

Cognitive Dissonance in Groups: The Consequences of Disagreement

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As L. Festinger (1957) argued, the social group is a source of cognitive dissonance as well as a vehicle for reducing it. That is, disagreement from others in a group generates dissonance, and subsequent movement toward group consensus reduces this negative tension. The authors conducted 3 studies to demonstrate group-induced dissonance. In the first, students in a group with others who ostensibly disagreed with them experienced greater dissonance discomfort than those in a group with others who agreed. Study 2 demonstrated that standard moderators of dissonance in past research—lack of choice and opportunity to self-affirm, similarly reduced dissonance discomfort generated by group disagreement. In Study 3, the dissonance induced by group disagreement was reduced through a variety of interpersonal strategies to achieve consensus, including persuading others, changing one's own position, and joining an attitudinally congenial group.

The open expression of disagreement in a group leads to the existence of cognitive dissonance in the members. The knowledge that some other person, generally like oneself, holds one opinion is dissonant with holding a contrary opinion. (Festinger, 1957, pp. 261–262)

Cognitive dissonance theory has been used to explain why people eat grasshoppers, donate to charity, enjoy tedious tasks, and devalue attractive choices (see Harmon-Jones & Mills, 1999; Olson & Stone, in press). These accounts of dissonance phenomena have addressed primarily an individual level of analysis in which dissonance emerges in the relations among individual's thoughts, feelings, and actions. In this spirit, Abelson et al.'s (1968) classic sourcebook introduced consistency theories by distinguishing between those that emphasize intrapersonal cognitive elements, notably Festinger's (1957, 1958) dissonance theory, and those that focus on interpersonal sources of consistency, such as Heider's (1958) balance theory.

As our opening quote indicates, however, Festinger (1957, 1958) envisioned the social group as an important source of cognitive dissonance. In fact, his classic 1957 book applied dissonance theory to four phenomena: The first three of these involved primarily individual-level processes (i.e., the consequences of decisions, forced compliance, exposure to information) whereas the fourth involved social support or agreement in groups. Furthermore, as Cooper and Stone (2000) noted, the first published study

on dissonance was highly interpersonal and addressed the reactions of members of a doomsday group when their group's predictions of the apocalypse failed (i.e., Festinger, Riecken, & Schachter, 1956). The present article develops this important, although not always acknowledged, tradition of group-oriented dissonance research.

Several modern interpretations of dissonance theory recognize that the source of dissonance or its resolution can reside in social relations. According to Stone and Cooper's (2001, 2003) self-standards model, dissonance occurs when people evaluate their behavior and find it discrepant from some standard of judgment. This standard can be based on personal considerations and self-expectancies or on social factors such as the normative rules and prescriptions used by most people in a culture. Research on vicarious dissonance also recognizes social sources of dissonance in the idea that one person's discrepant behavior can generate vicarious discomfort in observers and spur attitude change to resolve the socially shared dissonance (Norton, Monin, Cooper, & Hogg, 2003; Sakai, 1999). Additionally, dissonance can be resolved through group-level mechanisms, including the diffusion of responsibility for a dissonance-producing act to others in a group and the misattribution of dissonance arousal to dislike for an out-group (Cooper & Mackie, 1983; Zanna & Sande, 1987). Thus, theoretical and empirical support is beginning to accumulate on interpersonal- and group-level dissonance mechanisms.

The present article reports three studies that refine and extend Festinger's (1957) initial ideas about how dissonance is generated and resolved in discussion groups. The first study examined whether simple attitude heterogeneity in a group provides sufficient social and informational challenge to group members to yield dissonance, as assessed by a self-report measure of dissonance arousal (see Elliot & Devine, 1994). The second study evaluated whether dissonance that originates in attitude heterogeneity functions similarly to dissonance that arises from inconsistencies in intraindividual cognitions. Specifically, we examined whether dissonance-induced arousal in groups could be resolved through such standard procedures as (a) removing choice for taking a discrepant attitude position (Linder, Cooper, & Jones, 1967) and (b) self-affirming by focusing on positive self-attributes (Steele,

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1988). Finally, the third study examined how group members can regulate dissonance-inducing attitudinal inconsistency through group interaction. Conceptualizing dissonance as a group-centered phenomenon suggests a variety of interpersonal mechanisms of inconsistency reduction that have escaped scrutiny in prior work.

The Nature of Arousal Induced by Attitude Heterogeneity in Groups

The negative experience associated with cognitive inconsistencies has been described in various ways. According to Festinger (1957), dissonance is a psychological discomfort or an aversive drive state that people are motivated to reduce, just as they are motivated to reduce hunger. Heider (1946, 1958) also conceived of unbalanced states as yielding tension, but he saw the shift toward balance as a cool, almost nonmotivational process based on the Gestalt idea that people's perceptions tend toward simple cognitive structures or "good figures." Thus, despite Festinger's (1957) suggestion that dissonance and balance theories address the same process, dissonance motives have been described in more motivationally charged terms.

Festinger's original dissonance theory did not specify the origins of cognitive inconsistency beyond the general notion that inconsistency arises when one cognitive element does not follow from another, as occurs when others in a group disagree. Balance theory also is congenial to the idea that simple heterogeneity of group members' views is sufficient to generate an unbalanced state. Theoretical extensions of dissonance and balance notions have elaborated specific reasons why disagreement from others instigates negative tension. In one view, people are motivated to maintain harmony in judgments with others and to reduce attitude discrepancies because others value and reward consistency with external social norms and they devalue and punish inconsistency (Hovland & Rosenberg, 1960). Others might also prefer consistency because consistent behavior is predictable (Newcomb, 1953). Another possible source of consistency pressures is the enhanced confidence in the validity of one's own attitudes that arises when others agree instead of disagree (Newcomb, 1953).¹ In short, from these perspectives, attitudinal heterogeneity is motivating because it is associated with social sanctions and because it threatens judgment validity.

Classic perspectives on social influence coincide with the cognitive consistency ideas that attitudinal discrepancies generate dissonance for social and informational reasons. Theories of social influence distinguish between motives to agree with others for (a) the normative reasons reflected in one's own and others' expectations and (b) the informational reasons represented in evidence about reality (e.g., Deutsch & Gerard, 1955; Festinger, 1950; Jones & Gerard, 1967; Kelley, 1952). Normative influence pressures are diverse and include motives to achieve a coherent, favorable self-concept as well as to establish positive relations with others (Chaiken, Giner-Sorolla, & Chen, 1996; Cialdini & Trost, 1998; Wood, 2000). In contrast, informational influence pressures originate in people's desire to have a valid understanding of reality and thereby to effectively negotiate their world. To meet informational needs, people rely on others' views in part because social consensus is not normally opposed to reality and in part because similar others have the power to define reality (Tajfel, 1978; Tajfel & Turner, 1986). As evidence of these normative and informational

motives, research on social influence has demonstrated that disagreement from relevant others can threaten self-esteem (Pool, Wood, & Leck, 1998; Tajfel, 1978) and social acceptance (Schachter, 1951) and can yield subjective uncertainty (Hardin & Higgins, 1996; Haslam et al., 1996).

In sum, dissonance and balance theories both suggest that disagreement from others in a group produces cognitive inconsistency and the negative states of dissonance or imbalance. More elaborated accounts within consistency and social influence traditions coincide in identifying normative and informational reasons why disagreement might generate a negative tension state and guide influence and other attempts to restore agreement. Regardless of whether dissonance is produced directly from others' disagreement or is an indirect product of the normative and informational challenges posed by disagreement, there is good theoretical reason to believe that dissonance arises from interpersonal inconsistencies in judgments. These interpersonal origins coexist with the better-known intrapersonal sources of dissonance.

Empirical Evidence That Others' Attitudes Are a Source of Cognitive Inconsistency

Empirical support for the idea that disagreement with others produces dissonance distress can be found in a number of consistency paradigms (see Davis, 1963). For example, in the standard test of balance theory, participants are informed that two people who are linked in some way either agree or disagree. Especially when the dyadic relations are high in intensity and involve close friends or strong attitudes, dyads with unbalanced relations (i.e., liked/related people disagree or disliked/unrelated people agree) are typically judged to be less pleasant and less stable than ones with balanced relations (i.e., liked/related people agree or disliked/unrelated people disagree, Newcomb, 1953; Osgood & Tannenbaum, 1955). Although these tests of balance in perceived dyadic relations are interesting in their own right, more relevant is research on attitude heterogeneity in real groups.

In one of the few studies of consistency processes in interacting groups, Alexander (1964) examined the drinking behavior of male adolescents in friendship groups. As predicted, groups that were balanced so that everyone was a drinker or an abstainer were judged by nongroup members to be more attractive and popular than heterogeneous groups that included some drinkers and some abstainers. In additional support of balance theory, fellow group members viewed nonconforming, minority members of heterogeneous groups as especially unattractive. To explain these results, Alexander invoked the balance notion that "an uncomfortable psychological condition, 'strain' (tension, stress, etc.), results from perceived disparity between one's own attitude and an attitude attributed to an attractive other with respect to an important object of perceived common relevance" (p. 395).

More direct evidence of heightened arousal in interactions with others who hold opposing positions was provided in Taylor's

¹ Additional speculations about the source of inconsistency-induced tension include the possibility that an approach-avoidance conflict emerges from the simultaneous positive and negative action tendencies implied by attitudinal inconsistency (Hovland & Rosenberg, 1960; see also Harmon-Jones, 1999).

(1968) study of two-person discussion groups. The dyads were composed so that members either liked or disliked each other and either agreed or disagreed on the discussion topic. During the discussion, the amount of tension in partners' verbal and nonverbal behaviors was recorded with Bales's (1951) Interaction Process Analysis. In unbalanced conditions (i.e., liked partner disagreed, disliked partner agreed), participants evidenced greater amounts of interpersonal tension at the beginning of the interaction than in balanced conditions (i.e., liked partner agreed, disliked partner disagreed). As the interaction progressed, unbalanced dyads displayed more tension-reducing behaviors such as laughing and joking. Presumably as a result of these behaviors, at the end of the interaction unbalanced dyads showed tension levels comparable to balanced ones. In general, these findings provide support for the consistency theory prediction that disagreement from other group members is experienced as inconsistency and elicits a negative tension state.

Study 1

Our first study measured directly whether attitude heterogeneity in groups is experienced as dissonance. In the study, group members were presented with others' (supposed) attitudes on a controversial social or campus issue and then reported their emotions on a self-report measure of dissonance (Elliot & Devine, 1994). In earlier research with this measure, people reported feelings of discomfort, unease, and bother when placed in standard contexts known to elicit dissonance, such as freely choosing to write a counterattitudinal essay (e.g., Devine, Tauer, Barron, Elliot, & Vance, 1999; Galinsky, Stone, & Cooper, 2000; Harmon-Jones, 2000). In the present research, we anticipated that participants in a group with others who disagree would report more psychological discomfort than those in a group with others who agree.

We were uncertain whether disagreement would heighten negative emotions other than discomfort. It seems that people flexibly interpret the arousal generated by cognitive inconsistencies so that dissonance arousal is sometimes experienced narrowly as discomfort and other times more broadly as a general negative state (see Cooper & Fazio, 1984). Thus, some research using the standard counterattitudinal advocacy dissonance paradigm has found increased discomfort alone (e.g., Elliot & Devine, 1994; Galinsky et al., 2000), whereas other research has found heightened general negative affect in addition to discomfort (e.g., Harmon-Jones, 1999, Study 1). The nature of the negative emotion generated by inconsistency also might vary with the particular dissonant cognitions. For example, threats to self-integrity and self-esteem plausibly yield negative self-feelings along with discomfort (e.g., Aronson, 1999; Stone & Cooper, 2001, 2003). In the present study, we expected that, regardless of whether disagreement from others yielded discomfort alone or also increased other negative emotions, disagreement would have little impact on positive emotions. This prediction would be apparent in an interaction between extent of disagreement from others in the group and positive versus negative measures of emotion.

The first study also investigated whether the amount of dissonance discomfort increased with the pressure to agree with others. To manipulate pressure, some participants were told that they would discuss an attitude issue with other group members, other participants that they would discuss the issue to reach consensus,

and still others that they would not interact with their group but just be exposed to group opinions. The inconsistency induced by disagreement might be heightened in the discussion and consensus conditions, in which the anticipated interaction would accentuate social and informational pressures to agree. No-interaction participants should report less discomfort because of the lessened agreement pressure. This pattern of heightened discomfort with increased pressures to agree would emerge in a three-way interaction between others' attitudes, type of group, and the emotion measure. In this interaction, the greatest dissonance discomfort should be evident when the group disagrees and participants expect to discuss or reach consensus with the group. Alternatively, if cognitive inconsistency and dissonance arise from simply being associated with disagreeing others regardless of the extent of group pressure, then the aforementioned two-way interaction should emerge between extent of group agreement and the emotion measures.

Method

Participants

One hundred forty-two female and 47 male students participated to fulfill a requirement in their introductory psychology course at Texas A&M University (College Station). Responses from an additional 16 participants were not included in the study. Of these, 7 reported no extreme attitudes on the pretest questionnaire and thus could not be exposed to a position that disagreed with their own, 4 received incorrect experimental materials, 3 failed to follow procedures, and 2 admitted prior knowledge of the experiment.

Procedure

Participants met in groups of 4 to 6 for a study concerned with the accuracy with which people are able to predict the course of a group discussion. Participants were told that they would initially be presented with a short attitude survey. Some were instructed that one of the items on that survey would be chosen for the topic of a subsequent group discussion (discussion condition), whereas others were instructed that in addition to discussing the issue, their group was to attempt to reach a consensus (consensus condition). In a third condition, participants were told that they would not actually interact with one another, and therefore no discussion would take place (no-interaction condition). Instead, they would give their impressions of other group members.

Participants were separated into cubicles to individually complete the attitude survey. On completion, each participant's responses were used to select an issue on which he or she held an extreme opinion (i.e., positions of "1," "2," "8," or "9" on the 9-point attitude scale). Participants then received a sheet with the issue written at the top of the page and the (supposed) other group members' numerical judgments marked on the attitude scale below. In the agreement condition, other group members indicated positions on the same side of the neutral point as the participant's own (e.g., if the participant indicated a position of "2" on the attitude scale, the others' judgments were listed as "1," "2," and "3"). In the disagreement condition, the other group members indicated positions on the opposite side of the attitude scale (e.g., if the participant indicated a position of "2" on the attitude scale, the others' judgments were listed as "7," "8," and "9"). Thus, participants believed that they would discuss an issue on which they held extreme views with other group members who agreed or disagreed with them.

To enhance the realism of the group interaction, participants in the discussion and consensus experimental conditions imagined what would happen during the interaction and wrote their predictions on blank forms. Participants in the no-interaction condition were given a filler task to

perform and listed their impressions of the other participants. Finally, all participants completed the emotion measure and rated their reactions to the group and, in the appropriate conditions, the pending discussion (see below). They were then debriefed and dismissed. No discussion actually took place.

Materials

Attitude survey. Participants indicated on 9-point scales (1 = *strongly against* to 9 = *strongly in favor*) their position on seven social or campus issues: capital punishment, immigration laws, legalized abortion, tuition increases to provide funding to attract minority students, a law to make flag burning illegal, gun control, and reinstating a university-wide bonfire celebration that had been terminated because of safety concerns.

After receiving the attitudes of the rest of the group and after rating their emotions, participants in the discussion and consensus conditions indicated their attitudes a second time by reporting the position they expected to take in the group discussion. Given the extremity of participants' initial positions and the fact that other group members supposedly knew participants' initial attitudes, we did not anticipate much attitude change across the two assessments. In support, the mean attitude shift was less than 1 point on the 9-point scale, with the majority of participants (57%) remaining steadfast throughout. Further analyses revealed that attitude change did not vary across conditions.

Emotion measure. To assess feelings of dissonance discomfort, positive feelings, and negative self-evaluation, we had respondents indicate on 7-point scales (1 = *does not apply at all* to 7 = *applies very much*) the extent to which 24 words or short phrases reflected how they were feeling about themselves at that point in time (adapted from Elliot & Devine, 1994).

We performed a principal-components analysis on the individual items to derive affect indices. An examination of the scree plot revealed a clear three-factor solution that corresponded closely to that obtained by Elliot and Devine (1994). Consequently, a maximum-likelihood factor analysis with oblimin rotation was performed to assess a three-factor solution. The first factor, labeled *negative self-evaluation*, accounted for 27% of the total variance, and the items that loaded highly on this factor ($> .5$) were combined into an index (i.e., "disappointed with myself," "annoyed at myself," "angry at myself," "disgusted with myself," "guilty," "critical," "shamed," "regretful," "frustrated," "embarrassed," "distressed," and "negative"; $\alpha = .88$). The second factor, labeled *positive emotions*, accounted for 17% of the total variance, and the high-loading items were combined into an index (i.e., "happy," "good," "energetic," "friendly," "optimistic," and "content"; $\alpha = .87$). The third factor, labeled *dissonance discomfort*, accounted for 6% of the total variance, and the high-loading items were combined into an index (i.e., "uneasy," "uncomfortable," "tense," "bothered," and "concerned"; $\alpha = .81$). The item "anxious" was omitted from the final factor structure because of a low communality (below .30; see Bollen, 1989).

The correlations among factors were generally as expected. That is, greater negative self-evaluation was associated with greater discomfort, $r(186) = .52, p < .01$. Also, greater positive emotions were associated with lesser discomfort, $r(186) = -.32, p < .01$, and with lesser negative self-evaluation, $r(185) = -.16, p < .05$.

Coding of participants' predictions for group interaction. Three independent raters coded participants' predictions about the impending group interaction in the discussion and consensus conditions for statements that spontaneously indicated discomfort (e.g., "I will end up feeling bad," $\alpha = .90$). Coders also evaluated the spontaneous use of strategies to reduce tension and alleviate dissonance. Because participants were separated from the group when giving their predictions, we anticipated that they would focus on the individual strategies available

to them at that point, such as bolstering their own views (e.g., "I am right because. . .," $\alpha = .74$) and counterarguing the views of others (e.g., "They cannot be right because. . .," $\alpha = .86$). We also evaluated strategies that would yield group consensus, including changing one's own views (e.g., "I will listen to their opinions and try to understand their point of view," $\alpha = .64$) and influencing others (e.g., "I will explain why I think the way I do," $\alpha = .83$). We also attempted to code statements reflecting dissociation or separation from the group, but only 1 participant mentioned such a strategy (i.e., "This is only an experiment and I will not see these people again").

Final questionnaire. In the discussion and consensus conditions, participants completed a questionnaire composed of 21 items that assessed a variety of perceptions of the group and the pending discussion. Of particular interest were participants' responses to questions assessing motivation for consensus, perceived ease of reaching consensus, importance of others' understanding of one's own point of view, pressure to respond similarly to other group members, and similarity of self to other group members (all answered on 9-point scales, 1 = *not at all* to 9 = *very*). The patterns of findings across other items were generally as expected but will not be discussed here because they are not central to our interpretation. No-interaction participants completed a shorter questionnaire of only 11 items that omitted questions pertaining to any impending interaction.

Results

Success of Manipulations

We analyzed mean questionnaire ratings according to a Group Attitudes (others agree vs. disagree) \times Group Type (discussion vs. consensus) analysis of variance (ANOVA) design. Several questionnaire items indicated that participants correctly understood the group type manipulation. Specifically, participants reported being more motivated to achieve consensus when instructed to do so in the consensus condition ($M = 6.23, SD = 2.13$) than when this instruction was not given in the discussion condition ($M = 5.42, SD = 1.92$), $F(1, 120) = 5.05, p < .05$. Participants in the consensus condition also believed that consensus would be easier to achieve ($M = 6.69, SD = 2.56$) than did participants in the discussion condition ($M = 5.41, SD = 2.44$), $F(1, 120) = 16.35, p < .01$. Finally, participants in the consensus condition placed greater importance on others' understanding of their own point of view ($M = 7.05, SD = 1.47$) than did participants in the discussion condition ($M = 6.02, SD = 2.20$), $F(1, 119) = 9.52, p < .01$.

The questionnaire ratings also indicated that the manipulation of group attitudes was successful. Participants were more motivated to reach consensus when others agreed ($M = 6.28, SD = 1.93$) than when others disagreed ($M = 5.38, SD = 2.12$), $F(1, 120) = 5.97, p < .05$; expected that consensus would be easier to achieve when others agreed ($M = 7.33, SD = 1.47$) than when others disagreed ($M = 3.97, SD = 2.29$), $F(1, 120) = 93.96, p < .01$; and believed that consensus would be more likely to occur when others agreed ($M = 7.88, SD = 1.33$) than when others disagreed ($M = 4.17, SD = 2.17$), $F(1, 120) = 147.18, p < .01$. Furthermore, participants in all conditions rated how similar others were to the self. Others were perceived to be more similar when they agreed ($M = 6.46, SD = 1.74$) than when they disagreed ($M = 3.21,$

Table 1
Emotion Ratings (and Standard Deviations), Study 1

Emotion rating	Agree			Disagree		
	No interaction	Discussion	Consensus	No interaction	Discussion	Consensus
Discomfort	2.28 (0.77)	2.58 (1.16)	2.46 (1.02)	2.63 (1.29)	3.30 (1.43)	3.43 (1.64)
Negative self-evaluation	1.62 (0.77)	1.97 (1.10)	1.58 (0.64)	1.55 (0.66)	1.64 (0.76)	1.75 (0.89)
Positive emotions	5.32 (1.07)	4.34 (1.28)	4.61 (1.21)	4.79 (1.26)	4.75 (1.08)	4.37 (1.37)

Note. Emotion ratings were given on 7-point scales with higher numbers reflecting greater discomfort, more negative self-evaluations, and more positive emotions. $N = 189$.

$SD = 1.79$), $F(1, 183) = 166.34$, $p < .01$.² No other significant effects were obtained on these measures.

Emotional Reactions

Mean emotional reactions were analyzed according to a Group Attitudes (others agree vs. disagree) \times Group Type (discussion vs. consensus vs. no-interaction) \times Emotion (dissonance discomfort vs. negative self-evaluation vs. positive feelings) ANOVA with repeated measures on the last factor (see Table 1).³ The analysis revealed a main effect for type of emotion, $F(2, 362) = 347.05$, $p < .01$, and a marginal effect for group attitude, $F(1, 181) = 3.03$, $p < .09$. Importantly, the predicted two-way interaction emerged between group attitudes and emotion, $F(2, 362) = 7.58$, $p < .01$. In addition, the interaction between group type and emotion was significant, $F(4, 362) = 4.59$, $p < .01$. No other effects approached significance.

To examine the predicted interaction between group attitudes and emotion, simple one-way analyses of variance (ANOVAs) were conducted on each emotion measure.⁴ As anticipated, participants in the disagreement condition experienced significantly more dissonance discomfort than those in the agreement condition, $F(1, 187) = 13.49$, $p < .01$. No differences emerged on negative self-evaluations or positive feelings (both F s < 1).

Simple effects tests to decompose the interaction between group type and emotion revealed essentially that the impending interaction generated a negative mood state regardless of whether the group agreed or disagreed. Specifically, the discussion and consensus conditions reported greater discomfort and less positive emotions than the no-interaction condition (p s $< .06$). The discussion and consensus conditions did not differ in these analyses, and the analyses on negative self-evaluation did not yield any effects that approached significance. Because the interaction-induced negative mood state emerged with agreement as well as disagreement and because it emerged on positive feelings as well as discomfort, it does not appear to reflect dissonance-related emotions.

The three-way interaction between group attitudes, group type, and emotion did not approach significance. However, inspection of the pattern of means on the discomfort ratings in Table 1 suggests that, with greater amounts of group pressure, disagreement generated greater discomfort than agreement. Despite the nonsignificant interaction, we decided to conduct simple effects tests to examine the apparent pattern in the means. Participants in the discussion and consensus conditions experienced significantly more discomfort when others disagreed, which suggested that dissonance in-

creased with increasing group pressure, $F(1, 183) = 4.91$, $p < .05$, and $F(1, 183) = 9.97$, $p < .01$, for discussion and consensus, respectively. However those in the control condition did not experience more discomfort when others disagreed versus agreed ($F < 1.3$).

Predictions for Impending Interaction

In participants' predictions for the group interaction in the consensus and discussion conditions, 6% spontaneously mentioned discomfort, nervousness, anxiety, or fear. As expected, this percentage was larger among participants who believed that others disagreed (12%) rather than agreed with them (1%), $\chi^2(1, N = 124) = 8.34$, $p < .01$.

Participants' predictions for group interaction also revealed a focus on dissonance reduction strategies associated with prevailing over others. The most popular strategy, used by 28% of participants overall, was to bolster their own positions by citing reasons why they were correct. Furthermore, bolstering varied across group agreement, with 38% of participants experiencing disagreement engaged in bolstering, whereas only 18% of those experiencing agreement engaged in bolstering, $\chi^2(1, N = 124) = 6.24$, $p < .05$. Other strategies were mentioned relatively infrequently and did not vary across condition (e.g., counterarguing others' positions, intending to persuade others, conforming to others' positions).

² Analyses on perceived similarity also revealed an interaction between group attitudes and group type, $F(2, 183) = 5.61$, $p < .01$, reflecting that the effects of disagreement on perceived similarity were stronger when participants did not expect to interact with the group than when they did expect to interact.

³ We conducted several additional analyses not reported in the text. To verify that emotional reactions did not differ across attitude issues, analyses compared the mean emotional reactions across the seven issues. As expected, no significant effect emerged for issue or for the interaction between issue and emotional reaction (F s < 1). In addition, to explore effects of participant sex, we reconstituted the analyses to include sex as a factor. The only significant effect for sex emerged in a main effect, $F(1, 175) = 4.57$, $p < .05$, indicating that men expressed slightly more intense emotional reactions than did women. Because respondent sex did not interact with the variables of interest, it will not be discussed further.

⁴ Local error terms were used in follow-up tests involving within-subject factors because of heterogeneity of variance.

Discussion

This study demonstrated that being grouped with others who hold opinions opposed to one's own induces feelings of dissonance discomfort. The greater discomfort when others disagreed than agreed emerged as a main effect across the levels of group pressure. That is, discomfort was heightened by disagreement when participants expected to interact with their group, when they expected to interact until they reached a consensus, and, albeit to a somewhat lesser extent, when they were simply informed of other group members' divergent views and did not expect to interact with them.

Whether the group agreed or disagreed did not have the same effects on negative self-evaluation and positive emotion as it did on discomfort. The minimal impact of group agreement on negative self-evaluation and positive feelings is reassuring support for our dissonance interpretation because it suggests that the motivational properties of disagreement were not part of some larger shift in general mood. Instead, heightened discomfort reflected the more specific experience of being uncomfortable and tense. However, as we noted in the introduction to this article, dissonance is not always limited to discomfort but instead may incorporate other forms of negative emotion. Depending on how people interpret the dissonant arousal state, a variety of specific patterns of negative emotions could be generated by cognitive inconsistency. For example, dissonance that involves beliefs about the self might be reflected in heightened negative self-evaluation.

Although the results of the first study are consistent with the idea that disagreement from others in a group is a source of cognitive inconsistency that generates dissonance, the specific pattern of effects also could be interpreted as indicating that group pressure to agree is responsible for discomfort. That is, even though the analysis on discomfort did not reveal a significant interaction between others' attitudes and extent of group pressure, simple effects tests suggested that the discomfort associated with disagreement increased with increasing levels of group pressure. Specifically, disagreement had a greater impact when participants expected to interact with others than when they did not.

The trend toward greater discomfort with increasing group pressure raises the possibility that factors associated with the interaction spurred the experience of discomfort. That is, instead of dissonance arising from the simple inconsistency presented in other group members' disagreeing views, participants might have been concerned about directly confronting attitudinal conflict in face-to-face interaction. They also might have been concerned about the possibility of interpersonal rejection during the group discussion. The broadly framed items used to measure discomfort in Elliot and Devine's (1994) scale do not allow us to differentiate between the emotional products of impending conflict or interpersonal rejection versus those of cognitive inconsistency.

We conducted a second study to clarify whether others' disagreement in the present context yielded dissonance or some other negative emotion associated with interpersonal conflict and potential rejection. To do this, we varied several factors that have been shown in prior research to reduce dissonance but that less plausibly affect anticipation of conflict or rejection. Thus, in one experimental condition we removed participants' apparent freedom of choice for taking a position that disagreed with others in the group. Lack of choice adds consonant cognitions and thereby reduces the

overall amount of dissonance that otherwise would be experienced (Festinger, 1957, 1958). In support of this reasoning, past research has found that engaging in an attitude-inconsistent behavior yields dissonance primarily when people believe that they freely chose to engage in the act (e.g., Brehm & Cohen, 1962; Cooper & Fazio, 1984; Linder et al., 1967).

To vary freedom of choice in Study 2, we had some participants express their attitudes under the high choice conditions of Study 1, whereas others were told that they were to take a specific position that happened to be discrepant from others in their group. That is, after participants had indicated their positions on a questionnaire and were shown the positions of the other group members, the experimenter remarked that, regardless of what position they had indicated, they were in an experimental condition in which they were required to hold a certain position. It was supposedly accidental that their assigned positions were the same as their true positions.

We also varied a second factor that has been shown in prior research to reduce dissonance effects, the opportunity to self-affirm or reinforce general integrity and self-worth. In prior research, participants who thought about valued aspects of the self or invoked other affirmational resources after engaging in attitude-inconsistent acts showed less attitude change than otherwise would occur (Steele, 1988; Steele, Spencer, & Lynch, 1993). In the self-affirmation account of these findings, bolstering self-worth reduces the dissonance that is generated when people's actions threaten their personal integrity. In addition, self-affirmations might reduce dissonance through mechanisms more congenial to Festinger's original theorizing. For example, self-affirmations might distract participants from inconsistencies between attitudes and behaviors or they might reduce the importance of attitude-inconsistent behaviors (Simon, Greenberg, & Brehm, 1995). In general, then, self-affirmations plausibly reduce dissonance through a variety of mechanisms, including bolstering self-worth, distracting people from the dissonant cognitions, and trivializing the importance of those cognitions (Olson & Stone, in press).

Study 2

To determine whether disagreement generates discomfort due to cognitive consistency pressures or due to alternative motives associated with interaction and consensus seeking, we designed the second study so that all participants experienced disagreement from others and, furthermore, all expected to interact with others to reach consensus. We adopted a new, mock-jury trial task in this study that was particularly likely to heighten concerns with consensus and thereby to allow us to differentiate dissonance from these other concerns.

All participants in the study believed that the other "jurors" in their group uniformly disagreed with participants' initial verdicts. In a free-choice condition analogous to Study 1, participants freely chose their verdict and then learned that their judgment disagreed with other group members. In a second condition, participants were assigned with no apparent choice to a verdict that disagreed with others' views. In a third condition, participants were given the opportunity to self-affirm after learning about their (freely chosen) disagreement from others. We anticipated that both the lack of choice and the opportunity to self-affirm would reduce the experience of dissonance and thus yield less discomfort than apparent

in the free-choice, no-affirmation condition. In addition, it seemed likely that the self-affirmation condition would have a unique pattern of effects on the other two emotion measures, negative self-evaluation and positive emotions. Specifically, the opportunity to reinstate a favorable self-view should alleviate negative self-evaluation and possibly increase positive emotion relative to the free-choice, no-affirmation condition.

Method

Participants

Forty-eight students from introductory psychology courses at Augsburg College (Minneapolis, MN) participated in partial fulfillment of course requirements (33 women, 14 men, 1 unreported).

Procedure

Participants met in groups of 4 to 6 to participate in a study on jury decision making. They were separated into cubicles to evaluate information pertaining to a legal case, which included judge's instructions and a summary describing an airplane crash and resultant fire (developed by Kruglanski, Webster, & Klem, 1993; see also Shestowsky, Wegener, & Fabrigar, 1998). After evaluating this information individually, they expected to complete some questionnaires and then reconvene with 3 other members of their group to discuss the case.

Before the impending discussion, participants rendered their initial verdicts on an 8-point verdict scale, ranging from -4 (*definitely guilty of negligence*) to $+4$ (*definitely not guilty of negligence*), which did not have a zero neutral point so that all participants had to indicate a preference. Participants also wrote down two or three reasons in support of their judgment.

To convince participants that the rest of the group initially disagreed with them, they were shown a sheet listing their own and the others' (supposed) initial verdicts. If the participant responded with a guilty verdict of -4 , -3 , -2 , or -1 , they were led to believe that the other 3 group members' initial responses were not guilty, $+3$, $+2$, and $+3$. If the participant responded with a $+4$, $+3$, $+2$, or $+1$, they were led to believe that the other three group members' initial responses were -3 , -2 , and -3 .⁵ Procedures then varied depending on condition.

Low-choice condition. In this condition, participants were informed during the initial instructions that one member of their group would be assigned to defend a certain position. More specifically, they were told that, "Whoever is designated as juror number four will be assigned a certain position. That is, regardless of your own initial position, you will be given a specific position to defend. This assigned position may or may not represent your actual position." In actuality, all participants in this condition believed that they were juror number four. The "assigned" position was always the same as the participants' own initial positions. After receiving the feedback regarding group member positions, participants completed the emotion measure and final questionnaire.

Self-affirmation condition. After receiving the feedback indicating that the other group members disagreed with their position, participants in this condition completed a self-affirmation task (developed by Vance, Devine, & Barron, 1997). While introducing this task, we reminded participants of the pending group discussion so as to keep them focused on that aspect of the study. To self-affirm, participants generated four examples of times when they had demonstrated their most cherished personal characteristic. Devine and her colleagues (Tauer, Devine, & Elliot, 1998; Vance et al., 1997) have demonstrated that this task effectively reduces feelings of dissonance. Following the opportunity to affirm, participants completed the emotion measure and final questionnaire.

High-choice, no-affirmation control condition. Participants in this condition simply completed the emotion measure and final questionnaire after receiving the feedback indicating other group members' positions.

Measures

Verdict questionnaire. In addition to the 8-point verdict scale described in the procedure, participants gave a dichotomous guilty/not guilty verdict to enhance the realism of the case decision. This question also was used as a manipulation check to ensure that participants correctly understood their answer on the 8-point verdict scale. The few inconsistent responses were brought to the attention of the participants and rectified.

Emotion measure. The emotion measure was the same as in Study 1. As with the first study, correlations computed among factors revealed that greater negative self-evaluation was associated with greater discomfort, $r(46) = .73, p < .01$, greater positive emotions were associated with less discomfort, $r(46) = -.44, p < .01$, and greater negative self-evaluation was related to less positive emotions, $r(46) = -.36, p < .02$.

Final questionnaire. This six-item questionnaire was an abbreviated version of that used in Study 1. The first question probed participants' current position on the verdict (answered on the same 8-point scale as the initial verdict). The remaining questions assessed participants' motivation to reach consensus, willingness to compromise, intent to persuade others, pressure felt to respond similarly to others, and similarity of self to others (all answered on scales ranging from 1 = *not at all* or *none* to 9 = *very* or *a great deal*).

Results

Emotional Reactions

To evaluate whether the dissonance-reduction strategies affected emotional reactions, the data were analyzed according to a Condition (low-choice vs. self-affirmation vs. high-choice, no-affirmation control) \times Emotion (discomfort vs. negative self-evaluation vs. positive emotions) design with repeated measures on the last factor.⁶ The analysis revealed a main effect for type of emotion, $F(2, 90) = 50.33, p < .01$, and a significant interaction between condition and emotion, $F(4, 90) = 3.34, p < .02$ (see Table 2). The main effect for condition did not approach significance.

To examine the interaction between condition and emotion, we conducted simple one-way ANOVAs on each emotion. The significant effect in the analysis on discomfort, $F(2, 45) = 4.65, p < .02$, indicated that those in the low-choice and self-affirmation conditions experienced significantly less dissonance discomfort than those in the control condition ($ps < .05$). No significant effects emerged in the analyses on negative self-evaluation or positive emotions.

Final Questionnaire Items

Each of the five questionnaire items relating to the supposed group discussion was analyzed with a one-way ANOVA. The only significant effect emerged on the item regarding pressure to respond similarly to others, $F(2, 44) = 5.57, p < .01$. Specifically,

⁵ Mean responses for those expressing verdicts of guilty and not guilty were -2.19 and 1.81 , respectively. The average magnitude of the difference between participants' responses and the average of the supposed others' responses (always 2.67) was 4.86.

⁶ We also conducted analyses to examine the effects of the sex of the participant. When the analyses were reconstituted to include sex as a factor, no significant effects were obtained for respondent sex. Therefore, we do not discuss this variable further.

Table 2
Emotion Ratings (and Standard Deviations), Study 2

Emotion rating	Low-choice	Self-affirmation	High-choice, no-affirmation control
Discomfort	2.45 (0.80)	2.45 (0.99)	3.58 (1.65)
Negative self-evaluation	1.89 (0.80)	2.03 (0.79)	2.40 (1.37)
Positive emotions	4.42 (1.21)	4.84 (1.17)	4.00 (1.17)

Note. Emotion ratings were given on 7-point scales with higher numbers reflecting greater discomfort, more negative self-evaluations, and more positive emotions. $N = 48$.

those in the control condition ($M = 5.59$, $SD = 2.90$) reported significantly more pressure than those in the low-choice ($M = 3.43$, $SD = 1.50$) and self-affirmation conditions ($M = 3.38$, $SD = 1.67$, $ps < .05$).

Discussion

Replicating the findings from Study 1, disagreement from others in a free choice paradigm apparently introduced new elements that were dissonant with participants' already existing cognitions. The dissonance was evident in participants' reports of discomfort. Furthermore, this discomfort was reduced by standard moderators of dissonance that we adapted from past counterattitudinal advocacy research (see Harmon-Jones & Mills, 1999; Olson & Stone, in press). Echoing the findings of this earlier research, we found that participants in the present study experienced little dissonance discomfort when they were given low choice about taking an opposing position in the group or when they freely disagreed and then were encouraged to self-affirm important self-attributes.

The relatively low levels of discomfort in the low-choice and self-affirmation conditions are consistent with our argument that disagreement yielded dissonance rather than a fear of impending conflict or social rejection. In these conditions, participants still expected to interact with others who disagreed with them, and they should still have been expecting possible conflict and interpersonal rejection. However, they did not report heightened discomfort relative to those in the control condition. The success of these standard dissonance manipulations thus bolsters our interpretation of discomfort as a product of dissonant cognitions rather than of other motives established by disagreement in groups.

It is interesting to note further that the opportunity to self-affirm did not yield any uniquely positive effects on emotions. We had anticipated that self-affirmation would enhance positive emotions and reduce negative self-evaluations. Instead, these emotion indices did not differ across conditions. Although the low-choice and self-affirmation conditions yielded a slight increase in positive emotions and a slight decrease in negative self-evaluation relative to the control condition (see Table 2), these trends were not even marginally significant.

In summary, the first two studies provide support for our group-y perspective on dissonance. They indicate that dissonance arises from inconsistencies grounded in interpersonal interaction, much as past research with individual-level paradigms has demonstrated that dissonance arises from intrapersonal inconsistencies, especially from individual's counterattitudinal behavior. In the first study, we were able to assess disagreement-inspired dissonance with a self-report measure of dissonance arousal. In the

second study, we were able to manipulate it by varying factors known to moderate dissonance effects in past research. Specifically, we demonstrated that dissonance generated from others' disagreement was alleviated by (a) the introduction of consonant cognitions via low choice to take an opposing position and (b) by the opportunity to self-affirm. As one of the reviewers of an earlier version of this article noted, if it walks like a duck and quacks like a duck, then it is likely to be a duck, or, in the present case, dissonance.

By arguing that people experience dissonance discomfort when in a group with others who hold opposing viewpoints, we are identifying a motivational basis for people's preference for agreement over disagreement in groups. Our analysis does not replace more cognitively oriented theories of group influence (for a review, see Prislin & Wood, in press), but instead provides a theoretical framework that links simple disagreement from others to a negative tension state that motivates information processing and other mechanisms of change. Understanding the strategies through which people can resolve interpersonal dissonance is the focus of the final study in this article.

Most theories and research concerning inconsistency-reduction strategies have focused on individual cognitive restructuring, including changing one's own attitudes to be consistent with other cognitions and cognitive bolstering of existing attitudes (see Abelson, 1959; Rosenberg, 1960, 1968). However, if dissonance can arise from social interaction, it is possible that it also can be reduced by means of social interaction. Such an idea is consistent with Newcomb's (1968) proposal that interpersonal communication and influence can restore equilibrium in balance-type relations. Expounding on a similar theme, Festinger (1957) outlined specific modes of resolving the inconsistency generated by group heterogeneity, including changing one's own attitude to agree with others, influencing those who disagree to change their opinions, affiliating with social supporters who agree, and derogating disagreeing others to make them noncomparable to the self. As we noted in the introduction to this article, research has already begun to demonstrate that dissonance can be reduced through interpersonal strategies, including diffusing responsibility for a dissonance-producing act to others in a group (Zanna & Sande, 1987) and misattributing dissonance arousal to dislike for out-group members (Cooper & Mackie, 1983).

The first two experiments provided some initial, suggestive evidence of the kinds of interpersonal strategies that people use to reduce dissonance in the present paradigm. As we reported in the results of Study 1, participants' predictions of group interaction revealed that those expecting to interact with a disagreeing group

spontaneously bolstered their own views and outlined the reasons why they were correct. This strategy is likely an important component of exerting influence over others during the interaction. Furthermore, evidence of spontaneous dissociation from a disagreeing group emerged in both studies. When others disagreed, participants tended to separate themselves from the group and to rate the other group members on the questionnaire as dissimilar from themselves. Although no significant effects emerged across conditions on ratings of perceived similarity of others to oneself in Studies 1 or 2 (as reported above), correlational analyses revealed that less perceived similarity was associated with higher ratings of discomfort, $r(187) = -.27, p < .01$, and $r(45) = -.31, p < .05$, for Studies 1 and 2, respectively. The correlational findings suggest that dissociation may have been used spontaneously to reduce dissonance-induced tension. These preliminary findings correspond to two of the interpersonal dissonance reduction strategies originally suggested by Festinger (1957): exerting influence over others and dissociating from a disagreeing group and affiliating with a group of attitude supporters.

In the third study, we focused not only on the strategies of influence and affiliation with supporters but also on another interpersonal strategy suggested by Festinger (1957): changing one's own attitudes to align with others' opinions. We were uncertain whether all of these strategies would prove equally effective at reducing dissonance. There is reason to believe that finding congenial others with whom to affiliate might be a less successful strategy to reduce cognitive inconsistency than changing one's own or others' attitudes. Affiliating with social supporters bolsters one's own views but does not remove the disagreement initially experienced with the original group. Thus, changing attitudes might be a more successful strategy than switching groups. In addition, successfully persuading others might yield some unique benefits in addition to dissonance reduction. Successful persuasion can generate positive feelings by conferring social efficacy and implying that one's initial positions were correct.

Study 3

The third study tested Festinger's (1957) proposition that social groups not only are a source of dissonance but also are a means of dissonance resolution. As in Study 2, participants served as mock jurors, and the other jurors in their group supposedly disagreed with participants' initial verdicts. Participants then indicated their emotions and were encouraged through a carefully designed set of manipulations to follow one of the focal dissonance-reduction strategies: changing their own positions to yield to others' views, persuading others to change their opinions, or joining an alternative, more congenial group. After engaging in one of these strategies, some participants were led to believe that group agreement had been achieved and the inconsistency resolved, whereas others believed that agreement had not been reached and the inconsistency remained unresolved. Emotions were then assessed a second time to determine whether resolution of attitude discrepancies through these interaction strategies reduced participants' discomfort.

In general, we anticipated that the successful resolution of inconsistency would reduce discomfort but have less effect on positive emotions or negative self-evaluation. Thus, we predicted a three-way interaction between the type of emotion measure,

whether emotions were assessed before or after the potential dissonance-reduction strategy, and whether the inconsistency had been resolved. In addition, if the two strategies of being influenced and of exerting influence are more effective than the strategy of joining a more congenial group, then a four-way interaction should emerge to reflect these differences across type of dissonance-reduction strategy. This interaction would reflect especially marked reductions in discomfort for the strategies that involve influence when inconsistency had been resolved and when emotions were measured after dissonance reduction. Finally, the four-way interaction might emerge also if the strategy of influencing others enhances self-efficacy and increases positive emotions and self-worth in ways not associated with the other strategies. Then scores on positive emotions and negative self-evaluation might be especially favorable for the persuasion strategy when inconsistency was resolved and emotions were assessed after dissonance reduction.

Method

Participants

One hundred eighty-one students from introductory psychology courses at Texas A&M University participated in exchange for course credit (93 women, 79 men, 9 unreported). Data from 11 additional participants were not included in the analyses (5 had prior knowledge of the experiment, 4 responded inappropriately because of experimenter error, and 2 failed to follow procedures).⁷

Procedure

Participants met in groups of 4 to 6. As can be seen in the description of the procedure in Figure 1, they first were separated into cubicles to evaluate the legal case. The case information included the summary and judge's instructions from Study 2 along with a legal analysis that supported a not-guilty verdict (see Kruglanski, Webster, & Klem, 1993). After evaluating this information individually, participants expected to reconvene to discuss the case and reach consensus about the defendant's guilt or innocence. Before the (supposed) discussion, they rendered their initial verdicts on an 8-point scale and were asked to write down two or three reasons supportive of their judgments, which were to be shown to other jurors.

To convince participants that the rest of the group initially disagreed with them, they were shown a listing of the others' initial verdicts. Given that, after reading the legal analysis, most participants indicated an initial judgment of "not guilty," the other members were presented as supporting

⁷ Fifty participants were not included in this sample because they did not respond appropriately to the experimental procedures. Specifically, 31 participants in the compromise condition did not change their verdict despite experimental procedures prompting them to do so. Additionally, 19 participants in the persuade and join-new-group conditions changed their positions during the study despite experimental procedures to guard against them compromising. Given the complexity of the experimental procedures, these failures are perhaps not surprising. To verify that the participants removed from the study did not differ from those that were retained, all major analyses were conducted using both the full sample of 231 participants and the sample of 181 participants who responded appropriately to procedures. Because virtually identical results were obtained from both samples, the data reported in the text are from the smaller sample of 181 participants.

Yield	Persuade	Join new group
Received legal case <ul style="list-style-type: none"> judge's instructions and summary faded, difficult-to-read legal analysis supporting not guilty verdict 	Received legal case <ul style="list-style-type: none"> judge's instructions and summary legal analysis supporting not guilty verdict 	Received legal case <ul style="list-style-type: none"> judge's instructions and summary legal analysis supporting not guilty verdict
Gave initial verdict and reasons		
Shown other group members' initial verdicts tailored to disagree with participant		
Rated emotions and group interaction on initial questionnaire		
Shown other group members' (weak) arguments		
Received second legal analysis supporting a guilty verdict		
Gave second verdict		
		Joined new group
Shown other group members' second verdicts	Shown other group members' second verdicts	Shown new group members' verdicts
Rated emotions and group interaction on final questionnaire		

Figure 1. Summary of procedures for each experimental condition, Study 3.

a guilty verdict.⁸ That is, on the 8-point verdict scale, the other group members supposedly indicated scores of: “-2,” “-3,” and “-3.” Participants then completed the emotion measure and an initial questionnaire (see below).

A set of arguments supposedly written by the other jurors was then distributed. To ensure that participants did not spontaneously change their own verdicts after reading the others' arguments, the arguments were constructed to be poor in quality and to have minimal relevance to the case (e.g., “It is hard to stop a forest fire; you cannot just throw water on it and expect it to go out”).

Participants then received a structured set of information designed to convince them that they had persuaded the others, yielded to agree with the others, or switched to a more congenial group. The specific information provided for each resolution strategy is described below and is outlined in Figure 1. Extensive pretesting had been conducted to refine the experimental procedures, especially to ensure that the strategies were believable and that the majority of participants would respond appropriately. Finally, after the structured strategy manipulation, participants completed the emotion measure for a second time, gave their ratings on a final questionnaire (see below), and were debriefed.

Persuading others. In this condition, some participants were led to believe that their arguments and position had persuaded the others to change their views (see Figure 1). After viewing the arguments ostensibly written by the other jurors, participants indicated their verdicts a second time. Supposedly, the other jurors also had given their judgments again, and the new verdicts were displayed on a summary sheet given to each participant. To convince half of the participants in this condition that they had successfully persuaded the other jurors, the new verdicts agreed with participants' initial judgments (inconsistency resolved). For the other half of the participants, the rest of the group did not change their verdict and group consensus was not achieved (inconsistency unresolved).

Yielding to others. In this condition, participants were encouraged to change their initial verdict to match that of the other jurors (see Figure 1). To this end, the legal analysis in support of a not-guilty verdict was faded and difficult to read, in order to decrease their confidence in and certainty about their initial judgments. To provide a further challenge to their opinions, after viewing others' opinions and arguments, we gave participants a second legal analysis supporting a guilty verdict. Supposedly, this second analysis had been missing from their original packet of materials but the other members of the jury had received it. After reading the second analysis, participants again rated their verdicts, and supposedly, the other jurors did so as well. The new jury verdicts then were displayed on a sheet given to each participant. Half of the participants in the yielding strategy condition were informed that because they had changed their initial verdict, the jury was now in agreement (inconsistency resolved). The other half of the participants were informed that, although they had changed their initial verdicts to coincide with the other group members' original positions, the other group members also had changed their initial verdicts, so the disagreement persisted (inconsistency unresolved). Presumably, the change in

⁸ Twenty-one of the 181 participants responded “guilty” to the initial verdict measure. We had anticipated this possibility, and we tailored the experimental manipulations appropriately, representing the rest of the group's position as “not guilty” and their arguments as supporting the appropriate position. Given that virtually identical results were obtained whether or not the participants voting “guilty” were retained in the analyses, they were included in all analyses reported in the text. Mean responses for those initially expressing a guilty and not-guilty verdict were -1.95 ($n = 21$) and 2.64 ($n = 160$), respectively. The average magnitude of the difference between participants' initial responses and the average of the supposed others' initial responses was 5.23.

others' verdicts emerged because of a variety of factors, including the arguments received from the rest of the group.

Joining a new group. In this condition, participants were told that they would be leaving the dissenting group and joining a new group (see Figure 1). After viewing the initial set of arguments ostensibly written by the other jurors, participants restated their verdict on a sheet of paper with a scale only for their position. They were then asked to join with another group (jury) that was participating in the same study down the hall. Supposedly, a member of this other jury had left and it was important to fill the vacancy. Participants received a summary sheet listing the positions of the new group members. Half of the participants in this condition believed that the members of the new jury held positions similar to their own (inconsistency resolved) and half believed they had conflicting positions (inconsistency unresolved).

Measures

Verdict questionnaire. The verdict questionnaire was the same as that used in Study 2.

Emotion measure. The emotion measure was the same as that used in Studies 1 and 2, although in this experiment it was administered twice. Correlations computed among factors revealed that, for both assessments, greater negative self-evaluation was associated with greater discomfort ($r_s = .67$ and $.69$, for first and second assessments, respectively, $p_s < .01$), greater positive emotions were associated with less discomfort ($r_s = -.35$ and $-.34$, for first and second assessments, respectively, $p_s < .01$), and greater negative self-evaluation was related to less positive emotions ($r_s = -.20$ and $-.26$, for first and second assessments, respectively, $p_s < .01$).

Initial questionnaire. The initial questionnaire was composed of four questions assessing participants' motivation to reach consensus, willingness to compromise, intent to persuade others in the group, and pressure felt to respond as other group members. All questions were answered on a 9-point scale (1 = *not at all* or *none* to 9 = *very* or *very much*). As expected, analyses on these items revealed that participants generally did not differ across conditions, with the exception that the analysis on pressure felt to respond similarly to others produced a not especially interpretable interaction between resolution strategy and whether the disagreement was resolved ($p < .05$).

Final questionnaire. This questionnaire was similar to that used in Studies 1 and 2, with several additions. Of particular interest were questions that assessed whether consensus had been reached (answered *yes* or *no*), the participants' current positions (answered on the 8-point scale ranging from *definitely guilty* to *definitely not guilty*), the extent to which participants had compromised their initial position, listed strong arguments in support of their position, and perceived others as persuasive (answered on 9-point scales ranging from *strongly agree* to *strongly disagree*). Two additional questions assessed the amount of pressure felt to respond the same as other group members and the degree to which other group members were perceived as similar to oneself (answered on 9-point scales ranging from *none* or *not at all* to *very* or *very much*). The pattern of results across other questionnaire items generally supported expectations, but because these are not central to our interpretation, they are not discussed further.

Results

Success of Manipulations—Questionnaire Items

A Strategy (yield vs. persuade vs. join new group) \times Resolution (initial disagreement resolved vs. not resolved) ANOVA was conducted on the questionnaire ratings obtained at the end of the study. In general, the dissonance-reduction strategies were correctly perceived.

Participants in the yield condition correctly reported on the influence of others. Specifically, those encouraged to yield reported that they compromised more to reach agreement than those in the other two conditions, $F(2, 151) = 16.88, p < .01$, and that other jury members more effectively persuaded them to change their verdicts, $F(2, 144) = 31.62, p < .01$. These effects were evident in simple effects decomposition in which participants in the yield condition ($M = 5.06, SD = 2.33$, and $M = 4.21, SD = 2.23$, for having compromised and having been persuaded, respectively) differed from those who apparently persuaded others ($M = 2.69, SD = 2.41$, and $M = 1.75, SD = 1.15$, for having compromised and having been persuaded, respectively) or who joined a new group ($M = 2.86, SD = 2.08$, and $M = 2.18, SD = 1.43$, for having compromised and having been persuaded, respectively; $p_s < .05$).

Participants in the persuasion condition correctly reported their (apparent) influence over others. Specifically, participants in this condition were especially likely to report that they, personally, listed strong arguments in support of their positions, $F(2, 152) = 5.80, p < .05$. Simple effects decomposition revealed that persuading participants ($M = 7.17, SD = 1.34$) believed that they listed stronger arguments than yielding participants ($M = 5.87, SD = 2.01, p < .05$), although they did not differ from those joining a new group ($M = 6.63, SD = 2.38, p > .10$).

The success of the resolution manipulation was evident in participants' accurate perceptions of their fellow jurors' final, prediscussion verdicts. That is, when others advocated guilty, participants judged that others endorsed guilt more ($M = -2.13, SD = 0.77$) than when others advocated innocence ($M = 2.28, SD = 1.21$), $F(1, 153) = 736.79, p < .01$. In addition, the success of the resolution manipulation was apparent in that 87% of participants judged that consensus had been reached in the conditions in which inconsistency had been resolved, whereas only 17% of participants believed that consensus had been reached in conditions in which inconsistency had not been resolved, $\chi^2(1, N = 167) = 91.30, p < .01$.

Success of Manipulations—Verdict Change

As was expected, the different resolution strategies affected whether participants changed their judgments of guilt or innocence.⁹ Verdicts were evaluated with a Strategy (yielding vs. persuading vs. joining new group) \times Resolution (initial disagreement resolved vs. not resolved) \times Time of Assessment (initial response vs. response following the exchange of arguments) ANOVA design with repeated measures on the last factor. The analysis yielded a significant main effect for time, $F(1, 175) = 215.85, p < .01$, indicating that participants' responses were closer to the group's initial position at the second assessment than at the first. Also, a main effect for strategy, $F(2, 175) = 22.50, p < .01$, indicated that participants in the yield condition gave responses closer to those of their groups than participants in the persuade or dissociate conditions. The significant Time \times Strategy interaction,

⁹ Because 21 participants initially indicated a guilty verdict, we calculated the analysis on verdict change by scoring positive shifts as movement toward the group's initial position, regardless of participants' initial positions.

Table 3
Emotion Ratings (and Standard Deviations), Study 3

Emotion rating	Resolved-Others finally agree			Unresolved-Others continue to disagree		
	Yield	Persuade	Join new group	Yield	Persuade	Join new group
Before exchanging arguments						
Discomfort	2.72 (1.51)	3.54 (1.50)	2.96 (1.26)	2.46 (1.13)	3.08 (1.22)	2.92 (1.43)
Negative self-evaluation	1.54 (0.75)	2.05 (1.22)	1.61 (0.69)	1.57 (0.74)	1.63 (0.46)	1.70 (0.90)
Positive emotions	4.30 (1.32)	4.29 (1.04)	4.73 (1.32)	4.45 (1.26)	4.25 (1.43)	4.07 (1.24)
After exchanging arguments						
Discomfort	1.79 (0.70)	2.17 (1.14)	1.99 (1.02)	2.23 (1.21)	2.66 (1.46)	2.37 (1.35)
Negative self-evaluation	1.32 (0.49)	1.41 (0.70)	1.34 (0.55)	1.69 (0.94)	1.51 (0.56)	1.61 (0.81)
Positive emotions	4.36 (1.52)	5.18 (1.15)	5.23 (0.99)	4.23 (1.44)	4.21 (1.43)	4.19 (1.33)

Note. Ratings were given on 7-point scales with higher numbers reflecting greater discomfort, more negative self-evaluations, and more positive emotions. $N = 181$.

$F(2, 175) = 161.60, p < .01$, was decomposed by conducting separate analyses on the judgment change in each strategy condition.

As expected, when participants were encouraged to yield they changed their verdicts significantly from initial assessment ($M = 2.32, SD = 1.35$) to the second assessment ($M = -1.74, SD = 1.13$), $F(1, 46) = 169.37, p < .01$. This change attests to the success of the yield manipulation; participants in this condition changed their judgments because they received new information about the case before indicating their verdicts a second time. Participants who believed that they persuaded others showed no change from the first ($M = 2.24, SD = 1.72$) to the second session ($M = 2.29, SD = 1.61$), $F < 1$, presumably because the other group members were aware of their initial positions. Unexpectedly, participants who switched groups showed modest change in verdicts from the first session ($M = 1.87, SD = 1.84$) to the second session ($M = 1.65, SD = 1.81$), $F(1, 74) = 4.04, p < .05$. We are not sure how to interpret this modest shift, and we note that the magnitude of verdict change in the yielding condition was significantly greater than in the other two conditions (both $ps < .01$), whereas the amount of change in the join-new-group condition did not differ significantly from the amount of change in the persuade condition ($p > .30$).

Emotional Reactions

To evaluate whether dissonance was resolved through the interpersonal strategies, we analyzed the data according to a Strategy (yield vs. persuade vs. join new group) \times Resolution (initial disagreement resolved vs. not resolved) \times Emotion (discomfort vs. negative self-evaluation vs. positive emotions) \times Time of Assessment (before vs. after possible resolution) design with repeated measures on the last two factors (see Table 3).¹⁰ The primary result of interest is the marginally significant four-way interaction, $F(4, 346) = 2.09, p < .10$. To examine this in more detail, we conducted simple three-way ANOVAs on each of the emotion components, using a Resolution Achieved \times Strategy \times Time of Assessment design with repeated measures on the last factor.

Before describing the simple effects decomposition, we note that a number of lower order effects were obtained in the overall analysis in addition to the focal four-way interaction: A main effect emerged for emotion, $F(2, 346) = 317.04, p < .01$, reflecting the greater endorsement of positive feelings than negative self-evaluation or discomfort. Also, a main effect for time, $F(1, 173) = 62.42, p < .01$, reflected the greater intensity of feelings at the initial exposure to others' counterattitudinal judgments than at the second assessment. Significant two-way interactions emerged between emotion and time, $F(2, 346) = 60.41, p < .01$, time and resolution, $F(1, 173) = 8.75, p < .01$, and emotion and resolution, $F(2, 346) = 3.58, p < .05$. The three-way interaction between resolution, type of emotion, and time was significant, $F(2, 346) = 26.94, p < .01$, as was the interaction between strategy, type of emotion, and time, $F(4, 346) = 4.60, p < .01$.

Discomfort. In general, the simple three-way Resolution Achieved \times Strategy \times Time of Assessment ANOVA revealed that participants' discomfort was reduced when they resolved the disagreement through any of the dissonance-reduction strategies. Specifically, the analysis produced a marginally significant main effect for strategy, $F(2, 174) = 3.02, p < .06$, indicating that participants in the persuade condition experienced slightly more discomfort overall than those in the yield condition. In addition, the analysis revealed the anticipated Time \times Resolution interaction, $F(1, 174) = 24.85, p < .01$. Simple effects decomposition of the interaction revealed that, as anticipated, discomfort decreased from the first to second assessment when disagreement was resolved, $F(1, 89) = 83.16, p < .01$. Although discomfort also decreased when disagreement was unresolved, presumably because of the simple passage of time, $F(1, 89) = 31.06, p < .01$, the

¹⁰ To examine the effects of the sex of the participant, we reconstituted the analyses to include sex as a factor. The only significant effect involving sex was the Affect \times Sex interaction, $F(2, 316) = 3.84, p < .05$, which indicated that women expressed slightly greater discomfort and negative-self feelings, whereas men expressed slightly greater positive feelings. Because sex did not interact with any of the experimental manipulations, it is not discussed further.

decrease was significantly larger with resolution, $F(1, 178) = 24.39, p < .01$.

Negative self-evaluation. In general, the simple three-way analysis revealed that negative self-evaluations were alleviated by resolving the disagreement, especially through the strategies of persuading others or joining a congenial group. That is, a significant effect for time, $F(1, 175) = 22.84, p < .01$, reflected less negative self-evaluations at the second than first assessment. In addition, significant two-way interactions were evidenced between strategy and time, $F(2, 175) = 4.51, p < .02$, and between resolution and time, $F(1, 175) = 16.52, p < .01$. The Strategy \times Time interaction revealed that negative self-evaluations decreased significantly over time in the persuade, $F(1, 58) = 16.47, p < .01$, and join-new-group conditions, $F(1, 74) = 9.07, p < .01$, but not in the yield condition ($F < 1$). The Resolution \times Time interaction revealed that negative self-evaluations decreased from the first to second assessment when disagreement was resolved, $F(1, 89) = 31.79, p < .01$, but remained unchanged when the disagreement was unresolved ($F < 1$).

Positive emotions. Overall, the simple three-way decomposition analysis revealed that positive emotions increased when the disagreement was resolved by persuading others or joining a congenial group but not by yielding. Specifically, the analysis revealed a marginally significant Resolution \times Strategy \times Time interaction, $F(2, 174) = 2.77, p < .07$, along with a number of lower-order effects that we interpret in terms of this three-way interaction, including a main effect for time, $F(1, 174) = 12.98, p < .01$, an interaction between strategy and time, $F(2, 174) = 5.79, p < .01$, and an interaction between resolution and time, $F(1, 174) = 19.23, p < .01$.

To decompose the three-way interaction, separate Resolution \times Time analyses were conducted with each of the strategy conditions. In general, participants in the persuade and join-new-group conditions reported feeling more positive emotions when disagreement was resolved over time than when it was not. However, no significant effects emerged in the analysis in the yield condition. Specifically, for persuade participants, a significant effect for time, $F(1, 57) = 13.17, p < .01$, indicated that positive emotions increased from the first to second assessment. The significant interaction, $F(1, 57) = 15.80, p < .01$, revealed that positive emotions increased from the first to second assessment when disagreement was resolved, $F(1, 29) = 16.74, p < .01$, but remained relatively low when the disagreement was not resolved ($F < 1$). In the join-new-group condition, a significant effect for time, $F(1, 72) = 12.17, p < .01$, again indicated that positive emotions increased from the first to second assessment. Also, an effect for resolution, $F(1, 72) = 9.61, p < .01$, suggested that positive feelings increased with the resolution of the disagreement. Finally, the significant interaction, $F(1, 72) = 4.47, p < .05$, revealed that positive emotions increased from the first to second assessment when disagreement was resolved, $F(1, 36) = 14.20, p < .01$, but remained relatively unchanged when the disagreement was not resolved, *ns*.

Discussion

This third experiment builds on the findings of the first two by demonstrating that the dissonance discomfort generated by attitudinal heterogeneity could be reduced through interpersonal strat-

egies to achieve agreement among group members. All participants in the study initially believed that others in a mock-jury decision-making group disagreed with them. When group or individual attitudes changed so that they came into alignment, participants' discomfort decreased in comparison to when attitudes remained disparate. This emotional benefit of consensus was found regardless of the particular strategy participants used to reach agreement.

It is perhaps surprising that the three methods of resolving disagreement led to comparable reductions in discomfort given the very different behaviors that were involved in executing each strategy. Participants in the persuade condition believed that they had successfully influenced the rest of the group to change their views, presumably because of participants' especially persuasive arguments supporting their initially preferred verdicts. Participants in the yield condition read some new persuasive material that supported the position ostensibly taken by the rest of the group, and as a result, they shifted their views to align with those of the other group members. Participants in the new group condition were removed from their initial dissenting group and joined with a new group that agreed with them. All of these strategies appeared to regulate discomfort in a strikingly similar manner.

Despite the uniform effects of strategy on discomfort, reports of negative self-evaluation and positive feelings varied with the specific strategy used. That is, these emotions became more favorable when participants influenced others or joined an attitudinally congenial group, but not when they yielded to others' opinions. This pattern likely reflects the reduced feelings of self-efficacy associated with changing one's own opinion to conform to others' positions. In general, then, even though the strategies of inconsistency reduction in the present experiment uniformly reduced discomfort, achieving consistency without having to change one's own opinion conferred additional positive emotional benefits.

Although the third study successfully demonstrated that group agreement reduced discrepancy-induced dissonance, the design did not address whether people *spontaneously* attempted to establish agreement in groups to maintain cognitive consistency. The idea that people are spontaneously motivated to agree is congenial with the considerable amount of theorizing about conformity pressures and consensus seeking in groups (e.g., Davis, 1963; Deutsch & Gerard, 1955; Festinger, 1950). Some indirect support for such a spontaneous process is provided by the questionnaire ratings in the three studies. Not only did group members report experiencing pressures to hold a position similar to other group members, but also the greater the reported pressure to agree, the greater the experience of dissonance discomfort ($r_s = .39, .55, \text{ and } .44$, for Studies 1, 2, and 3, respectively, all $p_s < .01$). These correlational findings suggest that participants who spontaneously experienced greater motivation to agree also experienced greater discomfort.

General Discussion

The present research reintroduces Festinger's (1957) contention that disagreement from others in a group is a source of inconsistency that is experienced as dissonance. It thus extends common conceptions of cognitive dissonance as a phenomenon generated by intraindividual inconsistency in cognitive elements to include dissonance generated by group-level inconsistencies that emerge from attitude heterogeneity. The three studies demonstrated that

when group members hold discrepant attitudes, they experience dissonance discomfort. This basic phenomenon proved to be general across several features of the studies. That is, dissonance was induced by attitude heterogeneity on a variety of controversial social issues (Study 1) as well as on a mock jury trial (Studies 2 and 3). Also, in Study 1, group members experienced discomfort when the group was to engage in a discussion as well as when it was charged with achieving consensus. Thus, group-induced dissonance emerged with attitudinal heterogeneity on a variety of issues and for various discussion formats.

Our final study demonstrated that the dissonance induced by attitudinal discrepancy could be resolved through interpersonal strategies in the group, much as intraindividual inconsistencies can be resolved through change in individual cognitions. We examined three strategies to reduce attitudinal discrepancy: (a) changing one's own attitudes to agree with others in the group, (b) influencing others to change their opinion, and (c) joining a different, attitudinally congenial group. When these strategies successfully shifted initial disagreement among group members into agreement, dissonance was reduced and participants reported minimal discomfort. However, when these strategies did not alleviate the disagreement, then dissonance reduction was less marked. Thus, even though these strategies involve very different behaviors, they had uniformly beneficial effects on participants' negative tension states when they resolved attitude heterogeneity.

Consistency as a Group Phenomenon

The present studies offer a unique perspective on group processes by demonstrating that pressures toward consistency both emerge from and are resolved through group interaction. We argued further that attitude discrepancies cause dissonance because they threaten understanding of reality and normative regulation of self and social goals. In this view, consistency pressures are one of many features of group dynamics that establish and maintain consensus.

Attitudinal homogeneity is a natural state of many real-world groups because of self-selection processes in group formation, especially the tendencies to form relationships with similar others (Moreland, 1987) and with others who are in close physical proximity and thus are subject to similar external forces (Latané & L'Herrou, 1996). In addition, pressure toward consensus is an aspect of achieving group goals (see Festinger's, 1950, discussion of group locomotion). For juries and some other decision-making groups, consensus is mandated as part of the group's task. Other kinds of group goals may implicitly require consensus because the goals are more easily achieved when group members are in agreement (Cartwright & Zander, 1953). Although high levels of consensus-seeking in work groups can hinder divergent thought and consideration of a range of alternatives (Esser, 1998; Nemeth, 1992; Steiner, 1972; Wood, 1987), some agreement among group members (e.g., in planning, implementing) is required for groups to realize the benefits of divergent perspectives and to move toward a solution. In general, it appears that many aspects of group formation and interaction lead to attitudinal homogeneity among group members. Additional research might fruitfully explore the ways in which motives to maintain cognitive consistency and to reduce dissonance combine with other mechanisms to ensure group consensus.

Conclusion

The present research examined interpersonal relations as a source of and resolution to dissonance. In Festinger's (1957) conception, disagreement from others produces dissonance simply by introducing new elements that are inconsistent with already existing cognitions. That is, inconsistency is a motivator in its own right. This view can be contrasted with the alternative idea that disagreement generates discomfort because it presents an informational challenge by threatening the validity of people's attitudes or a social challenge by threatening social acceptance from the group and the shared social identity (e.g., Hovland & Rosenberg, 1960; Newcomb, 1953). Although Festinger (1957) did not tie dissonance to informational and social challenges, he argued that these factors moderate the experience of dissonance. For example, moderation by informational factors is evident when issues involve testable physical reality. Disagreement on such issues is unlikely to produce much dissonance, given that people's attitudes are already supported by objective, nonsocial, cognitive elements consonant with their opinion. Moderation by social factors occurs when the disagreement comes from small numbers of people or by people who are not highly valued. Disagreement from a minority of others does not produce much dissonance because of the supportive, consonant cognitions provided by the majority view. In addition, minimal dissonance is generated when the others who disagree are not relevant to the issue (e.g., nonexperts) or are not attractive, given that the dissonant cognitions would then be of little importance. In Festinger's view, then, informational and social factors moderate the experience of dissonance because they affect the proportion of consonant to dissonant cognitions or they affect the importance of these cognitions. In contrast, the possibility that dissonance arises from threats to understanding of reality or from threats to social acceptance and personal identity would be consistent with modern motivational theories of social influence and attitude change that consider a variety of motivations underlying influence (Chaiken, Giner-Sorolla, & Chen, 1996; Cialdini & Trost, 1998; Prislin & Wood, in press). Whether these threats are central to the experience of dissonance or only moderators of dissonance effects awaits additional research.

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