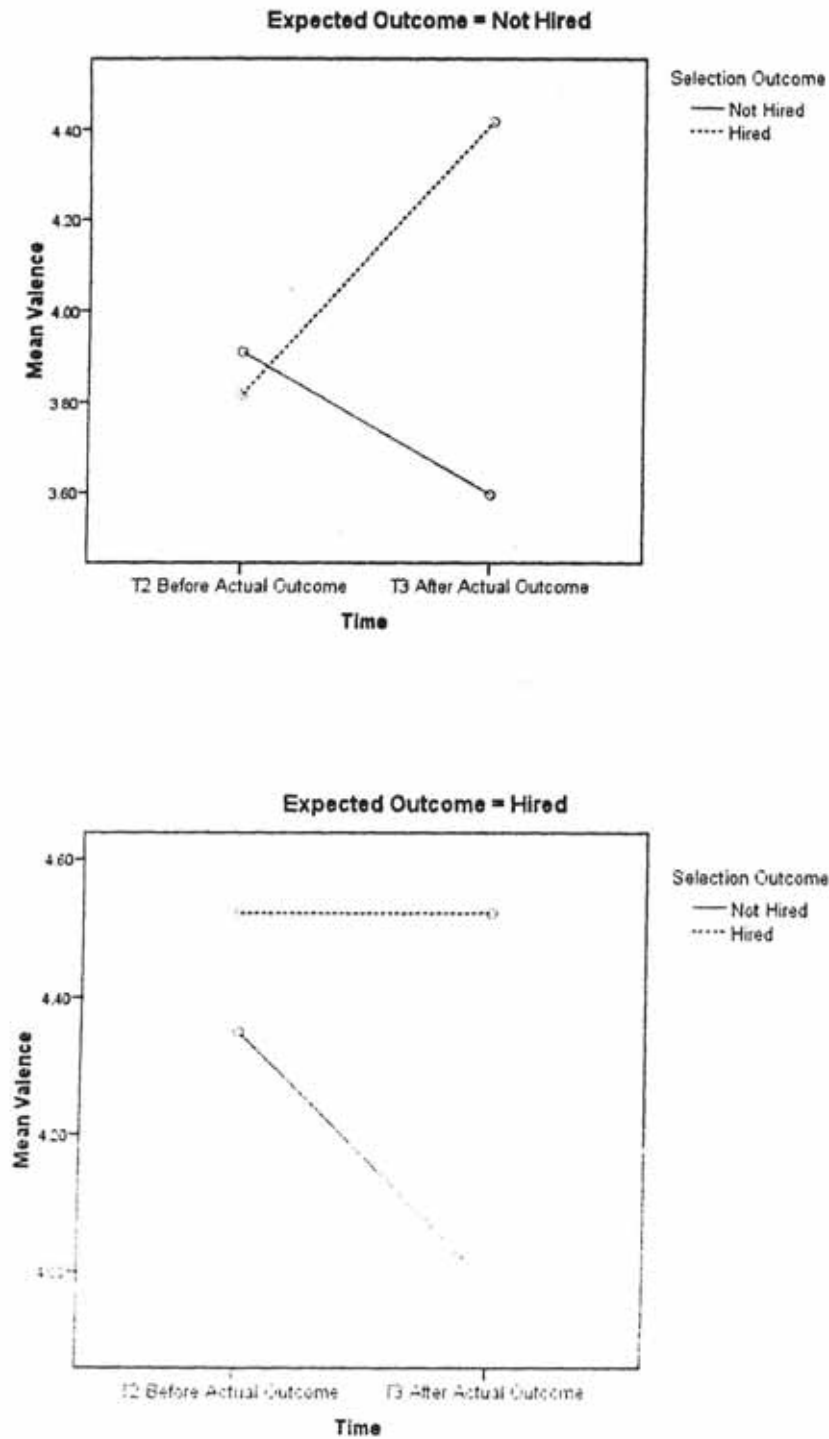


Figure 4. The effect of actual outcome and time of measurement on T2 (post-test) and T3 (post-feedback) instrumentality.

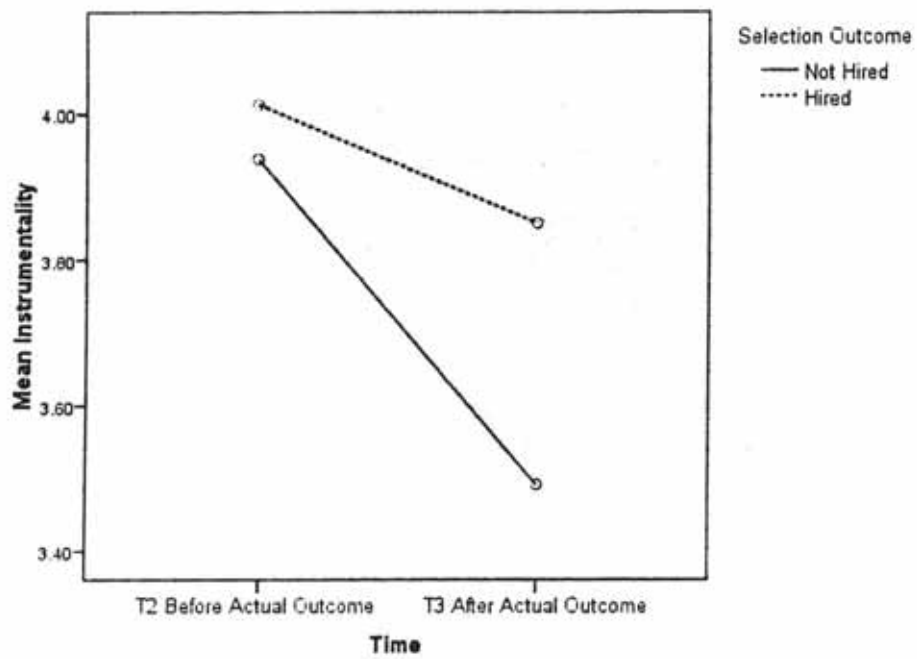


Figure 5. The effect of actual outcome and time of measurement on T2 (post-test) and T3 (post-feedback) expectancy.

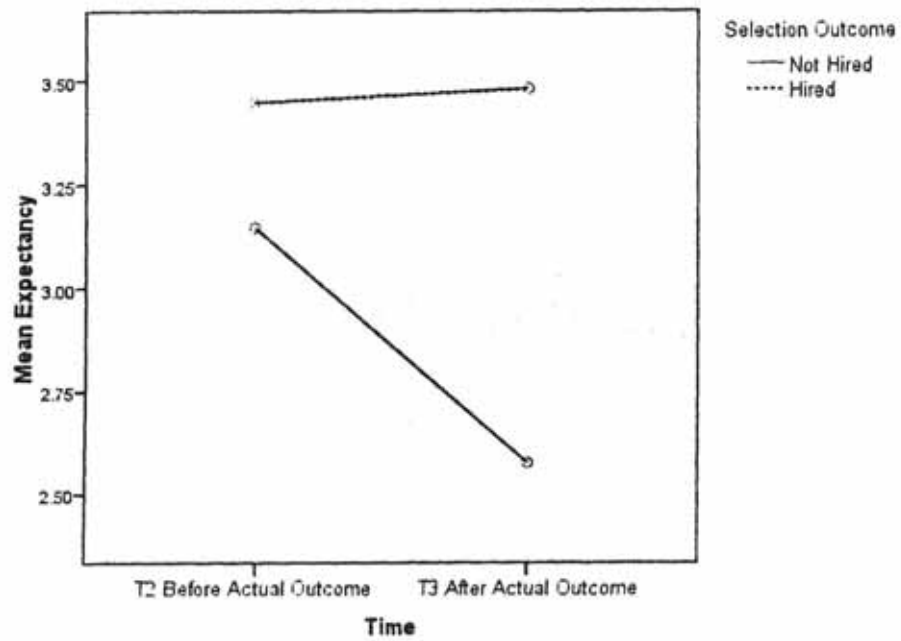


Figure 6. The trajectory of valence across study time points for those who expected to be hired and those who did not expect to be hired.

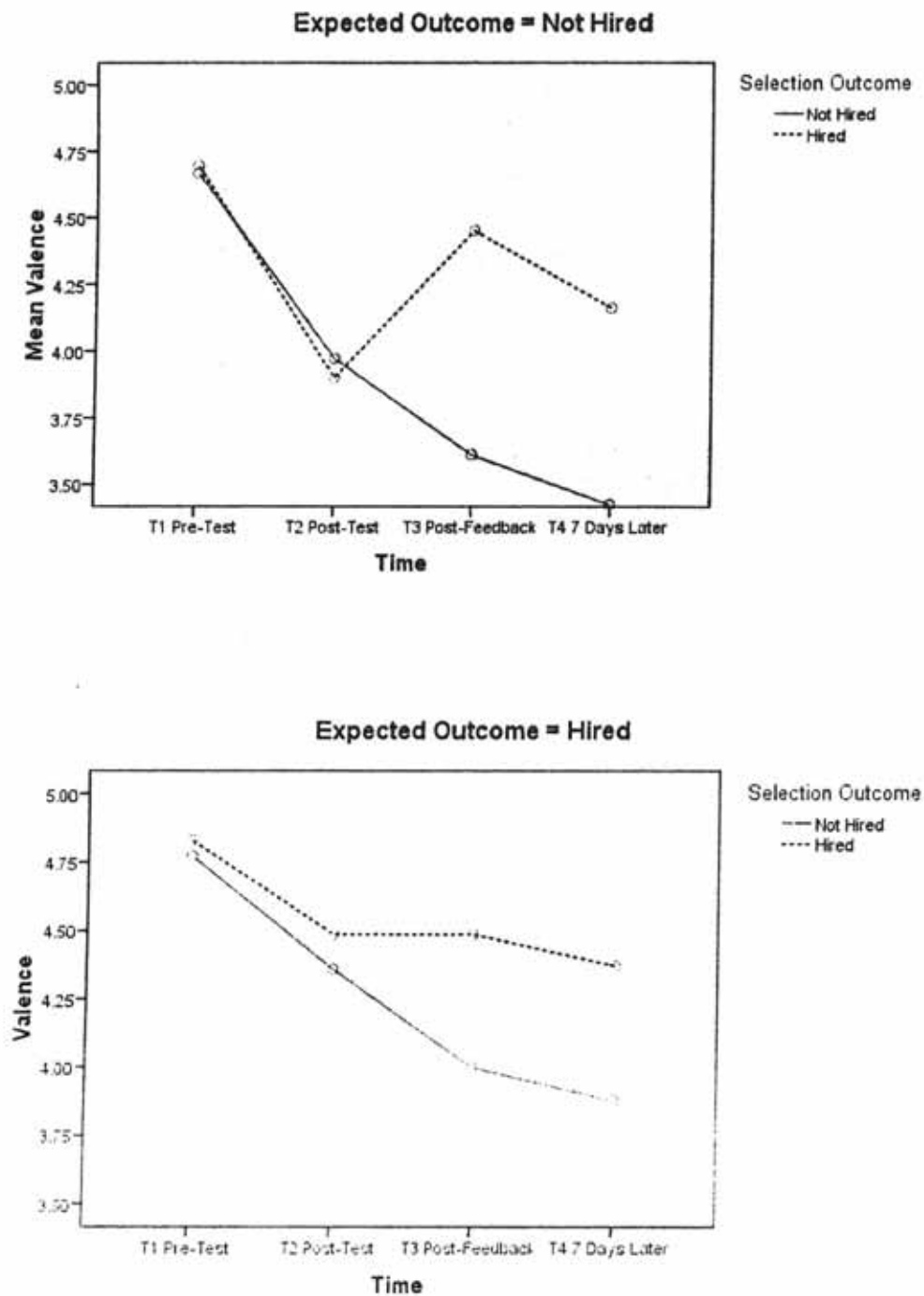


Figure 7. The trajectory of instrumentality across study time points for those who expected to be hired and those who did not expect to be hired.

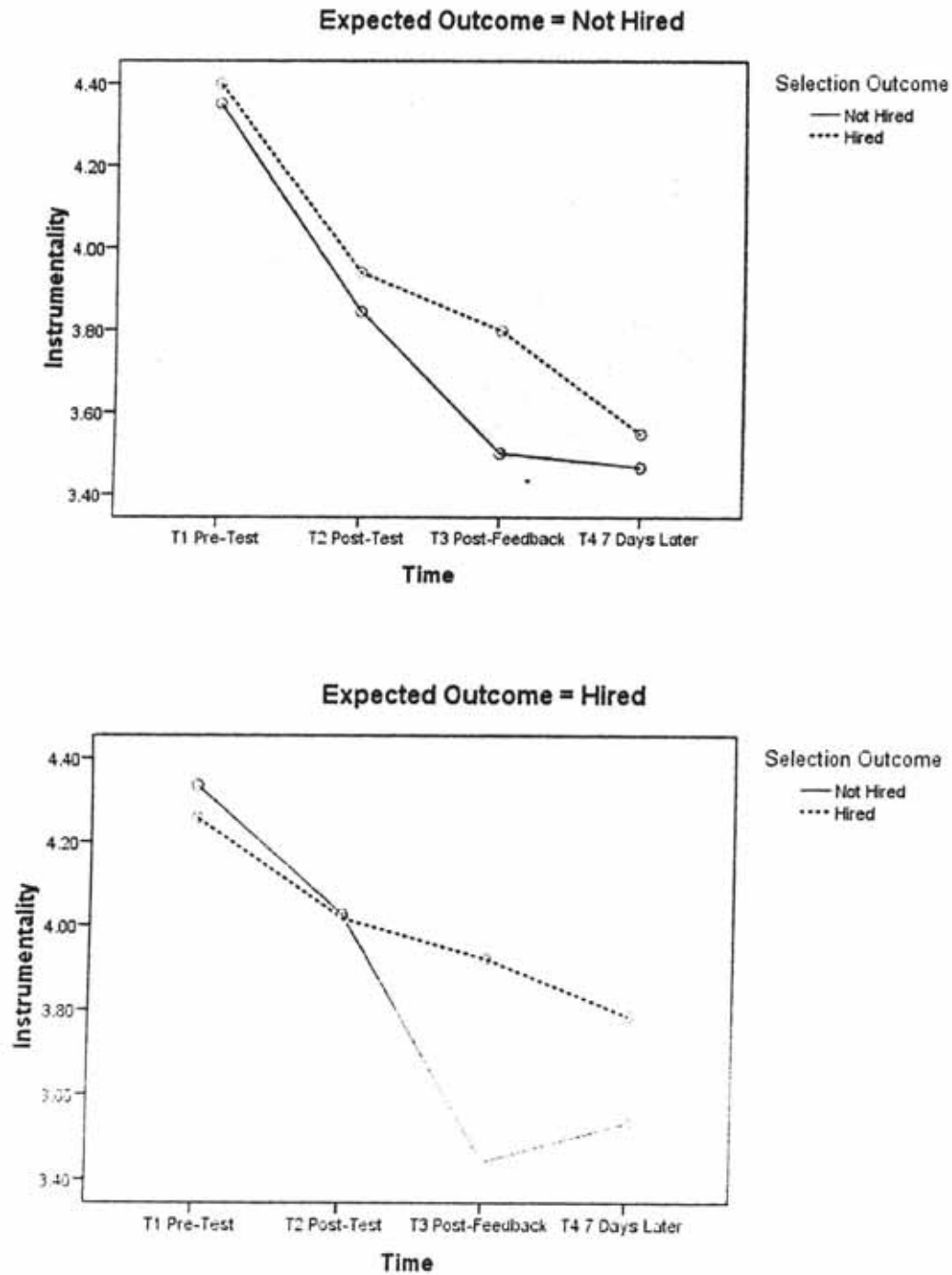
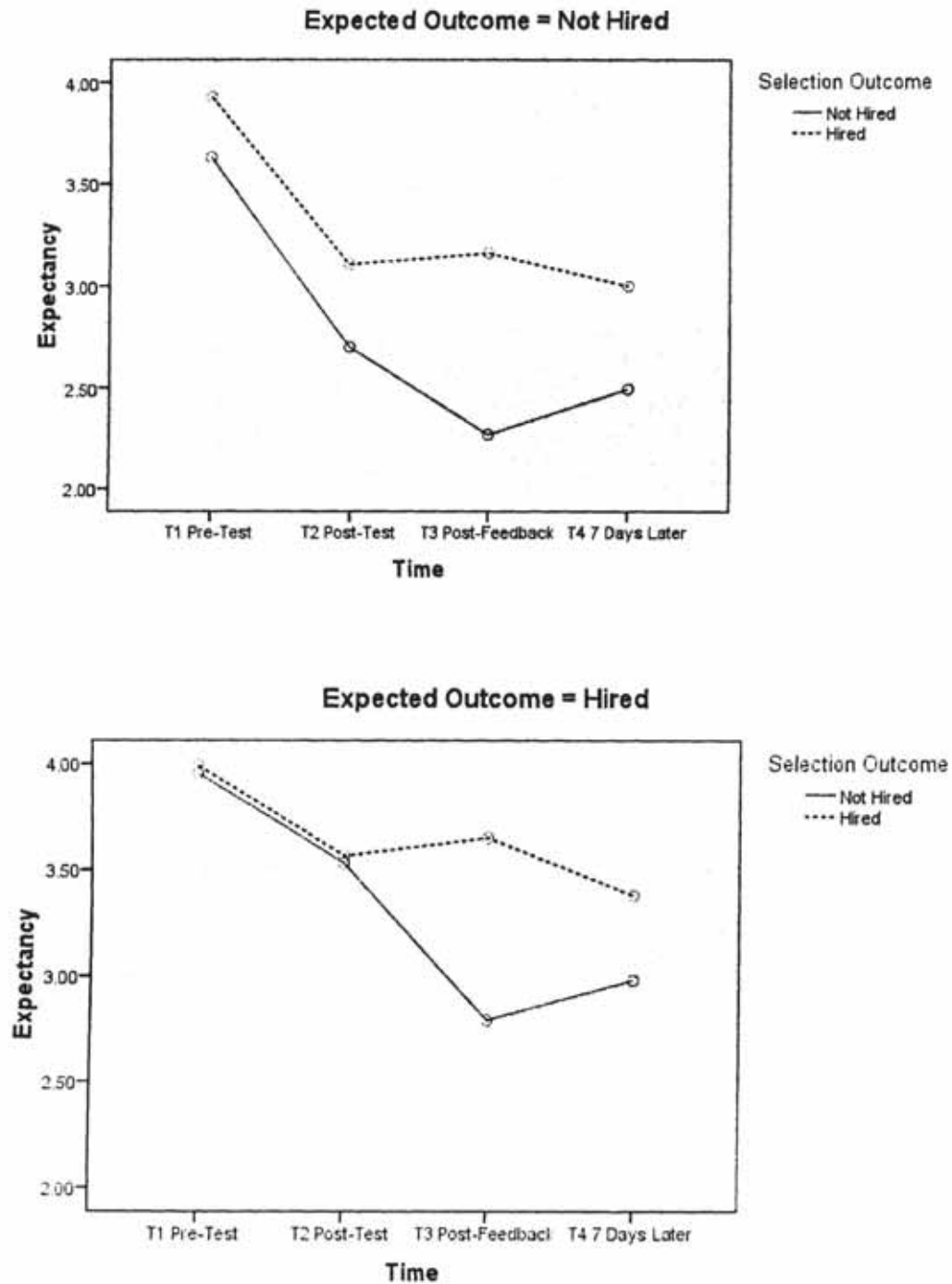




Figure 8. The trajectory of expectancy across study time points for those who expected to be hired and those who did not expect to be hired.



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## Appendix A: Stimulus (Job Description)

*Please imagine the following scenario and keep it in mind as you complete the upcoming test and as you answer the questions on the surveys.*

**Scenario**

You have recently provided a resume and application for a highly desirable position at a firm located in the Pacific Northwest. The firm contacted you and told you that there were many applicants for the position and that you were one of a small number of applicants selected to continue on in the process based on your education and experience. Although the firm has not given you specific information regarding the salary offered, the company has a reputation for providing excellent benefits and salaries about 30% greater than the current market rate. Moreover, the company has been ranked by a prominent business magazine as among the top five companies in the United States to work for. You are particularly interested in this opportunity.

As the next step in the selection process, the company has asked you to take an initial screening that will take 12 minutes to complete. Your performance on the test will determine whether you make the final group of candidates that will be invited for an in-person interview. If you get to the interview stage, you have a good shot at getting the job, but in order to interview for the position, you will need to perform well on the initial screening test.

Appendix B: Hire – No Hire Feedback

*Text for those who were hired*

Congratulations! The purpose of this letter is to let you know that you have been accepted for the interview. As you know, we tested a number of candidates for this position, and we are only able to offer interviews to a few.

Thank you so much for taking the time to take the screening test, and we appreciate your interest in the position.

We look forward to meeting you with you soon. Thank you again for your interest in our organization.

*Text for those who were not hired*

We regret to inform you that you have not been selected for the interview. As you know, we tested a number of candidates for this position, and we are only able to offer interviews to a few.

Thank you so much for taking the time to take the screening test, and we appreciate your interest in the position.

We wish you every personal and professional success with your job search and in the future. Thank you again for your interest in our organization.

Appendix C: Survey Instructions and Items Used

*Time 0 (Pre-Procedure), Time 1 (Pre-Test) and Time 2 (Post-Test) Surveys for the  
In-Class Portion of the Thesis Study*

**First Name** \_\_\_\_\_

**Last Name** \_\_\_\_\_

*Your name will only be used to assign extra credit and will not be tied to your survey answers or test score.*

**Email Address** \_\_\_\_\_

*Your email address will only be used to alert you to when to complete the online surveys for Time 2 and Time 3 and will not be linked to your survey answers or test score. Your email address may also be used to alert you if you have won the drawing for the iPod Shuffle.*

**Code**

Please write down the first two numbers of your street address. For example if your street address was 1206, you would write 1 2:      \_\_\_\_\_

Please write down the first two letters of the street on which you live. For example, if your street is Webster, you would write W E:      \_\_\_\_\_

*Your code will be used link your answers on this survey to your answers on the later online surveys. This sheet, which contains your name, will be kept separately from the surveys to maintain confidentiality.*

**Demographic Information***Some information about you:*

1. Age: \_\_\_\_\_

2. Gender: (Check one)

☐ Male☐ Female

3. What is the highest level of education you have received to date (Check one)?

☐ Less than high school☐ High school or equivalent☐ Associates degree☐ Bachelors degree☐ Masters degree☐ Doctorate degree (Ph.D., J.D., M.D.)

4. Ethnicity:

1 African American

2 Asian/Pacific Islander

3 Caucasian

4 Filipino

5 Hispanic

6 Native American

7 Other (please specify) \_\_\_\_\_

*Some information about your work experience:*

5. Are you currently working? (circle one) \_\_yes\_\_ \_\_no\_\_ (if no, skip down to question 8)

6. How many hours per week do you work? \_\_\_\_\_ Hours

7. How long have you been working for your present organization? \_\_\_\_\_ Years

8. How much work experience do you have? \_\_\_\_\_ Years

**(Please turn this page over and continue)**

Please indicate the extent to which the following items describe your opinions. We are interested in your own assessment of each statement and there is no right or wrong answer.	Strongly Agree							
	Agree							
	Neutral							
	Disagree							
	Strongly Disagree							
<b>My general opinions about tests</b>								
1. I think that testing people is a fair way to determine their abilities	1	2	3	4	5			
2. I think that written tests are a fair way to hire people for jobs	1	2	3	4	5			
3. I believe companies that use written tests are fair to applicants	1	2	3	4	5			
4. There are much fairer ways of selecting employees than written tests.	1	2	3	4	5			
<b>My general opinions about why things happen in the world of work</b>								
5. A job is what you make of it.	1	2	3	4	5			
6. On most jobs, people can pretty much accomplish whatever they set out to accomplish.	1	2	3	4	5			
7. If you know what you want out of a job, you can find a job that gives it to you.	1	2	3	4	5			
8. If employees are unhappy with a decision made by their boss, they should do something about it.	1	2	3	4	5			
9. Getting the job you want is mostly a matter of luck.	1	2	3	4	5			
10. Making money is primarily a matter of good fortune.	1	2	3	4	5			
11. Most people are capable of doing their jobs well if they make the effort.	1	2	3	4	5			
12. In order to get a really good job you need to have family members or friends in high places.	1	2	3	4	5			
13. Promotions are usually a matter of good fortune.	1	2	3	4	5			
14. When it comes to landing a really good job, who you know is more important than what you know.	1	2	3	4	5			
15. Promotions are given to employees who perform well on the job.	1	2	3	4	5			
16. To make a lot of money you have to know the right people.	1	2	3	4	5			
17. It takes a lot of luck to be an outstanding employee on most jobs.	1	2	3	4	5			
18. People who perform their jobs well generally get rewarded for it.	1	2	3	4	5			
19. Most employees have more influence on their supervisors than they think they do.	1	2	3	4	5			
20. The main difference between people who make a lot of money and people who make a little money is luck.	1	2	3	4	5			

**Please stop and wait for further directions before continuing!**

*Please imagine the following scenario and keep it in mind as you complete the upcoming test and as you answer the questions on the surveys.*

### **Scenario**

You have recently provided a resume and application for a highly desirable position at a firm located in the Pacific Northwest. The firm contacted you and told you that there were many applicants for the position and that you were one of a small number of applicants selected to continue on in the process based on your education and experience. Although the firm has not given you specific information regarding the salary offered, the company has a reputation for providing excellent benefits and salaries about 30% greater than the current market rate. Moreover, the company has been ranked by a prominent business magazine as among the top five companies in the United States to work for. You are particularly interested in this opportunity.

As the next step in the selection process, the company has asked you to take an initial screening that will take 12 minutes to complete. Your performance on the test will determine whether you make the final group of candidates that will be invited for an in-person interview. If you get to the interview stage, you have a good shot at getting the job, but in order to interview for the position, you will need to perform well on the initial screening test.

**(Please fill out the survey starting on the next page)**



Please indicate the extent to which the following items describe your opinions about the job and the test you are going to take. We are interested in your own assessment of each statement and there is no right or wrong answer.	Strongly Agree				
	Agree				
	Neutral				
	Disagree				
	Strongly Disagree				
<b>My opinions about the job and the test I am going to take</b>					
1. I would like to be hired for this job.	1	2	3	4	5
2. It would be good to have this job.	1	2	3	4	5
3. I want to get the job I read about in the job description.	1	2	3	4	5
4. If you do well on the test, you have a good chance of being hired.	1	2	3	4	5
5. I think you will be hired if you get a high test score.	1	2	3	4	5
6. How well you do on this test will affect whether you are hired.	1	2	3	4	5
7. The higher your test score, the better your chances of getting hired.	1	2	3	4	5
8. If you try to do your best on this test, you can get a high score.	1	2	3	4	5
9. If you concentrate and try hard you can get a high test score.	1	2	3	4	5
10. You can get a good score on this test if you put some effort into it.	1	2	3	4	5
11. Doing well on the upcoming test means a person can do the job well.	1	2	3	4	5
12. A person who scores well on this test will be good at this job.	1	2	3	4	5
13. I will be able to really show my skills and abilities through this test.	1	2	3	4	5
14. This test will allow me to show what my job skills are.	1	2	3	4	5
15. This test will give applicants the opportunity to show what they can really do.	1	2	3	4	5
16. I will be able to show what I can do on this test.	1	2	3	4	5
17. It will be clear to anyone that this test is related to the job.	1	2	3	4	5
18. The content of the test will clearly be related to the job.	1	2	3	4	5
19. I think that the testing process will be a fair way to select people for the job.	1	2	3	4	5
20. I think that the tests themselves will be fair.	1	2	3	4	5
21. Overall, the method of testing used will be fair.	1	2	3	4	5

Please indicate the extent to which the following items describe your thoughts and opinions. We are interested in your opinions and there are no right or wrong answers.	Strongly Agree				
	Agree				
	Neutral				
	Disagree				
	Strongly Disagree				
<b>My thoughts about how I will perform on the test I am about to take</b>					
22. I am confident that I will perform well on the test.	1	2	3	4	5
23. My performance on this test will be good.	1	2	3	4	5
24. I will do a good job on this test.	1	2	3	4	5
<b>My thoughts about how I perform on tests in general</b>					
25. I am confident in my ability to do well on written tests.	1	2	3	4	5
26. When it comes to taking tests, I generally do well.	1	2	3	4	5
27. I tend to do better on written tests than most people.	1	2	3	4	5
<b>My thoughts about an organization that uses tests like the one I will take</b>					
28. I would encourage others to apply for a job with this organization .	1	2	3	4	5
29. I would like to work for this organization.	1	2	3	4	5
30. In general, this organization seems like a good place to work.	1	2	3	4	5

*Please circle either yes or no to the following question:*

31. Based on the way I will perform on this test, I expect to be selected to interview for the job.  
(Yes / No)

**Please stop and wait for further directions before continuing!**

## Time 2 Survey

Please indicate the extent to which the following adjectives describe your feelings when you think about how you performed on the test you just took.	Strongly Agree				
	Agree				
	Neutral				
	Disagree				
	Strongly Disagree				
<b>My feelings when I think about how I performed on the test</b>					
1. Inspired	1	2	3	4	5
2. Alert	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Enthusiastic	1	2	3	4	5
5. Determined	1	2	3	4	5
6. Afraid	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Nervous	1	2	3	4	5
9. Scared	1	2	3	4	5
10. Distressed	1	2	3	4	5

Please indicate the extent to which the following items describe your opinions about the test you just took and the job you are applying for. We are interested in your own assessment of each statement and there is no right or wrong answer.	Strongly Agree				
	Agree				
	Neutral				
	Disagree				
	Strongly Disagree				
<b>My opinions about the job and the test I just took</b>					
11. I would like to be hired for this job.	1	2	3	4	5
12. It would be good to have this job.	1	2	3	4	5
13. I want to get the job I read about in the job description.	1	2	3	4	5
14. If you do well on the test, you have a good chance of being hired.	1	2	3	4	5
15. I think you will be hired if you get a high test score.	1	2	3	4	5
16. How well you do on this test will affect whether you are hired.	1	2	3	4	5
17. The higher your test score, the better your chances of getting	1	2	3	4	5



hired.					
18. If you try to do your best on this test, you can get a high score.	1	2	3	4	5
19. If you concentrate and try hard you can get a high test score.	1	2	3	4	5

<i>Please indicate the extent to which the following items describe your opinions about the test you just took. We are interested in your own assessment of each statement and there is no right or wrong answer.</i>	<b>Strongly Agree</b>				
	<b>Agree</b>				
	<b>Neutral</b>				
	<b>Disagree</b>				
	<b>Strongly Disagree</b>				
<b>My opinions about the test I just took (continued)</b>					
20. You can get a good score on this test if you put some effort into it.	1	2	3	4	5
21. Doing well on this test means a person can do the job well.	1	2	3	4	5
22. A person who scored well on this test will be good at this job.	1	2	3	4	5
23. I could really show my skills and abilities through this test.	1	2	3	4	5
24. This test allowed me to show what my job skills are.	1	2	3	4	5
25. This test gives applicants the opportunity to show what they can really do.	1	2	3	4	5
26. I was able to show what I can do on this test.	1	2	3	4	5
27. It would be clear to anyone that this test is related to the job	1	2	3	4	5
28. The content of the test was clearly be related to the job	1	2	3	4	5
29. I think that the testing process was a fair way to select people for the job	1	2	3	4	5
30. I think that the test itself was fair	1	2	3	4	5
31. Overall, the method of testing used was fair	1	2	3	4	5
<b>My thoughts about an organization that uses tests like the one I just took</b>					
32. I would encourage others to apply for a job with this organization	1	2	3	4	5
33. I would like to work for this organization	1	2	3	4	5
34. In general, this organization seems like a good place to work	1	2	3	4	5
<b>My thoughts about how I perform on tests in general</b>					
35. I am confident in my ability to do well on written tests	1	2	3	4	5
36. When it comes to taking tests, I generally do well	1	2	3	4	5
37. I tend to do better on written tests than most people	1	2	3	4	5

My thoughts about how I performed on the test I just took					
38. I am confident that I performed well on the test	1	2	3	4	5
39. My performance on this test was good	1	2	3	4	5
40. I did a good job on this test	1	2	3	4	5

*Please circle either yes or no to the following question:*

41. Based on my test performance, I expect to be selected for the interview. (Yes / No)

*In just a few words, please write down the most important reason for your performance on the test you just took, or the most likely cause of your performance on the test you just took:*

Now think about the reason you gave above. The items below concern your impressions or opinions of this cause or causes of your performance. Circle one number for each of the following questions. The number should indicate how close your opinion is to each statement. For example, selecting 9 indicates that you feel closest to the statement on the left side, selecting a 1 indicates that you feel closest to the the statement on the left side, and selecting a 5 indicates that you feel equally the same about the two statements.

1. That reflects an aspect of yourself	9	8	7	6	5	4	3	2	1	reflects an aspect of the situation
2. Manageable by you	9	8	7	6	5	4	3	2	1	not manageable by you
3. Permanent	9	8	7	6	5	4	3	2	1	temporary
4. You can regulate	9	8	7	6	5	4	3	2	1	you cannot regulate
5. Over which others have control	9	8	7	6	5	4	3	2	1	over which others have no control
6. Inside of you	9	8	7	6	5	4	3	2	1	outside of you
7. Stable over time	9	8	7	6	5	4	3	2	1	variable over time
8. Under the power of other people	9	8	7	6	5	4	3	2	1	not under the power of other people
9. Something about you	9	8	7	6	5	4	3	2	1	something about others
10. Over which you have power	9	8	7	6	5	4	3	2	1	over which you do not have power
11. Unchangeable	9	8	7	6	5	4	3	2	1	changeable
12. Other people can regulate	9	8	7	6	5	4	3	2	1	other people cannot regulate

**Thank you for your participation in this phase! You will receive an email in the next few days that will tell you what to do next.**

*Time 3 (Post – Feedback) for the Online Portion of the Thesis Study*

*Thank you for participating in the second phase of the study. You will be given feedback regarding whether you were selected for the interview on the next page, and then you will be asked to answer several survey questions, which will take about 10 minutes of your time. In 5-8 days you will receive another email asking you to take the third survey.*

**1) Your Name:**

**Please enter your first and last name in the boxes below. Your name will only be used to assign extra credit and will not be used to identify your survey answers in any way.**

First Name:

**2)**

Last Name:

**3) Please select your instructor's last name from the menu below. This information will only be used to provide you with extra credit for the course.**

- ☐ Borthwick
- ☐ Brannan
- ☐ Costa
- ☐ Drown
- ☐ Pickett-Cooper (Human Development)
- ☐ Pickett-Cooper (Experimental Psych)
- ☐ Zimmerman

**4) Your Code:**

**This code will be used to link your answers on this survey to your answers on the other surveys. If you have moved since you took the in class portion of this study, please use the information from the address you had at that time.**

Please enter the first two numbers of your street address. For example, if your street address was 1206, you would enter 12:

**5)**

Please enter the first two letters of the street on which you live. For example, if your street was Webster, you would enter W:

**6) Please indicate the extent to which the following adjectives describe your feelings when you think about the hiring decision you just received. Make your**

*selection by clicking on the circle that corresponds to your answer.*

**My feelings when I think about the hiring decision I just received:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Inspired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Alert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Excited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Enthusiastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Determined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Distressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7) Please indicate the extent to which the following items describe your opinions about the job to which you applied. We are interested in your own assessment of each statement and there is no right or wrong answer. Make your selection by clicking on the circle that corresponds to your answer.**

**My opinions about the job to which I applied:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I would like to be hired for this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It would be good to have this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I want to get the job I read about in the job description.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. If you do well on the test, you have a good chance of being hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I think you will be hired if you got a high test score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. How well you do on this test will affect whether you are hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The higher your test score, the better your chances of getting hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. If you try to do your best on this test, you can get a high score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If you concentrate and try hard you can get a high test score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. You can get a good score on this test if you put some effort into it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**8) Please indicate the extent to which the following items describe your opinions about the test you took to apply for this job. We are interested in your own assessment of each statement and there is no right or wrong answer. Make your selection by clicking on the circle that corresponds to your answer.**

**My opinions about the test I took to apply for the job:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Doing well on the test I took means a person can do the job well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. A person who scored well on the test I took will be good at this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I could really show my skills and abilities through the test I took.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The test I took allowed me to show what my job skills are.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. This test I took gives applicants the opportunity to show what they can really do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I was able to show what I can do on the test I took.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. It would be clear to anyone that the test I took is related to the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The content of the test I took is clearly related to the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I think that the testing process was a fair way to select people for the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I think that the test itself was fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Overall, the method of testing used was fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I think that I got a fair outcome as a result of this testing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I think that others got a fair outcome as a result of this testing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9) My thoughts about tests in general and the organization to which I applied (Click one).**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am confident in my ability to do well on written tests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. When it comes to taking tests, I generally do well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I tend to do better on written tests than most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I would encourage others to apply for a job with this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I would like to work for this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. In general, this organization seems like a good place to work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10) *In just a few words, please enter the reason for why you were or were not selected to interview for the job based on your test score:***

***Now think about the reason you gave above. The items below concern your impressions or opinions about the cause you wrote in the box. Click on one number for each of the following questions. The number should indicate how close your opinion is to each statement.***

**11) Is the reason something:**

- ☐ 1. That reflects an aspect of yourself
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. That reflects an aspect of the situation

**12) Is the reason something:**

- ☐ 1. Manageable by you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Not manageable by you

**13) Is the reason something:**

- ☐ 1. Permanent
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Temporary

**14) Is the reason something:**

- ☐ 1. You can regulate
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. You cannot regulate

**15) Is the reason something:**

- ☐ 1. Over which others have control
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Over which others have no control

**16) Is the reason something:**

- ☐ 1. Inside of you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Outside of you

**17) Is the reason something:**

- ☐ 1. Stable over time
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Variable over time

**18) Is the reason something:**

- ☐ 1. Under the power of other people
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Not under the power of other people

**19) Is the reason something:**

- ☐ 1. Something about you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Something about others

**20) Is the reason something:**

- ☐ 1. Over which you have power
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Over which you do not have power

**21) Is the reason something:**

- ☐ 1. Unchangeable
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Changeable

**22) Is the reason something:**

- ☐ 1. Other people can regulate
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Other people cannot regulate

***You are almost finished with the survey. Thanks for your participation! You must click the submit survey button below to complete the survey and receive your extra credit.***

*Time 4 (7 days Post-Procedure) for the Online Portion of the Thesis Study*

*Thank you for participating in the third phase of the study. Upon completion of this survey you will receive the full amount of extra credit available.*

**1) Your Name:**

**Please enter your first and last name in the boxes below. Your name will only be used to assign extra credit and will not be used to identify your survey answers in any way.**

First Name:

**2)**

Last Name:

**3) Please select your instructor's last name from the menu below. This information will only be used to provide you with extra credit for the course.**

- ☐ Borthwick
- ☐ Brannan
- ☐ Costa
- ☐ Drown
- ☐ Pickett-Cooper (Human Development)
- ☐ Pickett-Cooper (Experimental Psych)
- ☐ Zimmerman

**4) Your Code:**

**This code will be used to link your answers on this survey to your answers on the other surveys. If you have moved since you took the in class portion of this study, please use the information from the address you had at that time.**

Please enter the first two numbers of your street address. For example, if your street address was 1206, you would enter 12:

**5)**

Please enter the first two letters of the street on which you live. For example, if your street was Webster, you would enter W:

**6) Please indicate the extent to which the following adjectives describe your feelings when you think about the hiring decision you received. Make your selection by clicking on the circle that corresponds to your answer.**

**My feelings when I think about the hiring decision I received:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Inspired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Alert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Excited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Enthusiastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Determined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Distressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7) Please indicate the extent to which the following items describe your opinions about the job to which you applied. We are interested in your own assessment of each statement and there is no right or wrong answer. Make your selection by clicking on the circle that corresponds to your answer.**

**My opinions about the job to which I applied:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I would like to be hired for this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It would be good to have this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I want to get the job I read about in the job description.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. If you do well on the test, you have a good chance of being hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I think you will be hired if you got a high test score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. How well you do on this test will affect whether you are hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The higher your test score, the better your chances of getting hired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. If you try to do your best on this test, you can get a high score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If you concentrate and try hard you can get a high test score.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. You can get a good score on this test if you put some effort into it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**8) Please indicate the extent to which the following items describe your opinions about the test you took to apply for this job. We are interested in your own assessment of each statement and there is no right or wrong answer. Make your selection by clicking on the circle that corresponds to your answer.**

**My opinions about the test I took to apply for the job:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Doing well on the test I took means a person can do the job well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. A person who scored well on the test I took will be good at this job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I could really show my skills and abilities through the test I took.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The test I took allowed me to show what my job skills are.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. This test I took gives applicants the opportunity to show what they can really do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I was able to show what I can do on the test I took.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. It would be clear to anyone that the test I took is related to the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The content of the test I took is clearly related to the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I think that the testing process was a fair way to select people for the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I think that the test itself was fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Overall, the method of testing used was fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I think that I got a fair outcome as a result of this testing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I think that others got a fair outcome as a result of this testing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9) Please indicate the extent to which the following items describe your opinions about tests in general and the company to which you applied. Make your selection by clicking on the circle that corresponds to your answer.**



**My thoughts about tests in general and the organization to which I applied (Click one).**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am confident in my ability to do well on written tests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. When it comes to taking tests, I generally do well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I tend to do better on written tests than most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I would encourage others to apply for a job with this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I would like to work for this organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. In general, this organization seems like a good place to work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10) In just a few words, please enter the reason for why you were or were not selected to interview for the job based on your test score:**

***Now think about the reason you gave above. The items below concern your impressions or opinions about the cause you wrote in the box. Click on one number for each of the following questions. The number should indicate how close your opinion is to each statement.***

**11) Is the reason something:**

- ☐ 1. That reflects an aspect of yourself
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. That reflects an aspect of the situation

**12) Is the reason something:**

- ☐ 1. Manageable by you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Not manageable by you

**13) Is the reason something:**

- ☐ 1. Permanent
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Temporary

**14) Is the reason something:**

- ☐ 1. You can regulate
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. You cannot regulate

**15) Is the reason something:**

- ☐ 1. Over which others have control
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Over which others have no control

**16) Is the reason something:**

- ☐ 1. Inside of you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Outside of you

**17) Is the reason something:**

- ☐ 1. Stable over time
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Variable over time

**18) Is the reason something:**

- ☐ 1. Under the power of other people
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Not under the power of other people

**19) Is the reason something:**

- ☐ 1. Something about you
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Something about others

**20) Is the reason something:**

- ☐ 1. Over which you have power
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Over which you do not have power

**21) Is the reason something:**

- ☐ 1. Unchangeable
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Changeable

**22) Is the reason something:**

- ☐ 1. Other people can regulate
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ 5.
- ☐ 6.
- ☐ 7.
- ☐ 8.
- ☐ 9. Other people cannot regulate

***You are almost finished with the survey. Thanks for your participation! You must click the submit survey button below to complete the survey and receive your extra credit.***