DECISION MAKING STYLE DIVERSITY AND FAULTLINES IN TEAMS

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Psychology

by

Dinora R. Fitzgerald

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The thesis of Dinora R. Fitzgerald was reviewed and approved* by the following:

Susan Mohammed  
Associate Professor of Psychology  
Thesis Advisor

Sam Hunter  
Associate Professor of Psychology

Stephanie Shields  
Professor of Psychology and Women’s Studies

Gul Kremer  
Professor of Engineering Design

Mel Mark  
Professor of Psychology  
Head of the Department of Psychology

*Signatures are on file in the Graduate School
ABSTRACT

As the workplace continues to become increasingly diverse and complex, understanding how multifaceted forms of diversity affects team processes and performance is crucial. This study addresses how rational and spontaneous decision making style diversity affects process conflict within teams and how that process conflict then affects team performance. Additionally faultlines formed by the alignment of decision making style diversity and gender diversity is examined as a moderator of the decision making style diversity to process conflict relationship. Conflict resolution is examined as a moderator of the process conflict to team performance relationship. The sample was 300 individuals in 86 teams enrolled in an Introduction to Engineering Design course at a large mid-Atlantic University. Participants filled out paper-and-pencil surveys after their team had completed their first group project and performance was measured by the grade provided by the instructor on the first project. Moderated hierarchical regression was used to test the hypotheses. While none of the hypotheses were supported, ancillary analyses indicate that the relationship between group composition and process complex is complex, as is the relationship between process conflict and group performance. Implications for practices and research are discussed as well as possible future directions.
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Chapter 1

INTRODUCTION

As workforce diversity continues to grow, understanding the challenges and opportunities that go hand-in-hand with that diversity becomes increasingly important. Traditional research on team diversity has focused primarily on the dispersion of demographics, personality traits, or attitudes and values within a team (Horwitz & Horwitz, 2007; Mathieu, Maynard, Rapp, & Gilson, 2008). However, differences in cognitive style have been under-researched, specifically decision making style, which refers to individuals’ preferences in the way they approach and choose actions in response to a particular situation (Scott & Bruce, 1995).

There is a dearth of information on how decision making styles influence real world environments, particularly in reference to how they develop and manifest in groups (Kozhevnikov, 2007). Because most group tasks require that group members make decisions and come to agreement on plans and ideas, decision making style is likely to emerge as a salient characteristic early in a group’s lifespan. Therefore, this research will examine the effects of the deep-level diversity characteristic of decision making style. Since decision making styles affect the way that individuals approach tasks, diversity in decision making style may lead to disagreements regarding how work should be accomplished in a team.
Process conflict refers to disagreements regarding the way a task should be accomplished (Jehn & Bendersky, 2003) and is of particular interest because it has been found to have a long-lasting impact on teams when it occurs early in their lifespans, which was not found to be the case with other forms of conflict (Greer, Jehn, & Mannix, 2008). Additionally, process conflict has been examined less often than relationship and task conflict so less is known about how process conflict influences team outcomes and processes as well as what variables may serve as antecedents to process conflict (de Wit, Greer, & Jehn 2012). Therefore, this study will examine the impact of decision making style diversity on process conflict.

Past research has found inconsistent relationships between team diversity and team outcomes (Horwitz & Horwitz, 2007), suggesting the presence of moderators in the diversity-performance relationship as well as contextual factors that may serve as boundary conditions for this relationship. Faultlines, which are hypothetical dividing lines that may emerge in a group based on alignment of diversity characteristics (Lau & Murnighan, 1998), provide an alternative view of the influence of diversity in groups. Faultlines offer a potential explanation for previous inconsistencies in diversity research because in addition to examining team diversity, faultlines also examine the alignment of team member characteristics. Faultlines can explain why certain team configurations of decision making styles may lead to increased process conflict in some teams even when compared to teams that have similar levels of diversity in decision making style.

In addition to examining antecedents and moderators of process conflict, this study also examines the effect of process conflict on group performance. The relationship between process conflict and group-level outcomes such as performance has typically
been found to be negative (Behfar, Mannix, Peterson, & Trochim, 2011; de Wit et al., 2012). However, the relationship between process conflict and performance has been found to be inconsistent (e.g., Goncalo, Polman, & Maslach, 2010; Greer et al., 2008). A possible explanation for the discrepancies in group outcome results in the team conflict literature could be that boundary conditions of the relationship between conflict and group outcomes are not always considered. For example, the extent to which the team has resolved underlying conflicts could have a significant impact on team outcomes. Behfar, Peterson, Mannix and Trochim (2008) state that “conflict resolution strategies in groups ought to receive greater attention in predicting team performance than has been the case to date” (p. 186). This study answers the call issued by Behfar and colleagues by including conflict resolution as a moderator of the process conflict-group performance relationship.

This research seeks to contribute to the literature in several ways. First, this study will expand the types of diversity commonly investigated in the team diversity literature to include decision making style. Despite being ignored in the literature, differences in decision making styles among team members can potentially be the source of tension and disagreement in teams and negatively affect team performance. Appelt, Milch, Handgraaf, and Weber (2011) also note the need to determine how individual differences in cognitive style, such as decision making styles, interact with situational factors. Team diversity and faultlines are situational factors that may influence the effects of decision making styles that this study will examine.

Second, the current work will expand the nomological network of process conflict, which has been under-researched relative to other types of conflict despite being
shown to have detrimental and long-lasting effects on team performance (de Wit et al., 2012; Greer et al., 2008).

Third, whereas the vast majority of faultline literature focuses on surface-level attributes (Thatcher & Patel, 2012), this study will expand to consider the interplay between both surface-level (e.g., gender) and deep-level (e.g., decision making style) dimensions, thereby providing a more sophisticated analysis. Fourth, although faultlines are generally conceptualized as independent variables, this study proposes that faultlines will act as a moderator of the relationship between team diversity and process conflict. Fifth, the current work will address the inconsistent findings of the relationship between process conflict and team performance by examining the moderating influence of conflict resolution. The study model is depicted in Figure 1-1.

![Figure 1-1: Study Model.](image-url)
Literature Review

Team Diversity

Surface-level diversity includes overt differences in individual characteristics that can be discerned within minutes of meeting a new individual, including race, gender and age (Harrison, Price, & Bell, 1998; Milliken & Martins, 1996). Surface-level traits can also include informational diversity such as organizational tenure and functional background. These easily observable demographic differences are more likely to influence team members through social categorization (Bell, Villado, Lukasik, Belau, and Briggs, 2011; Tajfel & Turner, 1986; Turner, 1985). Several meta-analyses have found that demographic diversity has a small negative relationship with team performance (e.g., Bell et al., 2011; Horwitz & Horwitz, 2007; Webber & Donahue, 2001).

Less frequently studied than demographic diversity, deep-level diversity refers to differences in team members’ psychological attributes, such as an individual’s personality, values, and attitudes (Harrison et al., 1998; Harrison, Price, Gavin, & Florey, 2002). These differences are more likely to become apparent after long or repeated interactions with an individual (Harrison et al., 2002). Bell (2007) found that many deep-level composition variables were more strongly related to performance in field settings than in lab settings, indicating the importance of examining deep-level characteristics in contexts where they have a chance to emerge naturally as they become salient to team members. Whereas deep-level composition variables, such as Big Five personality traits and preference for teamwork, have received the most attention (Bell, 2007), diversity
researchers have called for future research to examine a wider range of deep-level traits (Harrison et al., 1998; Van Knippenberg & Schippers, 2007). The current study will answer this call by examining decision making style diversity.

**Decision Making Style**

Cognitive style consists of a broad group of individual differences and refers to the way people perceive, think, solve problems, learn, and interact with their external environment (Witkin & Goodenough, 1977). During the 1950s to 1970s, there was a large focus on cognitive style with numerous types being identified (Kozhevnikov, 2007). In 1988, Keefe compiled a list of 40 distinct cognitive styles. Several commonly studied cognitive styles include: field independence and field dependence (level of dependency on surroundings when participating in perceptual tasks, Witkin et al., 1954), impulsivity-reflectivity (preference to respond to cues quickly or after a period of reflection; Kagan, 1966), and verbalizer-visualizer (reliance on either imagery or verbal strategies during information processing; Richardson, 1977). Because of the extensive variety of cognitive styles, Allinson and Hayes (1996) created the Cognitive Style Index, which places individuals on a continuum based on their cognitive preferences. The purpose of this spectrum was to group cognitive styles more broadly, rather than focusing on varied and specific styles. Intuition lies on one end of the spectrum and refers to individuals who rely on “immediate judgment based on feeling and the adoption of a global perspective” (p. 122). Conversely, analysis, which lies on the other end of the continuum, refers to
individuals who rely on “judgment based on mental reasoning and a focus on detail” (p. 122).

One specific form of cognitive style is decision making style (Kozhevnikov, 2007) which is the characteristic way in which individuals perceive and respond to decision-making tasks and the patterns that emerge when individuals are exposed to these tasks (Driver, 1979; Harren, 1979). According to Scott and Bruce (1995), there are five basic types of decision making styles: rational (logical evaluation of possibilities and alternatives), intuitive (a reliance on feelings and intuitive), dependent (a reliance on advice and suggestions from others), avoidant (efforts to evade making a decision), and spontaneous (a focus on making decisions quickly). Individuals typically use all five styles to different degrees, with one style being dominant (Scott & Bruce, 1995).

Several studies have examined decision making styles as an individual difference. For example, Thunholm (2004) found that one’s likelihood to engage in rational, dependent, and avoidant decision making styles was related to the individual’s self-evaluations, whereas spontaneous and intuitive decision making style were not. Thunholm’s results suggest that internal influences, such as self-regulation, may affect one’s decision making style. Hunt, Krzystofíak, Meindl, and Yousry, (1989) demonstrated that individuals displayed a preference for decisions made by others who had a similar cognitive style (determined by the analytic-intuitive index) as themselves. Curseu and Schruijer (2012) examined outcomes of various decision making styles and found that rational style positively predicted one’s tendency to engage in rationality in decision making and negatively predicted indecisiveness. Intuitive decision making style in managers has been found to positively affect financial and non-financial performance
(Sadler-Smith, 2004), and emotional awareness had a positive effect on intuitive decision making style (Sinclair, Ashkanasy, & Chattopadhyay, 2010).

Cognitive style in general, and decision making style in particular, are not often examined in a group context (Kozhevnikov, 2007; Sadler-Smith, 2004). In one of the few team-level studies on decision making styles, Armstrong and Priola (2001) found that teams composed of highly intuitive individuals were more likely to engage in both social-oriented and task-oriented behaviors than teams composed only of highly analytic individuals. Although Armstrong and Priola examined mean-level differences in decision making style, the focus of the present study is on diversity of decision making style.

Due to the autonomous or semi-autonomous nature of many team tasks, differences in decision making styles are likely to emerge quickly in a team’s lifespan since team members begin to exhibit different tendencies when deciding the best way to reach consensus on how to proceed with the team’s task. These differences are likely to persist and become increasingly salient as the team continues to work together and the number of decisions the team must reach an agreement on increases. Therefore, understanding how the compositional effects of decision making style diversity affect group processes and outcomes is important for furthering the deep-level diversity literature.

Priola, Smith, and Armstrong (2004) found that teams that were heterogeneous in terms of where group members were on the Cognitive Style Index reported more disagreements than homogeneous teams. In an experimental study, van Knippenberg, Haslam, and Platow (2007) manipulated the diversity of a fictional cognitive style in groups (some group members were assigned as being Type H and others as Type P and
were told that Type H individuals were prone to coming up with different ideas than Type P individuals), and found that perceived diversity in this style negatively affected group identification. While previous research suggests that cognitive styles, such as decision making styles, can affect group-level outcomes, the present study will expand upon this past research to examine decision making style diversity and faultlines in student groups interacting over the course of a semester.

Because of the focus on group-level diversity in decision making, two disparate decision making styles will be emphasized in the current research: rational and spontaneous. Based on the work of Allinson and Hayes (1996), the decision making style furthest on the “analytic” spectrum is rational, which indicates a reliance on thorough information searches and logical evaluation of alternative options (Scott & Bruce, 1995). By its very nature, the emphasis on detail and comprehensiveness requires a longer time frame than a spontaneous style which is characterized by fast decisions that are likely not based on careful consideration of facts (Scott & Bruce, 1995). Thus, rational and spontaneous are conflicting styles that introduce a temporal dimension to the study of decision making that is not evidenced in other style combinations and has not previously been examined in teams.

Because individuals who employ a rational style are likely to conduct a systematic evaluation of various options and consequences using all available information, whereas an individual using a spontaneous style merely wants to reach decisions quickly, frustration may result when individuals are working with group members who have opposing styles. A team with diverse decision making styles may therefore experience
negative effects of decision making style diversity on group processes and outcomes through mechanisms such as increased conflict.

While intuitive decision making style is commonly contrasted with rational decision making style (Appelt et al., 2011; Koele & Guus, 2010; Sadler-Smith, 2004), several studies that examine the General Decision-Making Style Inventory developed by Scott and Bruce (1995) have found psychometric inconsistencies with the intuitive decision making style subscale (e.g., Curseu & Schruijer, 2012; Loo, 2000) that have not been present in the evaluation of the other decision making style subscales. For example, in a confirmatory factor analysis conducted by Loo (2000), several fit indices demonstrated that the intuitive style moderately fit the data (CFI = .897; AGFI = .819) and other fit indices indicated that intuitive style was a poor fit for the data (CMIN/df = 8.01; RMSEA = .178). Conversely, all the fit indices indicated that the other four decision making styles, including rational and spontaneous were a very good fit with the data. This suggests that focusing on spontaneous rather than intuitive decision making style may provide methodological strengths when examining decision making style diversity.

**Process Conflict**

**Definition**

Intragroup conflict can be divided into three distinct types: relationship conflict, task conflict, and process conflict (Jehn 1994, 1995; Jehn & Mannix, 2001). Relationship
conflict arises from disagreements stemming from interpersonal issues, such as different attitudes and values. Task conflict occurs when there are disagreements pertaining to aspects of the group’s assignment. Process conflict develops when the group disagrees over how to get a task done, such as arguments based on how to divide the responsibilities of a group task (Jehn, 1997; Jehn & Mannix, 2001).

**Outcomes**

Process conflict has not been examined as frequently as either task or relationship conflict (de Wit et al., 2012); however, understanding how process conflict affects groups is just as important as understanding the effects of the other two forms of conflict. Several empirical studies have found that process conflict is negatively related to group performance (e.g., Behfar et al., 2011; Greer, Caruso, & Jehn, 2011; Passos & Caetano, 2005; Jehn & Mannix, 2001) and these findings have been supported by a recent meta-analysis (de Wit et al., 2012). However, research by Goncalo et al. (2010) indicated that the relationship between process conflict and group performance may not be so straightforward. Goncalo and colleagues found that when process conflict occurred early in a group’s lifespan, it had a positive relationship with group performance; however, when process conflict occurred later in a group’s lifespan, it had a negative relationship with performance. Conversely, Greer et al.’s (2008) results indicated that when process conflict occurred early in a team’s lifespan, the conflict had a long-lasting negative effect on the team for the remainder of its time working together. Specifically, early process
conflict was positively related to increased levels of both task and relationship conflict over the course of the team’s interaction (Greer et al., 2008).

Process conflict has also been found to have negative effects on other aspects of team interaction, including increased negative emotions such as guilt (Chen & Ayoko, 2012), decreased team creativity and innovation (Martins & Shalley, 2011; Matsuo, 2006), decreased team viability (Jehn, Greer, Levine & Szulanski, 2008), and decreased group member satisfaction and group coordination (Behfar et al., 2011). Moderators of the process conflict to group performance relationship include conflict resolution (Behfar et al., 2008; Greer et al., 2008), team interpersonal power congruence (Greer et al., 2011), and whether the team is a face-to-face or virtual team (Martinez-Moreno, Gonzalez-Navarro, Zornazo, & Ripoll, 2009).

**Antecedents**

Several empirical studies have also examined possible antecedents of process conflict. For example, the emergence of collective efficacy early in a group’s lifespan was found to have a negative relationship with early process conflict (Goncalo et al., 2010). Since Goncalo and colleagues also showed that surface-level diversity was negatively associated with early collective efficacy, their findings suggest that there may be a possible positive relationship between surface-level diversity and process conflict (mediated by collective efficacy). This is partially supported by Martins and Shalley (2011) who demonstrated that age diversity, but not other forms of surface-level diversity, had a positive relationship with the level of process conflict in groups. Other
forms of diversity, such as value diversity, have also been demonstrated to increase the levels of process conflict in groups (Jehn et al., 1999).

**Diversity**

Research suggests that group diversity can have a positive effect on increased levels of intragroup conflict (e.g., Choi & Sy, 2010; Jehn, Northcraft, & Neale, 1999; Pelled Eisenhardt, and Xin, 1999). For example, demographic diversity characteristics such as race and tenure were positively related to relationship conflict, and functional background diversity was positively related to task conflict (Pelled et al., 1999). Similarly, Choi and Sy (2010) found that faultlines based on different characteristics (relation- and task-based) were significantly related to relationship and task conflict, respectively. Additionally, Jehn et al. (1999) demonstrated that informational diversity was positively related to task conflict and that there was an interaction between deep-level diversity (values) and surface-level diversity (social categories) on the relationship between informational diversity, task conflict, and group performance. Their findings also provided support for the negative relationship between value diversity and relationship conflict. Viewed holistically, the results of these studies provide support for a variety of both surface-level and deep-level characteristics on multiple forms of conflict. However, from reviewing the literature on intragroup conflict, it is clear that there is a disproportionate amount of empirical research examining diversity and both relationship and task conflict and a relative paucity of studies on diversity and process conflict.
To this author’s knowledge, no previous empirical work has examined deep-level diversity as an antecedent to process conflict. However, it is likely that diversity based on process-oriented traits, such as the way in which one makes decisions, may lead to increased process conflict. Furthermore, understanding the effects of deep-level diversity on conflict is crucial because increased knowledge of compositional effects on conflict can help create future groups that are seeded (using a systematic method to place members on a team, as suggested by Humphrey, Hollenbeck, Meyer, & Ilgen 2007) in a way that optimizes performance. For this reason, studying diversity as an antecedent to process conflict is important as knowledge of these effects can help in forming teams in a way that allows them to be more successful in the long run.

**Faultlines**

*Definition and Conceptualization*

Traditional research on team diversity has focused primarily on examining traits in isolation of one another. To address the need to examine the possible effects of interactions between multiple types of diversity, a stream of research on faultlines in teams has emerged (Thatcher & Patel, 2012). Faultlines “[depend] on the compositional dynamics of the multiple demographic attributes that can potentially subdivide a group. Faultlines divide a group’s members on the basis of one or more attributes” (Lau & Murnighan, 1998, p. 325). A team of four members where two members are African-American women and two members are Caucasian men has the same dispersion of
diversity characteristics as a team where there is one African-American man, one African-American woman, one Caucasian man, and one Caucasian woman. Despite the demographic diversity remaining constant between these two teams, the alignment of race-gender diversity characteristics in the first team causes it to more readily break into subgroups, leading to a variety of possible outcomes, one of which is decreased performance (Lau & Murnighan, 1998; Thatcher & Patel, 2011).

If a researcher focused only on diversity, the teams in the above example would appear to be equal in terms of race and gender characteristics. This lack of detailed description may lead to confusion about why diversity had positive effect for one team, but negative for the other. Faultlines are an important extension and emerging construct in the diversity literature because they help to account for the effects of compositional factors above and beyond traditional diversity (Gibson & Vermeulen, 2003; Tuggle, Schnatterly, & Johnson, 2010). Tuggle et al. (2010) found that informational diversity in executive boards predicted attention to entrepreneurial issues; however, when they examined, the model with informational faultlines as an input rather than diversity, they found that weak faultlines improved attention to entrepreneurial issues and strong faultlines reduced the attention to these issues. By examining faultlines, Tuggle and colleagues were able to understand how informational differences affected team outcomes in much more detail than when they just examined diversity. Gibson and Vermeulen (2003) examined the effect of demographic subgroups on team learning behavior and found that team demographic heterogeneity had a curvilinear (U-shaped) relationship with learning behavior only after the authors corrected for subgroup strength. Subgroup strength also had a curvilinear relationship with learning behavior; however,
the relationship was in the opposite direction (inverse U-shaped) of the relationship between heterogeneity and learning behavior. The differential findings of the relationship between heterogeneity and learning behavior and the relationship between subgroup strength and learning behavior indicates that there are important effects of subgroups that could not be identified by analyzing diversity alone. Therefore, faultlines help to clarify the relationship between diversity and group outcomes.

The constructs and relationships used in faultline research can be broadly defined as inputs, moderators/mediators, and outputs. Faultlines are most commonly examined as an input, but rarely as a moderator (Thatcher & Patel, 2012). As an exception, Bezrukova, Spell, and Perry (2010) found support for the moderating effect of faultlines on interpersonal injustice and outcomes such as anxiety and depression. Bezrukova, Jehn, Zanutto, and Thatcher (2009) demonstrated that faultline distance (the level of difference between subgroups) moderated the relationship between faultline strength (demographic alignment between members within a group) and group performance. When faultline distance was high, the negative effect of faultline strength on group performance was increased. The current study adds to this work by examining faultline strength as a moderator of the decision making style diversity to process conflict relationship.

When examining faultlines, the most commonly studied output is group performance (e.g., Bezrukova et al., 2009; Bezrukova, Thatcher, Jehn, & Spell 2011; Choi & Sy, 2010; Homan, Van Knippenberg, Van Kleef & De Dreu 2007b; Jehn & Bezrukova, 2010; Lau & Murnigham, 2005; Meyer, Chemla & Schermuly, 2011). However, additional group outcomes have been examined, including psychological distress (Bezrukova et al., 2010), group-level organizational citizenship behaviors (Choi
& Sy, 2010), team satisfaction (Cronin, Bezrukova, Wingart, & Tinsley, 2011; Homan, Van Knippenberg, Van Kleef & De Dreu, 2007a; Jehn & Bezrukova 2010; Lau & Murnigham, 2005), team effectiveness (Cronin et al., 2011), team learning behavior (Gibson & Vermeulen, 2003; Lau & Murnigham, 2005), creativity (Pearsall, Ellis, & Evans, 2008), and decision making quality (Rico, Molleman, Sanchez-Mananares, & Van der Vegt, 2007; Rico, Sanchez-Manzanares, Antino, & Lau, 2012).

**Theoretical Framework**

Lau and Murnighan (1998) built their theory of faultlines on self-categorization theory and social identity theory, which both propose that individuals have a tendency to form groups (or subgroups) based on similar demographic traits or other salient characteristics (Tajfel & Turner, 1986; Turner, 1985). Both self-categorization theory and social identity theory describe why team members are more likely to form subgroups with other members that have similar salient attributes than they are with team members who differ from them in salient ways. Subsequent researchers have expanded on these foundations by including additional theories such as cognitive resource perspectives (Bezrukova et al, 2009), equity sensitivity (Jehn & Bezrukova, 2010), expectation states theory (Molleman, 2005; Rico et al., 2012), and upper eschelon theory (Tuggle et al., 2010).

In their original theoretical development of demographic faultlines, Lau and Murnighan (1998) put forth five propositions about group faultlines. First, the formation of subgroups increases in likelihood when the demographic characteristics are salient to
the group’s task. For example, in groups working on a highly gendered task, such as designing weaponry, gender may be more salient than for groups working on a less gendered task, such as designing a toothbrush. Thus, the weaponry group is more likely to form subgroups based on gender. Second, subgroups are more likely to persist and continue to affect the group once they have been formed. This implies that if gender faultlines occur in the weaponry group, the negative effects associated with those faultlines will be sustained over the course of their project. Third, over time, the salience of demographic characteristics in groups that have not subdivided based on demographic characteristics will decrease. This means that surface-level characteristics will be less likely to cause subgroup formations in the toothbrush group if they did not occur within an initial timeframe. This proposition is supported by the work of Harrison and colleagues (1998; 2002) who found that the effects of surface-level diversity on team outcomes decrease over time. Fourth, majority subgroups will hinder the expression of minority opinions. Fifth, when subgroups have comparable power, they are likely to experience intense conflict that, if overcome, will reduce the likelihood of a similar conflict disrupting the group in the future.

**Measurement of Faultlines**

The novel nature of the faultline construct has led to a variety of needs within the field. For example, there is a basic lack of theoretical development beyond that originally proposed by Lau and Murnighan (1998) and little consensus over the operationalization of faultlines. There are several ways that faultlines are measured, but the most common is
by examining faultline strength, which is a measure of within-subgroup similarity (Lau & Murnighan, 1998). For example, if a faultline formed based on age and one subgroup included individuals that were 20, 26, and 32 years old, and another subgroup formed that included individuals who were 60, 62, and 62 years old, the second group would have a higher faultline strength than the first group. Typically, as faultline strength increases, group outcomes such as performance decrease (Thatcher & Patel, 2011). Another type of faultline measurement is faultline distance which is a measure of between-subgroup differences (Bezrukova et al., 2009). For example, if Team A had a subgroup of members who were 32, 33, and 36 years old, and another subgroup of individuals who were 40, 40, and 42 years old and Team B had a subgroup of members who were 22, 23, and 26 years old and another subgroup of individuals who were 60, 60, and 62 years old, Team B would have a greater faultline distance than Team A. Because each measure brings a slightly different perspective to the subgroup relationships, including both measures is important. The faultline measurement method developed by Shaw (2004) combines the level of subgroup alignment (the extent to which members within a subgroup are similar to each other, traditionally referred to as faultline strength) with a measure of cross-subgroup alignment, which examines the degree of similarity between groups (which has also been referred to as faultline distance). Because of its advantages, this measure will be used to measure faultlines in the current study.
Types of Faultlines

Just as with diversity, faultlines can be divided into surface-level and deep-level characteristics. Demographic faultlines focus on the surface-level diversity, characteristics that are noticeable from an initial interaction such as race, gender, and age (Harrison et al., 2002). These are also commonly referred to by other terms such as social-category faultlines (Bezrukova et al., 2009), and/or relation-oriented faultlines (Choi & Sy, 2010). The other most common type of faultline conceptualization is informational, also referred to as information-based or task-related faultlines (Choi & Sy, 2010; Bezrukova et al., 2009; Bezrukova et al., 2010). These types of faultlines focus on more task-related attributes such as team tenure and educational background. While faultline research has traditionally focused only on the alignment of demographic characteristics (Lau & Murnighan, 1998), the study of information-based faultlines is becoming increasingly common (Thatcher & Patel, 2012), yet few studies have examined deep-level traits.

Surface-Level Faultlines

The most commonly examined diversity characteristics in the faultline literature are surface-level variables including: age, gender, race, and ethnicity (e.g., Bezrukova et al. 2009; Bezrukova et al., 2010, Choi & Sy, 2010; Gibson & Vermeulen, 2003; Homan et al., 2007b). It is also worth noting that there are inconsistencies in the way that various authors categorize faultlines. For example, characteristics such as organizational tenure or level of education are sometimes referred to as demographic faultlines (e.g., Gibson &
Vermeulen, 2003; Li & Hambrick, 2005; Rico et al., 2007) and other times referred to as informational faultlines (Bezrukova et al., 2009; Bezrukova et al., 2011; Homan et al., 2007a; Sawyer, Houlette, & Yeagley, 2006). Despite this inconsistent categorization, informational diversity should not be grouped as deep-level diversity because characteristics such as organizational tenure and educational background are not directly indicative of differences in personality, values, or beliefs. Thatcher and Patel (2011) found that the more traditional surface-level categories such as gender and racial diversity increased demographic faultline strength more than functional background diversity, educational background diversity, tenure diversity, or age diversity. This suggests that focusing on gender and/or racial diversity is important and can have a significant impact on group functioning.

Many studies have found support for the negative relationship between surface-level faultlines and team performance (e.g., Bezrukova et al., 2009; Choi & Sy, 2010; Homan et al., 2008; Homan et al., 2007b; Jehn & Bezrukova, 2010; Lau & Murninghan, 2005; Li & Hambrick, 2005; Meyer et al., 2011; Rico et al., 2012; Sawyer et al., 2006). These findings have been supported by a recent meta-analysis on demographic faultlines which found that there was a significant negative relationship between demographic faultline strength and team performance ($\rho = -0.37$, 95% CI = -0.43 – -0.31; Thatcher & Patel, 2011).

However, research has also shown that certain emergent states or group processes may mediate the relationship between demographic faultline strength and group performance. The most commonly studied mediator of this relationship has been intragroup conflict, particularly task and relationship conflict (e.g., Jehn & Bezrukova,
2010; Li & Hambrick, 2005; Molleman, 2005; Pearsall et al., 2008). For example, Choi and Sy (2006) found that the relationship between relation-oriented faultlines (those based on gender, age, and race) and performance was mediated by relationship conflict and the relationship between task-related faultlines (those based on tenure) was mediated by task conflict. The meta-analysis on demographic faultlines conducted by Thatcher & Patel (2011) also supports the notion that there is a positive relationship between demographic faultline strength and increased task and relationship conflict. To this author’s knowledge, there are no studies that have examined the relationship between faultlines and process conflict. Given that process conflict is emerging as a negative driver of team performance (de Wit et al., 2012), the present research will examine faultlines as a moderator of the decision making style diversity and process conflict relationship.

Deep-Level Faultlines

The vast majority of faultline literature has focused on differences in surface-level diversity (Thatcher & Patel, 2012), leaving a noticeable gap in knowledge relating to the effects of deep-level faultlines on team performance. Although limited, some researchers have included various types of deep-level diversity characteristics in their studies of faultlines (e.g., Homan et al., 2007a; Homan et al., 2007b; Meyer et al., 2011; Molleman, 2005; Rico et al., 2007). Some of these studies have manipulated team composition to create faultlines, whereas others have measured deep-level diversity in pre-assembled teams. For example, in several different laboratory studies, participants were given false
personality tests and were assigned a fabricated personality type based on their gender, rather than their actual responses (e.g., Homan et al., 2007a; Homan et al., 2007b; Meyer et al., 2011). The purpose of this manipulation was to create a salient faultline split along a group’s gender composition. In all studies where this technique was used, these fabricated personality types were found to have an effect on the formation of faultlines. While these studies did not focus on genuine deep-level differences and essentially made the differences surface-level by presenting them to the group at the outset of the experiment, the results suggest that group members did view personality differences as salient differences during faultline formation. For example, Homan and colleagues (2007a; 2007b) created faultlines based on gender and falsified personality types. In lab studies, the results indicated that teams with faultlines (with alignment between gender differences and personality differences) had more negative effects on outcomes such as satisfaction, team conflict, and team climate than the homogenous groups.

A small subset of the faultline literature has examined the effects of actual deep-level differences on faultlines in teams. Homan et al (2008) and Homan, Greer, Jehn, and Koning (2010) found that the more positive group members’ diversity beliefs were, the less likely members were to perceive subgroups. Homan et al. (2010) also found that openness to experience had an effect on subgroup perception in intellectually-based group tasks. These findings suggest that certain Big Five personality characteristics as well as individual beliefs are salient and may be grounds for subgroup formation in teams.

To date, there are two major studies that have examined the effect of deep-level faultlines in a field setting. Rico and colleagues (2007) found that strong faultlines based
on educational background (which the authors categorized as a deep-level characteristic) and conscientiousness had negative effects on group performance when compared to groups with weak faultlines. However, Molleman (2005) did not find any effects of either personality faultlines or ability faultlines on group cohesion or conflict, although the author noted that methodological limitations may have affected the results. These mixed findings suggest that further research on the effect of deep-level faultline on group performance is necessary to gain a fuller understanding of faultlines in general. The findings also suggest that the deep-level characteristics of interest must be selected carefully in order to ensure that these differences actually emerge and are salient to group members. Certain deep-level characteristics that are likely to be salient in subgroup formation include differences in decision making style, which is often overlooked in both the faultline and team diversity literatures.

**Decision Making Style and Gender**

Combining surface- and deep-level characteristics is important because surface-level characteristics are likely to be salient to group members early in their interaction, while deep-level characteristics may be more salient later (Harrison et al., 2002). If subgroups already begin to form based on gender differences and those differences are later compounded by alignment with differences in decision making style, the effects of faultline strength on process conflict are expected to be stronger than if decision making style faultlines were being examined alone.
Thatcher and Patel (2011) found that gender diversity lead to the strongest levels of faultline strength, indicating the importance of including gender diversity in the faultline strength equation. Furthermore, gender based differences in power, political savvy, conflict management, and trust have been proposed to mediate the differences in how men and women make decisions in organizations (Klenke, 2003), suggesting that there may be an interaction between gender and decision making style or that subgroups may form based on both of these attributes.

Additionally, the sample comes from student engineering teams, a context in which gender is very salient, given the under-representation of women in this field (Beggs & Doolittle, 1993; Besterfield-Sacre, Moreno, Shuman, & Atman, 2001). Lau and Murnighan’s (1998) first proposition is that “the formation of conflicting subgroups becomes more likely when the demographic characteristics within a group form a faultline and are related to the group’s task” (p. 332). Since gender differences are salient to engineering students working on a task together, the formation that conflicting subgroups will form based on gender is likely. Additionally, because Lau and Murnighan’s (1998) second proposition, “for groups that must perform tasks that highlight potential faultlines, the strength and clarity of the groups’ faultlines are likely to accentuate subgroups’ salience... Once formed the subgroups are more likely to persist” (p. 332), refers to persistence of subgroups once formed, if surface-level differences (gender) are later compounded by deep-level differences (decision making styles) that align in the same way, the teams are likely to face persistent divisive differences. Therefore, this study will focus on faultline strength determined by rational and spontaneous decision making styles as well as gender.
Development of Hypotheses

Decision Making Style Diversity and Process Conflict

Diversity in decision making style is expected to be positively related to an increase in process conflict because disagreements about how a group should complete a task (Jehn & Mannix, 2001) is influenced by how one decides to approach his or her work, including how he or she makes decisions. Priola and colleagues (2004) found that those with a more analytic (or rational) cognitive style prefer to work in a structured environment and conduct a step-by-step analysis of tasks. In contrast, those on the intuitive end of the cognitive style spectrum, such as spontaneous decision makers, prefer an open environment and are more feeling oriented than logical. These diametrically opposed preferences for making decisions may cause process conflict because the spontaneous group members are likely to reach decisions and want to move on much faster than the rational group members. Decision making style diversity is thus likely to create process conflict any time a group must consider an ambiguous situation and reach a conclusion based on the information that is available to them. Additionally, previous research has found that individuals display a preference for decisions that were made by people with a congruent decision making style to themselves than decisions made by people with different decision making styles (Hunt et al., 1989). This finding suggests that individuals may have a preference to work with others with a similar decision making style. Hunt and colleagues’ (1989) results are also supported by the similarity-attraction paradigm which suggests homogenous teams are more productive than
heterogeneous teams because the shared attributions of homogenous team members leads to mutual attraction which can result in more efficient team processes (Byrne, 1971).

Priola and colleagues (2004) found that heterogeneous groups composed of members who identified as analytic and members who identified as intuitive, reported stronger and higher levels of disagreement than homogeneous groups of either style. Furthermore, interviews with group members revealed that members in heterogeneous groups were aware of differences or similarities in their thought processes when compared to other members of the group. Group members also stated that the similarities and/or differences in thought processes affected the way that the group functioned. This supports the notion that differences in decision making style are salient and obvious to group members and that high levels of differences may lead to increased differences and conflict in a team. Although Priola and colleagues (2004) contrasted rational and intuitive styles, similar dynamics may occur between rational and spontaneous members. Individuals who prefer time to thoroughly think through alternatives (rational) are likely to be frustrated when working with those who prefer to come to decisions in a speedy manner (spontaneous) and vice versa. Thus, it is expected that diversity in decision making style will lead to increased process conflict.

*Hypothesis 1a:* Team-level diversity in rational decision making style will be positively related to process conflict.

*Hypothesis 1b:* Team-level diversity in spontaneous decision making style will be positively related to process conflict.
Moderating Effect of Faultlines

Faultlines are generally conceptualized as independent variables (Thatcher & Patel, 2012), not as moderators. However, examining faultlines as a moderator of the relationship between diversity and performance may aid in explaining the inconsistent findings in the team diversity literature because the relationships may be stronger when faultlines are present than when they are not.

It is hypothesized that faultline strength will moderate the relationship between decision making style diversity and process conflict because faultline strength will increase as various traits align within a group. Therefore, if gender aligns with decision making style (for example, the women tend to use a rational style and men tend to use a spontaneous style), faultline strength will be stronger than if decision making style diversity is not aligned with gender diversity. The increase in faultline strength is indicative of diversity being more divisive among group members, thus leading to increased levels of conflict.

Groups with high faultline strength are more likely to break into subgroups based on their team diversity than groups with low faultline strength, which may shorten their sense-making process and make them less amenable to hearing the ideas of their teammates (Homan et al., 2007b; Lau & Murnighan, 1998). Therefore, faultline strength based on these attributes will moderate the relationship between both rational and spontaneous decision making style diversity with process conflict. This alignment adds another dimension to the diversity that further explains the negative relationship with process conflict.
Conversely, low faultline strength in a team indicates that decision making style diversity is not aligned with gender diversity. Because surface-level differences have less of an effect after a team has been working together over time, the salience of the gender differences are not as likely to be reinforced by differences in decision making style. Homan et al. (2007b) found that informational diversity enhanced group performance when it was crossed with existing faultlines because this distribution increased information elaboration, satisfaction, and team climate. It is proposed that teams with low faultline strength will operate in a similar way: team members may be more willing to enter into discussion with other team members with different decision making styles if they have already formed a subgroup with them and feel comfortable. This openness to varied decision making styles would therefore decrease the negative effects of decision making style diversity on process conflict.

*Hypothesis 2a:* Faultline strength based on spontaneous and rational decision making style and gender will moderate the relationship between rational decision making style diversity and process conflict. When faultline strength is high, the negative relationship between rational decision making style diversity and process conflict will be stronger than when faultline strength is low.

*Hypothesis 2b:* Faultline strength based on spontaneous and rational decision making style and gender will moderate the relationship between spontaneous decision making style diversity and process conflict. When faultline strength is high, the negative relationship between spontaneous decision making style diversity and process conflict will be stronger than when faultline strength is low.
Process Conflict and Group Performance

Process conflict in groups often emerges based on disagreements surrounding how to distribute, schedule, and complete work (Jehn, 1997). The implicit coordination difficulties that precede process conflict can have long lasting implications for team performance (Gevers, Rutte, & van Eerde 2006; Janicik & Bartel, 2003). Greer et al. (2008) found that process conflict has long lasting effects on team interactions and is positively related to other types of conflict and negatively related to performance. Additionally, previous research has found that process conflict can increase the amount of negative emotions in a group (Greer & Jehn, 2007). Negative affect combined with the detrimental effects of coordination difficulties that may precede process conflict may therefore hinder team performance.

Several empirical studies have found evidence that supports the negative relationship between process conflict and group performance. For example, in their longitudinal study of the effects of intragroup conflict on group performance Jehn and Mannix (2001) found that high performing groups had low levels of process conflict. Greer et al. (2011) examined the relationship between team power, intragroup conflict, and group performance and also demonstrated that process conflict was negatively related to group performance. Passos and Caetano (2005) supported the negative relationship between process conflict and group performance and that the relationship was mediated by perceptions of team decision effectiveness. A recent meta-analysis also found support for the negative relationship between process conflict and group
performance ($\rho = -0.15$, 95% CI $= -0.25 - -0.06$; de Wit et al., 2012). Replicating previous empirical work, the following is hypothesized:

_Hypothesis 3:_ Process conflict will be negatively related to team performance.

**Moderating Effect of Conflict Resolution**

Conflict resolution refers to group members’ perception that intragroup conflict was resolved (Jehn et al., 2008) and can be applied to all forms of conflict, including process conflict (Greer et al., 2008). Conflict resolution may moderate the effect of process conflict on group performance because groups that are able to resolve their conflicts are more likely to overcome their issues and thus be less affected by conflict (Greer et al., 2008). Jehn et al. (2007) found that in teams that were able to resolve conflicts effectively, process conflict was not as negatively related to the emergence of trust and respect as it was in teams that did not resolve their conflicts. Jehn and colleagues’ findings suggest that conflict resolution allows teams to overcome the negative effects of process conflict, therefore maintaining the team members’ ability to work together effectively. This is in line with previous work which found that conflict resolution can help to mitigate the negative effects of conflict by increasing team effectiveness, efficiency, and fairness (Tjosvald, 1991; Thomas, 1992).

Behfar et al. (2008) examined the various strategies that teams use in managing conflict and found that teams that effectively manage conflict had three strategies in common. First, team members focused on the content of interpersonal interactions rather than delivery style. This may help teams with conflicts originating from decision making
style diversity if team members focused on the content of the decisions rather than the frustration or difficulties that may result from diverse styles. Second, team members explicitly discussed reasons behind decisions regarding the distribution of tasks. This might be difficult for team members with a preference for spontaneous decision making styles; however, if the team had a high level of conflict resolution, it may indicate that they were able to overcome these differences. Third, teams assigned tasks to members based on relevant experience rather than other methods such as volunteering or convenience. Again, this may help resolve conflict in teams with diverse decision making styles because it would allow members to focus on the outcomes of their decisions (i.e., who is the best person for completing a certain task), rather than the style used when making those decisions. The findings of Behfar and colleagues indicate that even if diversity in decision making styles causes initial process conflict in teams, teams that are able to employ certain strategies to resolve the conflict are less likely to be affected negatively by its occurrence.

Although previous research has found support for the moderation of conflict resolution on the relationship between process conflict and group performance (Behfar et al., 2008; Greer et al., 2008), Behfar and colleagues (2008) discuss the importance of giving more attention to the role of conflict resolution in the team performance literature. Answering this call, this study also proposes that conflict resolution will moderate the negative effect of process conflict on group performance.

*Hypothesis 4: Conflict resolution will moderate the relationship between process*
conflict and team performance. When conflict resolution is high, process conflict will have a weaker negative relationship with team performance than when conflict resolution is low.

**Mediating Effect of Process Conflict**

Due to the nature of Hypothesis 1 (rational and spontaneous decision making style diversity will be positively related to process conflict) and Hypothesis 3 (process conflict will be negatively related to group performance), it follows that there will be a mediating effect for process conflict. Intragroup conflict is an interpersonal team process that has commonly been examined as a mediator between team-level inputs and outcomes (Mathieu et al., 2008).

*Hypothesis 5a:* Process conflict mediates the relationship between rational decision making style diversity and group performance.

*Hypothesis 5b:* Process conflict mediates the relationship between spontaneous decision making style diversity and group performance.
Chapter 2

METHOD

Sample

The data for this study was collected as a part of a larger research study in collaboration with Gül Kremer from the School of Engineering Design. The sample from this study was first-year undergraduate engineering students at a large Mid-Atlantic university enrolled in an Introduction to Engineering Design course. Students participated in an initial assessment intake survey where they noted their skill level in various areas (e.g., computer skills, design skills, drafting skills), teams were then formed by the instructors with an attempt to balance out skill levels equally in each team. This allows each team to start with more equal prior domain knowledge. Teams were composed by the second week of the semester. Two teams of fewer than three people were excluded from analysis because faultlines cannot be tested with dyads. Therefore, the final sample was 300 individuals in 86 teams. The mean number of students per team was 4.06 ($SD = .48$); the numbers of individuals in each team ranged from 3 to 5. The average response rate within teams was 98.8%. The majority of the sample was male (79.7%).
**Team Task**

The students worked in teams to complete two engineering design projects over the course of one semester (15 weeks). The projects required that students work together to generate design ideas, select one idea to develop fully, and create a prototype for the chosen design (Okudan & Mohammed, 2006). The first project was narrower in scope and more structured (e.g., designing an electric toothbrush) than the second design project, which was industry sponsored and simulated tasks that engineers work on in organizations. Team projects comprised a substantial portion (50%) of the team grade.

**Procedure**

Data from this study came from the first project because the second project had incomplete grading data. The survey was administered after students had completed the first project (but before they knew their Project 1 grades), about halfway through the semester. Grades were collected from instructors after the completion of this project. The survey was administered in paper and pencil format and students received extra credit from completing the questionnaire. The survey measured demographic information (e.g., gender), individual differences (e.g., decision making style), and team process variables (e.g., process conflict and conflict resolution).
Measures

Decision Making Style

Decision making style was assessed using the 2 subscales from the General Decision-Making Style Inventory (Scott & Bruce, 1995). Rational decision making style was assessed with four items ($\alpha = .66$), including “I make decisions in a logical and systematic way.” Spontaneous decision making style was measured with five items ($\alpha = .84$), such as “I often make decisions on the spur of the moment.” Responses were on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree. See the appendix for the full list of items.

Faultlines

The measurement of faultlines is typically done in one of two ways: faultline strength, which measures the degree of similarity in group members’ attributes (Thatcher et al., 2003) and faultline distance, which measures the degree of differences in attributes between subgroups (Bezrukova et al., 2009). Faultline strength is more commonly measured in the literature (Thatcher & Patel, 2011), and there are several commonly used methods (e.g., Gibson & Vermeulen, 2003; Shaw, 2004; Thatcher et al., 2003).

Shaw (2004) has one major advantage over the other commonly used faultline strength measures because it simultaneously measures both intra-subgroup alignment and inter-subgroup alignment, capturing aspects of both faultline strength and faultline distance. The other measures (e.g., Gibson & Vermeulen, 2004; Thatcher et al., 2003)
only account for within-subgroup similarity and do not capture any aspects of between-subgroup differences or similarities. Therefore, the measure developed by Shaw (2004) will be used in analyzing Hypothesis 2.

There are five basic steps to calculating faultline strength (FLS) using the Shaw method. First, attribute variables have to be selected. For this study, the attributes are gender, rational decision making style, and spontaneous decision making style. Second, continuous variables must be converted into categorical variables. Gender is already a categorical variable, but rational and spontaneous decision making style are not. To remedy this, these variables will be divided into three categories based on standard deviation. Values below one standard deviation from the mean will be in the “low” category; values within one standard deviation of the mean will be in the “medium” category; values above one standard deviation from the mean will be in the “high” category. Shaw (2004) discusses creating categories based on natural groupings. By dividing the decision making style types in this way, the categorization likely mimics the way that team members naturally group those in their team: people who are “average” in regards to preference for each decision making style (within one standard deviation of the mean) and people who are above or below average for each style (above one standard deviation of the mean and below one standard deviation of the mean, respectively).

Third, a measure of subgroup internal alignment (IA) is calculated. IA is the extent to which members within a subgroup are similar to one another. First, the IA for each attribute is calculated using the formula:

\[
IA_{m/age/obs} = \sum \left( \frac{O_{mi} - E_{mi}}{E_{mi}} \right)^2
\]
In this example, IA refers to the observed male alignment index across age categories; \( O_{mi} \) is the observed number of males in the \( i \)th age category; \( E_{mi} \) is the expected number of males in the \( i \)th age category assuming random distribution. IA is then averaged against all the attributes of interest.

Fourth, an index of “cross-subgroup alignment” is calculated. In order to do this, subgroup pair cross-products are calculated using the frequency of subgroup members in each attribute category to provide an index of the level of match-ups between subgroup members in each category. Cross-subgroup alignment is examined across all non-redundant pairings using the following formula:

\[
Pairs_{nonred} = \frac{(N_{sub} \times (N_{sub} - 1))}{2}
\]

For attributes where there are more than two subgroups (e.g., rational and spontaneous decision making style), normalized weights need to be computed to apply to each cross-product pair. Then cross-subgroup alignment indices (CGAI) are calculated for each subgroup pairs. Fifth, the measures of internal and cross-subgroup alignment are combined to create the overall index of faultline strength using the following formula:

\[
FLS = IA \times (1 - CGAI)
\]

FLS can be assessed relative to each individual attribute or as overall faultline strength based on the aggregation of attributes. For this study, an aggregate measure of FLS will be used by calculating the mean FLS for rational decision making style, spontaneous decision making style, and gender. FLS is on a scale from 0 to 1, where 1 indicates strong faultlines and occurs when internal subgroup alignment is high and cross-subgroup alignment is low. The Faultline Index for Groups (FIG) program for SAS developed by Chung, Shaw, and Jackson (2006) will be used to calculate FLS.
Process Conflict

Process conflict was assessed using the three item process conflict subscale from the Intragroup Conflict Scale (Jehn & Mannix, 2001). Cronbach’s alpha for this scale was .79. An example item is “How often do you disagree about resource allocation in your work group (e.g., how much time to spend on a particular task)?” Responses were on a 5-point Likert scale where 1 = not at all and 5 = a great deal. See the appendix for the full list of items.

Conflict Resolution

Conflict resolution was assessed using a three item scale adapted from Jehn (1995). Cronbach’s alpha for this scale was .84. An example item is “We effectively talk through disagreements about procedures (the way things get done) in my group.” Responses were on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree. See the appendix for the full list of items.

Performance

Performance was assessed by using the grade that instructors assigned the group project.
Control Variables

Team size will be controlled because it has been found to relate to both diversity and group outcomes (Carrol & Harrison, 1998; Somech, 2006; Wheelan, 2009). The mean of rational and spontaneous decision making style will be controlled in the analyses that examine decision making style diversity since mean levels on diversity measures can be confounded with within-group standard deviation (Bedeian & Mossholder, 2000; Harrison & Klein, 2007). Following the suggestions of Lau and Murninhan (2005) and Bezrukova et al. (2007), gender diversity will be controlled when analyzing faultline strength to ensure that any significant results are based on the unique contribution of member alignment. Gender diversity will be measured using the Blau gender index, which is calculated using the equation $1 - \sum P_i^2$ where $P$ is the proportion of individuals in a category and $i$ is the number of categories (Blau, 1977). Finally, when analyzing the team performance outcome, class instructor will be controlled since individual preferences in grading may affect teams’ final grades.
Chapter 3

RESULTS

Aggregation

All analyses were conducted at the team level. In order to assess the suitability of aggregating process conflict and conflict resolution to the team level, intraclass correlations (ICC(1) and ICC(2)) and \( r_{wg} \) indices were computed. ICCs compare within-team and between team response variance (ICC(1)) and the reliability of team-level means (ICC(2); Bliese, 2002). The \( r_{wg} \) index assesses the level of agreement in the ratings of different team members and assumes that any variance in the ratings is due to error variance (James, Demaree, & Wolf, 1984; LeBreton & Senter, 2008). A one-way random-effects ANOVA was conducted to compute the ICC values. The ICC(1) value for conflict resolution at Time 1 was not significant (\( F = .966, p > .05 \)), suggesting that there is not adequate support to aggregate conflict resolution to the team level by mean. However, the mean \( r_{wg} \) for conflict resolution was .80, indicating adequate justification for agreement. These contradictory findings may be due to low between-unit variance in the sample, which would lead to a small ICC value, but suggest that there may still be adequate agreement in the teams to justify aggregation, as indicated by the \( r_{wg} \) (LeBreton & Senter, 2008).

The ICC(1) value for process conflict was .661 and significant (\( F = 1.79, p < .001 \)), and the ICC(2) value was (.44). The mean \( r_{wg} \) value for process conflict at T1 was
Therefore, the data supports aggregation of process conflict to the team level via mean-levels.

Descriptive Statistics and Correlations.

Table 1-1 provides descriptive statistics and correlation coefficients for all of the variables at the team level of analysis. Rational decision making style diversity was negatively correlated with the mean-level of rational decision making style ($r = -.301, p < .01$); however, there was not a significant relationship between spontaneous decision making style diversity and the mean-level of spontaneous decision making style. The mean values of spontaneous and rational decision making style were not significantly correlated; however, the standard deviation of both forms of decision were significant ($r = .383, p < .01$). Faultline strength was negatively correlated with process conflict ($r = -.268, p < .05$), and positively correlated with the Blau gender index ($r = .482, p < .01$) and the mean-level of rational decision making style ($r = .244, p < .05$). Performance was not significantly correlated with any variables.

Hypothesis Testing

Moderated hierarchical regression analysis was used to test Hypotheses 1, and 2 (Baron & Kenney, 1986). Independent variables and moderators were mean centered to increase the interpretability of the results. The control variables (group size, rational and spontaneous decision making style means, and Blau gender index) were entered into the
### Table 1-1: Descriptive Statistics and Correlations

<table>
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<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<td>2. Blau Gender Diversity</td>
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<td>.182</td>
<td>.026</td>
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<td>3. Rational DMS mean</td>
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<td>-.044</td>
<td>.111</td>
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<tr>
<td>4. Spontaneous DMS mean</td>
<td>.266</td>
<td>.307</td>
<td>-.011</td>
<td>-.135</td>
<td>-.215</td>
<td>--</td>
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<tr>
<td>5. Rational DMS diversity</td>
<td>.527</td>
<td>.299</td>
<td>-.082</td>
<td>.083</td>
<td>-.301**</td>
<td>.082</td>
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<tr>
<td>6. Spontaneous DMS diversity</td>
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<td>.313</td>
<td>-.192</td>
<td>.004</td>
<td>-.175</td>
<td>.068</td>
<td>.383**</td>
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<td>7. FLS mean</td>
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<td>-.002</td>
<td>.482**</td>
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<td>.145</td>
<td>.002</td>
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<td>8. Process Conflict</td>
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<td>-.244*</td>
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<td>-.081</td>
<td>.128</td>
<td>-.268*</td>
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<td>.044</td>
<td>.004</td>
<td>.017</td>
<td>--</td>
</tr>
<tr>
<td>10. Performance</td>
<td>88.8</td>
<td>7.61</td>
<td>.121</td>
<td>.075</td>
<td>.128</td>
<td>.003</td>
<td>-.189</td>
<td>.020</td>
<td>.181</td>
<td>.042</td>
<td>.081</td>
</tr>
</tbody>
</table>

Note. n=73

* p < .05, two-tailed; **p<.01, two-tailed
first step of this regression. The standard deviations of rational and spontaneous decision making style diversity were entered in the second step. Faultline strength was entered in the third step. The interaction terms between rational decision making style and faultline strength and between spontaneous decision making style and faultline strength were entered in the final step.

Hypothesis 1 predicted that team-level diversity in rational decision making style (1a) and spontaneous decision making style (1b) would be positively related to process conflict. As illustrated in Table 2-1, there were no significant main effects of either rational decision making style diversity ($\beta = -.167, p > .05$) or spontaneous decision making style diversity ($\beta = .168, p > .05$) on process conflict. Hypothesis 1a and 1b were not supported. It is worth noting that there was a significant negative effect of the Blau gender index on process conflict ($\beta = -.286, p < .05$) prior to decision making styles and faultline strength being added to the model. Additionally, there was a significant negative effect of faultline strength on process conflict ($\beta = -.407, p < .05$). However, this effect was only significant with the inclusion of the interaction variables in the model and was not hypothesized.

Hypothesis 2a predicted that faultline strength would moderate the relationship between rational decision making style diversity and process conflict, such that when faultline strength was high, the negative relationship would be stronger than when faultline strength is low. Hypothesis 2b predicted a parallel moderating effect for spontaneous decision making style diversity. The overall $F$ value for the full regression model was marginally significant ($F = 1.97, p = .059$). As shown in Table 2-1, the
interaction between spontaneous decision style diversity and faultline strength was not significant ($\beta = -.074, p > .05$), but the interaction between rational decision style diversity and faultline strength was significant ($\beta = .299, p < .05$).

Table 2-1: Moderated Hierarchical Regression Analysis for Decision Making Style Diversity and Faultline Strength on Time 1 Process Conflict

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-.142</td>
<td>-.150</td>
<td>-.149</td>
<td>-.150</td>
<td>-.151</td>
</tr>
<tr>
<td>Blau Gender Diversity</td>
<td>-.269*</td>
<td>-.269*</td>
<td>-.247*</td>
<td>-.159</td>
<td>-.115</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rational DMS Mean</td>
<td>.036</td>
<td>.015</td>
<td>.078</td>
<td>.189</td>
<td></td>
</tr>
<tr>
<td>Spontaneous DMS Mean</td>
<td>.051</td>
<td>.044</td>
<td>.083</td>
<td>.120</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rational DMS Diversity</td>
<td></td>
<td></td>
<td>-.167</td>
<td>-.127</td>
<td>-.068</td>
</tr>
<tr>
<td>Spontaneous DMS Diversity</td>
<td></td>
<td></td>
<td>.168</td>
<td>.165</td>
<td>.189</td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faultline Strength</td>
<td></td>
<td></td>
<td></td>
<td>-.194</td>
<td>-.407*</td>
</tr>
<tr>
<td>Step 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rational Diversity X Faultline Strength</td>
<td></td>
<td></td>
<td></td>
<td>.299*</td>
<td></td>
</tr>
<tr>
<td>Spontaneous Diversity X Faultline Strength</td>
<td></td>
<td></td>
<td></td>
<td>-.074</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.096</td>
<td>.099</td>
<td>.132</td>
<td>.157</td>
<td>.222</td>
</tr>
<tr>
<td>$F$</td>
<td>3.66*</td>
<td>1.84</td>
<td>1.65</td>
<td>1.70</td>
<td>1.97+</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.003</td>
<td>.034</td>
<td>.024</td>
<td>.065*</td>
<td></td>
</tr>
</tbody>
</table>

Note. n = 71
+ $p < .10$, two-tailed; * $p < .05$, two-tailed

The interaction between rational decision making style diversity and faultline strength was graphed (Figure 2-1). When faultline strength was low (-1SD), a simple slopes test demonstrated that there was significantly more process conflict in teams with low rational decision making style diversity than teams with high rational decision making style diversity ($t = -2.12, p < .05$). When faultline strength was high (+1SD),
teams with high rational decision making style diversity trended towards having more process conflict than teams with low rational decision making style diversity. A simple slopes test showed that this relationship was marginally significant ($t = 1.97, p = .053$). Overall, Figure 2-1 illustrates that process conflict mattered more in teams with low faultline strength than in teams with high faultline strength. Although, there was a significant interaction between rational decision making style diversity and faultline strength, the interaction was not in the expected direction. Therefore, neither Hypothesis 2a nor 2b were supported.

Figure 2-1: Interaction between Rational Decision Making Style Diversity and Faultline Strength on Time 1 Process Conflict

A second moderated hierarchical regression was used to examine Hypothesis 3, which predicted a negative relationship between process conflict and team performance.
As with the first moderated hierarchical regression, independent variables and moderator variables were mean centered to increase the interpretability of the results. The control variables (group size and instructor) were entered in the first step of the regression. Mean aggregated process conflict was entered in the second step. Mean aggregated process conflict was added in the third step. The interaction term between conflict resolution and process conflict was entered in the final step.

Hypothesis 3 predicted a negative relationship between process conflict and team performance. As illustrated in Table 2-2, there was not a significant main effect of process conflict on team performance ($\beta = .115$, $p > .05$). However, class instructor was found to be significantly predictive of team performance in every step of the model. Hypothesis 3 was not supported.

Table 2-2: Moderated Hierarchical Regression Analysis for Process Conflict and Conflict Resolution on Time 1 Performance

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Team Performance Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-.007</td>
</tr>
<tr>
<td>Instructor Dummy Code 1</td>
<td>.910**</td>
</tr>
<tr>
<td>Instructor Dummy Code 2</td>
<td>.684**</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
</tr>
<tr>
<td>Process Conflict Mean</td>
<td>.115</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution Mean</td>
<td>.128</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution X Process Conflict</td>
<td>.067</td>
</tr>
</tbody>
</table>

Total R²: .307 .319 .332 .335
F: 10.92** 8.57** 7.16** 5.96**
AR²: .013 .013 .003

Note. n = 71
* p < .05, two-tailed; ** p < .001, two-tailed
Hypothesis 4 predicted that conflict resolution would moderate the relationship between process conflict and team performance, such that when process conflict was low, there would be a weaker negative relationship with performance than when process conflict was high. The overall F for the interaction was marginally significant ($F = 7.16$, $p < .001$; Table 2-2); however, the interaction term was not significant ($\beta = .067$; $p > .05$). Hypothesis 4 was not supported.

Hypothesis 5 predicted that process conflict would mediate the relationships between rational decision making style diversity (5a) and spontaneous decision making style diversity (5b) and group performance. Because there was no main effect for either type of decision making style diversity on process conflict or for process conflict on group performance, Hypothesis 5 was not supported.

Ancillary Analyses

Due to the general lack of support for many of the hypothesized relationships, ancillary analyses were conducted in an attempt to better understand the relationships between the variables of interest. These analyses primarily focused on: investigating the interaction between rational and spontaneous decision making style diversity; determining the effects of the three way interaction between rational decision making style diversity, rational decision making style mean, and faultline strength; examining the effects of conflict resolution diversity; testing different categorical distinctions of faultline strength; restricting the sample based on faultline strength; examining the effects
of gender diversity and personality diversity salience; and testing the hypotheses using Time 2 data.

**Interaction Between Rational and Spontaneous Decision Making Style Diversity**

Given that rational and spontaneous decision styles were both conceptualized and found to be empirically distinct, two different scales were used to capture these styles (Scott & Bruce, 1995). As such, we compared teams that had higher and lower diversity on the rational style and higher or lower diversity on the spontaneous style. However, process conflict may be most heightened when teams are composed of members with both rational and spontaneous members. Although a direct test of this was not possible, the interaction between rational and spontaneous styles was examined and found to be non-significant ($\beta = .003, p > .05$).

**Interaction Between Rational Decision Making Style Mean, Diversity, and Faultline Strength**

Since Figure 2-1 indicated that faultlines mattered more for low rational decision making style diversity than high rational decision making style diversity, we tested a three-way interaction between the rational decision making style mean, rational decision making style diversity, and faultline strength in an attempt to further understand this relationship. The three-way interaction did not have a significant effect on process conflict ($\beta = .161, p > .05$). Thus, the results indicate that the two-way interaction
between rational decision making style diversity and faultline strength does not operate differently based on teams’ mean levels of rational decision making style.

**Conflict Resolution Diversity**

Because of conflicting results in the aggregation statistics (ICC(1) and \( r_{wg} \)), additional analyses were conducted to test the moderating effect of Time 1 conflict resolution diversity (which captures the disagreement between team members surrounding whether conflicts were resolved), rather than mean level, on the relationship between process conflict and team performance. It was predicted that higher process conflict, in combination with higher disagreement on conflict resolution, would lower team performance. A moderated hierarchical regression was used to examine these relationships. The control variables (group size and instructor) were entered in the first step of the regression. The additional control variable of mean aggregated conflict resolution was entered in the second step. Mean aggregated process conflict was added in the third step. The standard deviation of conflict resolution was added in the fourth step. The interaction term between conflict resolution standard deviation and process conflict was added in the final step.

Although there was no main effect of process conflict on team performance (Table 3-1), there was a significant positive relationship between process conflict and team performance when the interaction term was included in the model (\( \beta = .243, p < .05 \)). The interaction between process conflict and the standard deviation of conflict resolution was significant (\( \beta = .226, p < .05 \)) and accounted for 4% of the variance in
team performance above and beyond controls and main effects and therefore was graphed (Figure 3-1). A simple slopes test indicated that when there was a low standard deviation for conflict resolution (-1SD), there was no significant difference in the effect of process conflict on team performance ($t = -1.59$, $p > .05$). When there was a high standard deviation for conflict resolution (+1SD), a simple slopes test revealed that team performance was significantly lower in teams with low process conflict than teams with high process conflict ($t = 2.548$, $p < .05$). Team performance was the highest when there was a high level of disagreement regarding whether the team resolved conflict and the teams had a high level of process conflict.

Table 3-1: Moderated Hierarchical Regression Analysis of Process Conflict and Conflict Resolution Diversity on Time 1 Team Performance

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-.006</td>
<td>-.001</td>
<td>.039</td>
<td>.046</td>
<td>.027</td>
</tr>
<tr>
<td>Instructor Dummy Code 1</td>
<td>.890**</td>
<td>.884**</td>
<td>.895**</td>
<td>.893**</td>
<td>.910**</td>
</tr>
<tr>
<td>Instructor Dummy Code 2</td>
<td>.686**</td>
<td>.685**</td>
<td>.725**</td>
<td>.735**</td>
<td>.774**</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution Mean</td>
<td>.053</td>
<td>.141</td>
<td>.144</td>
<td>.114</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Conflict Mean</td>
<td></td>
<td>.187</td>
<td>.191</td>
<td>.243*</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution Standard Deviation</td>
<td></td>
<td>.083</td>
<td>.126</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution SD X Process Conflict</td>
<td></td>
<td></td>
<td></td>
<td>.226*</td>
<td></td>
</tr>
<tr>
<td>Total R²</td>
<td>.300</td>
<td>.303</td>
<td>.328</td>
<td>.335</td>
<td>.378</td>
</tr>
<tr>
<td>F</td>
<td>10.29**</td>
<td>7.71**</td>
<td>6.83**</td>
<td>5.79**</td>
<td>5.91**</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.003</td>
<td>.025</td>
<td>.007</td>
<td>.043*</td>
<td></td>
</tr>
</tbody>
</table>

Note. $n = 71$
* $p < .05$, two-tailed; ** $p < .001$, two-tailed
Figure 3-1: Interaction between Process Conflict and Conflict Resolution Standard Deviation on Time 1 Team Performance

To further explore this interaction, a three-way interaction between process conflict, conflict resolution mean-level, conflict resolution diversity was tested and was found to be marginally significant ($\beta = -.279$, $p = .072$). A graph of the three-way interaction showed that the two-way interaction between conflict resolution diversity and process conflict was driven by teams with low mean levels of conflict resolution. Additionally, slopes difference tests were conducted on each pair of slopes in the interaction (high conflict resolution mean/high conflict resolution diversity; high conflict resolution mean/low conflict resolution diversity; low conflict resolution mean/high conflict resolution diversity; and low conflict resolution mean/low conflict resolution diversity) and slope differences were significant for each pair of slopes in the model.
Categorical Distinctions for Faultline Strength

For hypothesis testing, the model was tested using three different categorical distinctions for the faultline strength calculation: one standard deviation below the mean, within one standard deviation of the mean, and one standard deviation above the mean. Three additional categorical distinctions for decision making styles were also tested. First, both types of decision making styles were divided into two categories using a median split. Second, both types of decision making styles were divided into three categories so that each group was of equal size (values below the 33rd percentile were in category one, values between the 33rd and 66th percentile were in category two, and values above the 66th percentile were in category three). Finally, both types of decision making styles were broken into four categories based on quartiles. When analyses were conducted for each of these categorical distinctions, none of these variations yielded statistically significant results.

Mean Faultline Strength

Because the mean of faultline strength was very low (.005, when the faultline measure ranges from 0 to 1), several of the hypotheses were tested restricting the sample to only teams with a faultline strength greater than 0. This reduced the sample size to 38 teams, greatly attenuating the power to find significant results. When Hypothesis 2 was tested with 38 teams, the interaction between faultline strength and rational decision making style diversity on process conflict (β = .221, p > .05) and the interaction between
faultline strength and spontaneous decision making style diversity on process conflict ($\beta = -.372, p > .05$) were not significant.

**Diversity Salience**

Some faultline researchers state that faultlines must be activated in order to have an effect on team processes (e.g., Hart & Van Vugt, 2006; Jehn & Bezrukova, 2010; Pearsall et al., 2008). Activated faultlines are perceived by group members and therefore denote that group members are aware of the diversity characteristics that are present in their teams. Gender salience was measured using a 3-item scale ($\alpha = .62; M = 2.63; SD = .48$). A sample item is “When people ask me who is in the group, I initially think of describing group members in terms of gender composition (e.g., two females and two males).” When gender salience was added as a control for testing Hypotheses 1 and 2; the results were not significantly different from the original tests of the hypotheses. Gender salience was also tested as a moderator of the relationship between rational and spontaneous decision making style diversity on process conflict and as a moderator of the relationship between faultline strength and team performance. None of the interaction terms were significant.

Decision making style diversity salience was measured using one item: “I often notice how different my group members are in terms of personality” ($M = 3.68; SD = .54$). When personality salience was added as a control for testing Hypotheses 1 and 2; the results were not significantly different from the original tests of the hypotheses. Personality salience was also tested as a moderator of the relationship between rational
and spontaneous decision making style diversity on process conflict and as a moderator of the relationship between faultline strength and team performance. Neither of these interaction terms were significant.

**Time 2 Analyses**

Finally, all of the hypotheses were also tested at Time 2. Cronbach’s alpha was computed for each scale and ICC and $r_{wg}$ values were calculated for all of the aggregated variables; all values were adequate. For Hypotheses 1 and 2 the sample size at Time 2 was reduced from 71 to 68 because teams that experienced membership change between time 1 and Time 2 were removed from the analysis. There was no support for Hypotheses 1 or 2 at Time 2. Because performance data was not available for all the teams at Time 2, the sample size for testing Hypotheses 3 and 4 was reduced to 25. No support was found for Hypotheses 3 and 4 at Time 2.
Chapter 4

DISCUSSION

The purpose of the current study was to examine the interaction between decision styles and faultlines on process conflict and the interaction between process conflict and conflict resolution on team performance. This study sought to expand the team diversity, decision style, faultline, and conflict literatures in several ways. First, rational and spontaneous decision making styles were examined as main diversity traits of interest. Decision making styles are an important component of team composition as they refer to deep-seated preferences in how individuals approach tasks and choose their actions in response to environmental factors (Scott and Bruce, 1995). Despite their importance, however, decision making styles have remained an unexplored form of diversity in this literature, which has emphasized demographics, Big Five personality traits, and other similar attributes (Bell 2007; Bell et al., 2011).

Second, the vast majority of the decision style literature is at the individual level (e.g., Curseu & Schruijer, 2012; Hunt et al., 1989; Thunholm 2004) and the few team-level studies has tended to focus on mean decision making styles, rather than diversity (e.g., Armstrong & Priola, 2001). The present study extended previous decision making style research by examining the effects of decision making style diversity on team processes. Teams with high levels of decision style diversity were expected to experience heightened levels of process conflict as they learned how to reconcile disparate inclinations for approaching tasks.
Third, this study expanded the faultline literature by focusing on a deep-level trait (decision making style) as well as a surface-level trait (gender) in the calculation of faultlines and examining faultlines as moderator of the diversity to process conflict relationship, rather than as an antecedent. Surface-level traits have been the focus of the vast majority of faultline research (Thatcher and Patel, 2011), and studies have found a strong and consistent negative relationship between surface-level faultlines and performance (e.g., Bezrukova et al., 2009; Choi & Sy, 2010; Homan et al, 2008; Lau & Murnigham 2005). However, little is known about the effects of deep-level faultlines on team performance, particularly in non-laboratory settings. Whereas faultlines have traditionally been examined as antecedents for group processes and outcomes (Thatcher & Patel, 2012), this study extends previous work by examining faultlines as a moderator of the effect of diversity on team outcomes. In order for faultlines to occur, teams must be diverse; therefore faultlines should help to explain why equal levels of diversity may affect one team more than another due to the alignment of attributes and traits.

Fourth, this study expands the nomological network of process conflict which, despite previous research demonstrating its long-lasting negative effects (Greer, Jehn, & Mannix, 2008), is under-researched compared to task and relationship conflict (de Wit et al., 2012). Additionally, this study examines antecedents of process conflict that have not previously been explored in the extant literature (e.g., deep-level diversity and faultline strength).

Results revealed that faultlines had a negative effect on process conflict; faultline strength moderated the relationship between rational decision style diversity and process
conflict; and conflict resolution diversity moderated the relationship between process conflict and team performance. Many hypotheses were not supported.

**Decision Styles and Process Conflict**

Although predicted, team-level diversity in both rational and spontaneous decision making styles were not positively related to process conflict (Hypothesis 1). However, faultline strength was found to have a negative effect on process conflict, but only when the interaction terms were included in the model. The ordinal interaction showed that as faultline strength based on gender and decision making style increased, process conflict decreased. Contrary to much of the previous research, which has shown a negative effect for faultlines (e.g., Bezrukova et al., 2009; Bezrukova et al., 2011; Homan et al., 2007b; Lau & Murnigham, 2005), results suggest that faultlines may actually be beneficial to groups. There are several possible explanations for this finding.

First, faultlines provide a more in-depth view of team composition than examining diversity alone, which may help to explain that faultline strength effects emerged instead of diversity effects when considering decision making styles within a team. A team with cross-cut diversity characteristics may look the same as a team with strong faultlines when simply examining the effects of diversity, but previous research has demonstrated differences in the effects of cross-cut and high faultline teams on performance (e.g., Homan et al, 2007a; Homan et al., 2007b, Meyer et al., 2011). In the current study, it is possible that the positive or null effects of high diversity/high faultline teams balanced out the negative effects of high diversity/low faultline (i.e., cross-cut)
teams when examining diversity alone. Therefore, the non-significant findings for Hypothesis 1 may be due to the effects of the high-faultline teams essentially cancelling out the effects of the cross-cut teams. When examining the relationship between faultlines and process conflict, by default the high faultline teams must also be highly diverse, thus providing a fuller picture of the relationship between team diversity characteristics and faultlines.

Second, rather than each type of decision style diversity influencing process conflict directly, it took the combination of both decision style diversity as well as gender to negatively impact disagreements concerning how work was to be accomplished. Again, this supports the need for research to move beyond simply looking at diversity as an antecedent, and instead gain a fuller understanding of how these compositional factors interact with each other.

**Moderating Role of Faultline Strength**

While faultline strength was not found to moderate the relationship between spontaneous decision making style diversity and process conflict (Hypothesis 2), the results support the moderation of faultline strength on the relationship between rational decision making style diversity and process conflict. It is worth noting that the mean for spontaneous decision making style ($M = .266$) was lower than the mean for rational decision making style ($M = .390$), indicating that spontaneous decision making style occurred to a lesser degree than rational. Thus, spontaneous decision making style may have had less of an influence in teams than rational decision making style.
When faultline strength was low, there was greater process conflict in teams with low rational decision making style diversity than in teams with high decision making style diversity. Conversely, when there was high faultline strength, teams with high rational decision making style diversity had higher levels of process conflict than teams with low rational decision making style diversity. In other words, in teams with weaker faultlines, having similar decision making styles led to more conflict than teams with dissimilar decision making styles. Just because team members may rely on similar methods for coming to decisions, their final decisions may not necessarily be the same. If team members are similar on other attributes, such as gender, and use similar decision making styles, it may lead to more process conflict if they reach different conclusions because they may not be expecting their peers to disagree with them. Additionally, compromising on a solution may be difficult because team members are relying on similar thought processes but coming to different conclusions, which may make it difficult for them to frame their ideas in ways that their teammates would find acceptable.

Conversely, if team members use different decision making styles for coming to conclusions, they may be able to explain their thought processes better and come to an agreement easier (i.e., when the spontaneous decision maker talks about how they just decided to do X, and the rational decision maker delineates the thought processes behind doing Y, it may be easier for the spontaneous decision maker to see where the rational is coming from, and compromise). These results are supported by previous research which found that teams where diversity characteristics are cross cut (e.g., low faultlines and high diversity), diversity has less of a negative impact on team outcomes because these teams have increased levels of information elaboration (Homan et al., 2007b; Homan et
al., 2008; Meyer et al., 2011; Rico et al., 2012). In teams such as these, diversity characteristics are distributed in such a way that strong subgroups do not form and team members feel comfortable aligning with and talking to multiple team members.

When teams had stronger faultlines, higher diversity in decision making styles was more detrimental than lower diversity, or similar decision making styles. If there are easily recognizable differences between teammates, they may enter into discussions expecting teammates in different subgroups to have differing opinions. Therefore, they may be more open minded, expecting to have to compromise (Liang, Hideg, & Adair, 2013). For example, three men in a group may expect the one woman to have a different opinion and that expectation may make them more amenable to discussing their opinions than if that fourth teammate was male and they expected him to conform to their decisions. Additionally, since gender was a main component of the faultlines in this sample, men may have been sensitized to the gender disparity in the engineering field and as a result, may have made more of an effort to integrate female teammates into the group.

**Process Conflict and Team Performance**

There was no significant main effect of process conflict on team performance (Hypothesis 3), nor was the interaction between mean aggregated conflict resolution and process conflict significant (Hypothesis 4). The lack of support for Hypotheses 3 and 4 may be explained by the recent work of Liang et al. (2013), who found that groups with surface-level faultlines have a higher expectation that conflict will occur and that this
expectation attenuates the negative effect of conflict on group performance. It is possible that a similar mechanism operated in this study and the expectation for conflict in the gender-diverse groups mitigated the effect of conflict on performance.

However, the results of the study provide support for the moderating effect of diverse conflict resolution perceptions on the relationship between process conflict and conflict resolution. When team members disagreed on whether conflict was resolved, teams with low levels of process conflict did not perform as well as teams with high levels of process conflict. When teams had a high level of agreement regarding conflict resolution, there was no significant difference between the level of process conflict and team performance. This suggests that when process conflict is high and teammates disagreed about conflict resolution, teams performed better than when they agreed about conflict resolution.

Previous research has found inconsistent results for the effects of process conflict on team performance, with some studies finding a negative effect (e.g., Behfar et al., 2011; Greer et al., 2011; Jehn & Manni, 2001), and others finding a positive relationship with team performance (e.g., Goncalo et al., 2010). Specifically, Goncalo and colleagues concluded that process conflict enhanced group performance when occurring early in a team’s lifespan because it allows group members to sort each other based on the tasks that best fit their skills and abilities. Process conflict was measured at Time 1, but because group members in the current study knew that they would work on a second project together, the completion of project 1 was the mid-point of the team life cycle (project one and two combined). Therefore, although a longitudinal approach is needed, the findings of this study are supportive of those of Goncalo et al. (2010), in that early
process conflict was beneficial for team performance. Additionally, teams that had a positive relationship between process conflict and team performance disagreed on whether the conflict had been resolved, possibly indicating that conflict was ongoing. Again, this may suggest that disagreements about whether conflict was resolved may have affected task two more than task one. Incomplete performance data at Time 2 (n = 25) attenuated the power to find significant results; therefore, even though these relationships were non-significant at Time 2, limited conclusions can be drawn regarding the longitudinal effect of process conflict in this study.

This pattern may have not been seen in teams with high agreement on whether conflict was resolved because the low conflict resolution diversity teams includes teams that agreed conflict had not been resolved and teams that agreed conflict had been fully resolved (and teams that agreed that conflict had been somewhat resolved). The three-way interaction between process conflict, conflict resolution mean-levels, and conflict resolution diversity revealed that team performance was highest when teams had high levels of process conflict, high levels of disagreement in whether conflict was resolved, and low mean levels of conflict resolution. Conversely, team performance was the lowest in teams with low levels of process conflict, high levels of disagreement regarding whether conflict was resolved, and low mean levels of conflict resolution.

Limitations and Future Research

As with all research, the findings of this study were bounded by limitations. Due to the gender balance in the engineering classes, many teams had no or very low
faultlines ($M = .005$). Because of this, faultlines would have to have a very strong effect on team processes and outcomes in order for the results to be significant. Ancillary analyses were conducted to examine the effects of only groups with faultlines present on the hypothesized relationships; however the sample size was greatly reduced with this restriction ($n = 38$) and no significant results were found. There are several ways that this could be overcome in future research.

First, including a wide range of surface- and deep-level variables would allow researchers to determine which combinations led to the strongest faultlines, and thus the strongest subgroups. This would amplify the effects of faultlines on team processes and performance. Second, future researchers may want to focus on variables that are already categorical or are continuous variables with strong theoretical support to be converted into categorical variables. This may also increase the strength of the faultlines in teams. Ancillary analyses explored different criteria, including dividing decision making styles into fewer categories (2; using median split), more categories (4; using quartiles), and the same number but using a different breaking points (3; using $33^{rd}$ and $66^{th}$ percentiles). However, no significant results were found for either the main effect of faultline strength on process conflict or the interaction between faultline strength and decision making style diversity for any of these combinations. Finally, conducting a laboratory study would allow the researchers to manipulate faultline strength so that teams could be considered to be “high faultline” or “low faultline,” again possibly increasing the effects of faultlines on process conflict and team performance. The strength of this experimental design is reflected in the number of laboratory vs. non-laboratory faultline studies that have
already been conducted (e.g., Homan et al., 2007a; Homan et al., 2007b; Rico et al., 2012).

There are other ways in which a laboratory study could expand the findings of this field study and overcome some of the limitations. This study found an unexpected relationship between faultline strength and process conflict as well as two moderations that operated differently than what was proposed. A laboratory study could help provide insight into these findings by creating a controlled environment where team processes and mechanisms could be more closely monitored. Additionally, there may be other factors that were not taken into account in this non-laboratory study, such as whether students knew each other before the project or worked together previously. If students had worked together previously, subgroups may have formed based on prior affiliation rather than either gender or decision making style diversity. Additionally, if students that had experience working together may have already formed strategies for overcoming the possible negative effects of decision making style diversity. These effects could be better controlled in a laboratory setting.

Furthermore, future research may benefit from blending the faultline and intersectionality literatures. Rather than assuming that, for example, *all men or all women* have the same experience, intersectionality recognizes that it is the sum of all of one’s social categories that affects each individuals’ experiences and that often only examining one social category at a time overlooks simplifies the story too much (Warner, 2008). Both intersectionality and faultlines expand traditional individual difference and diversity research to examine more of how more complex situational factors interact and affect
outcomes on both individual and team levels. Merging these perspectives can help to further strengthen the diversity literature by expanding current theoretical frameworks.

Conclusion

In conclusion, the results of this study highlight the need for research to examine the interaction between different forms of diversity in team composition. While diversity was not found to significantly impact process conflict, faultline strength did have a significant negative effect on process conflict, underscoring the importance of including faultlines and other compositional interactions in future research.

Additionally, this research supports the notion that the relationship between process conflict and team performance is complicated (Goncalo et al., 2010; Greer et al., 2008) and that mitigating factors, such as diversity of conflict resolution perceptions may affect the relationship. This supports the need for future research to invest more effort in researching process conflict rather than just task and relationship conflict.

As teamwork is increasing emphasized in the workplace, understanding the complex relationships between team composition and team processes and outcomes becomes even more critical. Understanding faultlines can help managers to create teams that work together as efficiently as possible or target interventions to help teams overcome these compositional shortcomings. Additionally, as a fuller understanding develops regarding the relationship of process conflict on teams, managers will know when to encourage process conflict and under what circumstances this type of conflict will be most, or least, beneficial to the team.
References


type, conflict management strategies, and team outcomes. *Journal of Applied Psychology, 93*(1), 170-188.


Appendix

Measures

Rational Decision Making Style (Scott & Bruce, 1995)
1. I double-check my information sources to be sure I have the right facts before making decisions.
2. I make decisions in a logical and systematic way.
3. My decision making requires careful thought.
4. When making a decision, I consider various options in terms of a specific goal.

Spontaneous Decision Making Style (Scott & Bruce, 1995)
1. I generally make snap decisions.
2. I often make decisions on the spur of the moment.
3. I make quick decisions.
4. I generally make important decisions at the last minute.
5. I often make impulsive decisions.

Process Conflict (Jehn & Mannix, 2001)
1. How often are there disagreements about who should do what in your group?
2. How often do you disagree about resource allocation in your work group (e.g., how much time to spend on a particular task)?
3. How much conflict is there about task responsibilities (the way to do things) in your group?

Conflict Resolution (adapted from Jehn, 1995)
1. We effectively talk through disagreements about ideas/opinions in my group.
2. We effectively talk through disagreements about procedures (the way we get work done) in my group.
3. We effectively deal with interpersonal friction/personality clashes in my group.