WHEN AND HOW DOES DIVERSITY INCREASE GROUP PERFORMANCE?: A THEORETICAL MODEL FOLLOWED BY AN EXPERIMENTAL STUDY

DISSERTATION

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By

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ABSTRACT

For the last fifteen years, research on workplace diversity has mostly investigated the direct effects of a diverse workforce on organizational performance. In general, researchers and practitioners now acknowledge the importance of having a diverse workforce by suggesting that it improves decision making processes that lead to more creativity and innovation. However, diversity does not only bring positive consequences. It has often been recognized that workforce heterogeneity can reduce intra-group cohesiveness, and lead to conflicts and misunderstandings which, in turn, can lower employee satisfaction, organizational citizenship behaviors, and increase turnover. Despite such a paradox in the diversity literature, answers to research questions such as “how” and “when” diversity influences performance at work are still limited within the scientific literature in management. The purpose of this dissertation is to provide answers to these questions by proposing a research model that emphasizes the role of collective identity salience and psychological safety climate as important conditions under which diversity may lead to increased group performance. The model also highlights three levels of psychological mechanisms (i.e. individual-, dyadic-, and group-level) to explain how diversity can lead to augmented group performance. An experimental study is conducted to test whether this model will hold in a laboratory setting, under a high level of control. Gender-based identity is the representative indicator of diversity that is used to manipulate group composition. Identity salience (personal identity versus collective
identity) is also manipulated, while psychological safety climate is assumed to be influenced through identity salience. Psychological mechanisms and group performance are measured. The results found in this study do not support the predicted hypotheses. The limitations of this study are discussed, along with practical and theoretical implications, and directions for future research.
This work is dedicated to my parents,
Denise Robert and Paul-Émile Roberge,
my sister, Isabelle Roberge,
and to my second family, my aunt and uncle, Louise and Louis Roberge,
and my cousins Julie and Chantal Roberge.
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# TABLE OF CONTENTS

ABSTRACT ........................................................................................................ ii
DEDICATION ................................................................................................. iv
ACKNOWLEDGMENTS ..................................................................................... v
VITA ................................................................................................................ viii
LIST OF TABLES .......................................................................................... xi
LIST OF FIGURES ......................................................................................... xiii

CHAPTER

1. INTRODUCTION ......................................................................................... 1
   Overview and Purpose of this Dissertation ............................................. 1

2. LITERATURE REVIEW .............................................................................. 4
   What Does it Mean to Be a Diverse Work Group? ................................. 4
   Does Diversity Lead to Increased Performance? .................................... 9
   When does Diversity Lead to Increased Group Performance? ............. 12
   How does Diversity Lead to Increased Group Performance? ............ 16

3. CONCEPTUAL MODEL AND PROPOSITIONS ....................................... 23
   Model and Propositions ......................................................................... 25

4. METHOD ................................................................................................... 57
   Design ....................................................................................................... 57
   Participants and Data Collection ............................................................ 58
   Procedures .............................................................................................. 60
   Measures ................................................................................................. 63

5. RESULTS ................................................................................................... 69
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Conceptual level of each psychological process identified in the literature.</td>
<td>31</td>
</tr>
<tr>
<td>3.2</td>
<td>Theoretical propositions.</td>
<td>55</td>
</tr>
<tr>
<td>4.1</td>
<td>Number of group per experimental condition considering group composition and identity salience.</td>
<td>60</td>
</tr>
<tr>
<td>4.2</td>
<td>Results of the pilot study: the overall means, means per gender, adjusted means and order of the selected advertisements for the effectiveness criteria.</td>
<td>57</td>
</tr>
<tr>
<td>5.1</td>
<td>Cronbach alphas for each construct.</td>
<td>74</td>
</tr>
<tr>
<td>5.2</td>
<td>Correlations among study variables.</td>
<td>75</td>
</tr>
<tr>
<td>5.3</td>
<td>Significance F tests for the main effects of subgroups of different genders on group empathy, communication, group involvement, group trust and psychological safety climate.</td>
<td>78</td>
</tr>
<tr>
<td>5.4</td>
<td>Significance F tests for the main effect of members’ perception of their ingroup-outgroup members on psychological closeness, interpersonal trust, interpersonal incivility behavior and interpersonal citizenship behavior.</td>
<td>79</td>
</tr>
<tr>
<td>5.5</td>
<td>The mean of group members’ perceptions of their ingroup and outgroup members on psychological closeness, interpersonal trust and interpersonal citizenship behavior.</td>
<td>80</td>
</tr>
<tr>
<td>5.6</td>
<td>Number of groups per treatment combination.</td>
<td>82</td>
</tr>
<tr>
<td>5.7</td>
<td>Label for each type of group.</td>
<td>83</td>
</tr>
<tr>
<td>5.8</td>
<td>Significance F tests for the hypothesis 00 on each construct.</td>
<td>85</td>
</tr>
<tr>
<td>5.9</td>
<td>Significance F tests for the contrast analyses (hypothesis 01, 02, 03, and 04)</td>
<td>xi</td>
</tr>
</tbody>
</table>
on psychological safety climate………………………………………………………… 86

5.10 Mean and standard deviation for each process and dependent variables under each experimental condition………………………………………………………… 88

5.11 Significance F tests for the interaction effects between group composition and identity salience on the process variables ………………………………………… 90

5.12 Significance F tests for the interaction effect between group composition and identity salience on task performance, interpersonal incivility behavior and interpersonal citizenship behavior……………………………………… 92

5.13 Significance F tests for the main effects of group composition on interpersonal incivility behavior, interpersonal citizenship behavior and task performance……………………………………………………………………………… 93

5.14 Significance F tests for the main effects of identity salience on interpersonal incivility behavior, interpersonal citizenship behavior and task performance……………………………………………………………………………… 94

5.15 Summary of the tested hypotheses………………………………………………… 95
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Proposed research model</td>
<td>24</td>
</tr>
<tr>
<td>3.2</td>
<td>Categorization of job behavioral performance at an individual level</td>
<td>27</td>
</tr>
<tr>
<td>3.3</td>
<td>Anticipated interaction effect between group composition and identity salience on psychological mechanisms</td>
<td>47</td>
</tr>
<tr>
<td>3.4</td>
<td>Anticipated interaction effect between group composition and psychological safety climate on psychological mechanisms</td>
<td>53</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION
Overview and Purpose of this Dissertation

Considering that workforce diversity has dramatically increased (Ragins & Gonzalez, 2003), practitioners (Childs, 2005; Ezine, 2003) now acknowledge that having a diverse workforce may be a key for sustained competitive advantage by increasing creativity and innovation (Bassett-Jones, 2005, Richard, 2000). However, researchers have found that the empirical evidence supporting such predictions is still limited. Many studies suggest that diversity leads to negative consequences such as rising conflicts, decreasing group cohesiveness and may even lead to counterproductive work behavior such as derogation, ostracism and discrimination. In fact, based on reviews of the literature (van Knippenberg, & Schippers, 2007; Williams and O’Reilly, 1998) as well as meta-analyses (Bowers, Pharmer, & Salas, 2000; Webber & Donahue, 2001), no consistent main effects of diversity on performance have been found.

The purpose of this dissertation is to reconcile these inconsistent findings by proposing and testing experimentally a research model that addresses the following research questions: *when and how does diversity lead to positive rather than negative group performance?* More specifically, by drawing on social identity theory (Tajfel & Turner, 1986), self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and research on groupthink (Janis, 1982), the model proposes that identity salience
and psychological safety climate are both important moderators of the relationship between group composition and group performance. Thus, according to the model these two psychological conditions explain situations when diversity leads to increased group performance. Moreover, by applying self-verification theory and other theories from the literature on close relationships (Swann, Rentfrow, & Guinn, 2005), the model identifies multi-level psychological mechanisms (i.e., individual-, dyadic-, and group-level) that are conceptualized as mediators of the relationship between group composition and group performance. These psychological mechanisms may explain how diversity leads to positive rather than negative outcomes. At an individual level, empathy and self-disclosure are the variables of interest. At a dyadic level, interpersonal knowledge, mutual identity confirmation and interpersonal trust are examined. At a group level, communication, group involvement and group trust are the focus of attention. Finally, drawing on the job performance literature (see Motowidlo, 2003), the model conceptualizes group performance in terms of task-oriented behaviors as well as social-oriented behaviors. Social-oriented behaviors refer to both interpersonal citizenship behaviors and interpersonal incivility behaviors manifested in groups.

To verify whether this model accurately identifies the conditions under which diversity leads to beneficial outcomes as well as identifies the psychological mechanisms underlying the relationship between diversity and an increase in group performance, an experimental study was conducted in a laboratory. Small groups composed of four or five members differed in their gender composition (Gruenfeld, Mannix, Williams, & Neale, 1996). These groups were either heterogeneous groups (dominated males versus dominated females) or homogeneous (all males or all females). Identity salience
(personal identity versus collective identity) will also be manipulated and psychological
safety climate is assumed to be influenced by collective identity salience.

This dissertation is organized into six chapters. Chapter 2 reviews the literature on
workplace diversity. Chapter 3 presents the proposed model that addresses the two
research questions and specifies propositions. Chapter 4 describes the hypotheses and the
method used to test them and Chapter 5 reports the results of the statistical analyses
conducted in this study. Finally, Chapter 6 discusses the findings, the limitations of the
study, the theoretical implications of the study as well as its practical implications and
some recommended directions for future research.
CHAPTER 2
LITERATURE REVIEW

It is only recently that researchers have seriously begun to study the management of workplace diversity (Nkomo, & Cox, 1996; Jackson, May, & Whitney, 1995; Jackson, & Ruderman, 1995). Indeed, fifteen years ago the scientific literature on workplace diversity was still in its infancy. This literature, however, has grown quickly and researchers have tried to address and discover whether diversity may indeed positively increase group performance.

This literature review addresses four research questions that interest researchers who study workplace diversity: (1) What does it mean to be a diverse work group?, (2) Does diversity lead to increased group performance?, (3) When does diversity lead to increased performance?, (4) How does diversity lead to increased group performance?

What Does it Mean to Be a Diverse Work Group?

Generally, in the literature, diversity has been defined as differences between individuals on any attributes that may lead to the perception that another person is different from the self (Jackson, 1992; Triandis, Kurowski, & Gelfand, 1994; van Knippenberg, De Dreu & Homan, 2004; Williams & O’Reilly, 1998). These attributes of interest may refer to demographic characteristics, informational/functional characteristics, personality traits, or personal values as well as other types of diversity such as mental and physical health and abilities. However, this definition adopts an
individual focus by referring to diversity as the perceived differences from the self. That conceptual definition addresses questions such as “Who am I, as an individual?” and “Who am I, as a member of a group?” By addressing these “I” questions, both of these questions remain at an individual level.

A conceptual definition of diversity adopting a group focus has also been proposed in the literature: Nkomo and Cox (1996) refer to diversity as “a mixture of people with different group identities within the same social system” (p. 339). According to this definition, the concept of group identities appears to be at the core of understanding workplace diversity. Another group-level definition has been proposed by Harrisson and Sin (2005). According to these authors diversity is “the collective amount of differences among members within a social unit” (p. 196). In contrast to the first definition, which emphasizes questions of individual identities, both of these definitions address questions of group identities such as “Who are we, as group members of different groups?” The current dissertation addresses this second conceptual definition of diversity.

Classifying types of indicators of diversity

Diverse groups are constituted of people that belong to and identify themselves with different groups. There are a large number of indicators of diversity. Being a diverse work group may mean many things. In order to be more parsimonious in our understanding of different indicators of diversity in groups, Harrison, Price and Bell (1998) proposed to categorize different indicators of diversity on two different dimensions: surface-level diversity and deep-level diversity. They have defined surface-level diversity as “differences among group members in overt, biological characteristics that are typically reflected in physical features” (p. 97). These attributes are visible and
easily perceived by individuals. Examples of surface-level diversity include age, gender, and race/ethnicity. Certain visible stigma such as physical handicaps, disfigurement, as well as weight problems (i.e., obesity or anorexia) could also be classified under surface-level diversity. In contrast, deep-level diversity refers to more subtle attributes that cannot necessarily be perceived right away. Such attributes refer to members’ personalities, attitudes, beliefs and values. Sexual orientation, religion and mental illness could also be classified under the deep-level diversity.

To classify informational/functional indicators of diversity such as profession, occupation, vocation, expertise or status under either surface- or deep-level diversity, the context must be taken into account. For example, in multidisciplinary teams, expertise may be considered surface-level diversity. When role asymmetry is clear and obvious, such as during a discussion between a CEO and first-line employees, status may then become considered as a surface-level of diversity. However, if the context does not make informational/functional characteristics salient, such indicators of diversity could be considered under deep-level diversity. For example, it may happen during lunch time that three individuals with different occupations eat together at the cafeteria; in this context, occupation would be considered as deep-level diversity, unless someone asks: what is your occupation? Otherwise, other attributes, such as race, gender or age, may be more salient and thus classify under surface-level diversity.

Thus, whether the information/functional characteristics are considered as surface-level diversity versus deep-level diversity will depend on the context (Pelled, Ledford, & Mohrman, 1999), and more specifically on contexts that make such characteristics more or less salient. But this can be true for any indicator of diversity.
Indeed, whatever the indicator of diversity is, the context may always have to be taken into account in order to determine the weight of the effects of different indicators of diversity. Some contextual variables may reduce or increase the salience of certain indicators of diversity and thus necessarily affect the social categorization process, which will be addressed and explained by answering the second question “does diversity lead to increased performance?”

Of course, the unique characteristics of certain indicators strongly influence the perceived relative salience of that indicator. For example, in an encounter between a man and a woman, the two individuals represent different group memberships according to their gender. Gender is naturally salient to people. However, there will always be contextual variables that reduce or increase the natural salience of gender, or the natural salience of any other indicator or attributes of diversity. The salience of any attributes always depends on the situation. In particular, researchers have examined the effect of time on people’s attention to surface- versus deep-level diversity. In general, research suggests that over time, people’s focus of attention shifts from surface-level diversity to deep-level diversity (Harrison Price, & Bell, 1998; Mohammed, & Angell, 2004; Van Vianen, De Pater, Kristof-Brown, & Johnson, 2004). In sum, bringing to the literature this distinction between surface-level diversity and deep-level diversity for classifying indicators of diversity has helped researchers to get a better understanding of the direct effects of different types of indicators of diversity on group performance.

Finally, it is interesting to mention that recently, Harrison and Klein (forthcoming) have presented a diversity typology that focuses on the property of the composition of an individual attribute within groups instead of focusing on the nature of
diversity indicator (demographic, functional, or personal), their typology. They classify types of diversity based on three dimensions: 1) separation, 2) variety, and 3) disparity. These three different types of diversity are conceptually different and thus require different type of measurement. Separation refers to a lateral continuum based on which may differ. Separation construct is most likely to be viewed as disagreement, opposition on preferences, beliefs, attitudes and values. Variety refers to members’ differences from one another qualitatively. Variety would be most likely distinctive, non-overlapping and refers to functional diversity such as expertise and specific experience. Finally, disparity refers to representing share or proportion of valued assets or resources and this most likely disparity constructs would be concentration of pay, compensation, prestige, status, power or authority.

Faultline

Faultline is a concept that has been introduced by Lau and Murnighan (1998). They define a faultline as an alignment of several characteristics (e.g. gender and age diversity within one group). Faultline refers to the composition of a group and can be either strong or weak. When the differences are strongly correlated, a strong faultline exist. In other words, a strong faultline occurs when multiple diversity dimensions converge within the group (Homan, 2006). An instance, when a group consists of subgroups of female executives and male employees, the group is then divided by two attributes: gender and role title. As pointed out by Homan (2006), research has shown that a strong faultline increases the salience of subgroups, resulting in suboptimal communication and deteriorated group functioning across those subgroups. A study conducted by Lau and Murnighan (2005) has shown that when the faultline is strong,
there is an increase in intra-group conflict and a decrease in satisfaction. A weak faultline occurs when the attributes cross-cut each other. To go back to the previous example, if there were an equal number of male and female executives as well as an equal number of male and female employees, the faultline would be considered weak. When the faultline is weak, the effects are assumed to be opposite. For example, two studies conducted by Marcus-Newhall, Miller, Holtz, & Brewer (1993) suggest that cross-cutting role assignments reduces intergroup bias. More precisely, their results report that subjects in the cross-cut condition perceived greater similarity among team members and in turn, showed less intergroup bias in reward allocation compared to those subjects in the convergent or strong faultline condition.

Does Diversity Lead to Increased Performance?

Research drawing on information/decision-making suggests that a diverse workforce leads to improved decision making processes, and to more creativity and innovation in organizations (Bantel, & Jackson, 1989; De Dreu, & West, 2001; McLeod, Lobel, & Cox, 1996). More precisely, this theoretical approach proposes that heterogeneous work groups are more likely to possess broader ranges of task-relevant knowledge, skills, abilities and points of view that are distinct and non-redundant compared to homogeneous work groups. The theoretical approach suggests that heterogeneous groups may, in turn, lead to more creativity and innovation at work because they integrate diverse knowledge bases and differences in experience and opinion. Teams composed of members with diverse backgrounds and characteristics should produce a wider variety of ideas, alternatives and solutions compared to teams composed of people with similar characteristics (Bantel & Jackson, 1989; Jackson, 1992).
In other words, by putting together multiple perspectives or ways to think about and understand specific issues, group performance may increase due to the achievement of a better quality of decision making. A concrete application in organizations supportive of this theoretical argument would be the implementation of multidisciplinary or cross-functional teams. Cross-functional teams combine representatives of different organizational functions (i.e., departments of engineering, marketing, accounting, production etc.) to ensure diversity in knowledge and perspective.

Unfortunately, managing diversity is not an easy task. Studies providing evidence that support the idea that diversity yields increased group performance are limited. Those studies which do support such optimistic predictions have been examining informational-related dimensions such as education, occupation or functional background (Jehn, Northcraft, & Neal, 1999; Pelled, Eisenhardt, & Xin, 1999; Wanous & Youtz, 1986). Among studies that examine demographic indicators, personality, values or attitudes, very few of these (Joshi, Liao, & Jackson, 2006) have shown that diversity may indeed lead to positive consequences (Bantel, & Jackson, 1989; Barrick, Stewart, Neubert, & Mount, 1998; Barry, & Stewart, 1997; Kristof-Brown, Barrick, & Stevens, 2005; McLeod, Lobel, & Cox, 1996).

In fact, research examining the impact of diversity at an individual level has shown that compared to similar or majority individuals, people who are different (dissimilar and minority individuals) have less attraction and trust in peers (Chatopadhyay, 1999), less frequent communication (Zenger & Lawrence, 1989), lower group commitment (Tsui, Egan, & O’Reilly, 1992), lower task contributions (Kirchmeyer, 1993; Kirchmeyer & Cohen, 1992) and lower perceptions of organizational
fairness and inclusiveness (Mor-Barak, Cherin, & Berkman, 1998). Consistent with these results found at an individual level, research examining the impact of diversity on group outcomes has found that a diverse workforce does have primarily negative consequences for group performance. Indeed, it has been recognized that heterogeneity at work reduces intra-group cohesiveness (Terborg, Castore, & DeNinno, 1976; Harrison et al. 1998), leads to conflicts and misunderstandings (Jehn, Chadwick, & Thatcher, 1997) which, in turn, lowers members satisfaction, decreases cooperation among members (Chatman & Flynn, 2001; Chatman & Spataro, 2005) and increases turnover (Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin, 1991). Finally, it has also been found that group heterogeneity may trigger psychological biases (i.e., stereotyping and prejudice) that contribute to counterproductive work behaviors such as derogation, ostracism and discrimination (e.g., Brewer, 1979).

Research drawing on social identity theory (Tajfel, 1978) and self-categorization theory (Turner et al., 1987) has contributed greatly to explain why diversity may have negative consequences for employees and the performance of their work group as well as the performance of their organization. Social identity theory and self-categorization theory suggest that people who are different are less likely to collaborate with one another than people who are similar because they do not consider themselves to belong to the same social category (ingroup) and thus do not share the same social identity. Similarities and differences are used as a basis for categorizing self and others into groups, with ensuring categorizations distinguishing between one’s own in-group from one or more out-group. This process has been named social-categorization.

Social-categorization has been the principal psychological mechanism identified
to explain why diversity impacts group performance negatively (see van Knippenberg et al., 2004). Social categorization is associated with perceptual and attitudinal biases that favor people from the ingroup and denigrate people from the outgroup. Thus, social-categorization may disrupt elaboration of task-relevant information because of possible positive biases (e.g. favoritisms) toward in-group members and negative biases toward out-group members (e.g. derogation).

It is important to mention that from a short term perspective, surface level indicators of diversity are more likely to trigger the social categorization process than indicators that are considered deep-level diversity, such as personality and values. By triggering the social-categorization process, these attributes obviously have a stronger impact on explaining the reduction of group performance. However, research also suggests that although individuals initially assess surface-level diversity to categorize others as similar or dissimilar, extended and more intense interactions result in a re-categorization based on deep-level similarities and differences. Therefore, as mentioned in the previous section, over time, these deep-level differences have a stronger impact on the social categorization process compared to surface-level indicators of diversity (Harrison, Price, & Bell, 1998; Mohammed & Angell, 2004).

When does Diversity Lead to Increased Group Performance?

Identifying the conditions under which diversity may indeed lead to increased group performance is becoming more and more important as practitioners promote the potential benefits of workplace diversity (Childs, 2005; Ezine, 2003). To identify the appropriate conditions under which diversity leads to positive consequences, researchers have examined moderating variables. Such variables explain when the relationship
between diversity and performance changes in orientation moving from negative to positive outcomes.

Some Moderator Variables

For several years, social psychologists have been trying to identify moderator variables that may explain the circumstances when workplace diversity may lead to lower or higher group performance. As pointed out by Brewer and Gaertner (2004), there are several laboratory experiments that have tested a number of moderator variables to examine whether these factors either inhibit or facilitate the effectiveness of contact to reduce ingroup, outgroup biases and promote positive attitudes toward out-group members. These moderating variables (confirmed by experimental studies) are the frequency and duration of intergroup interaction (Worchel, Andreoli, & Folger, 1977; Wilder & Thompson, 1980), the presence of intergroup anxiety (Stephan & Stephan, 1985; Wilder & Shapiro, 1989), the structure of cooperative tasks (Bettencourt, Brewer, Croak, & Miller, 1992; Deschamps & Brown, 1983; Gaertner, Dovidio, Rust, Nier, Banker, Ward, Mottola, & Houlette, 1999; Marcus-Newhall, Miller, Holtz, & Brewer, 1993), the outcome of cooperation (Worchel, et al., 1977), status equalization (Cohen, 1984), and goal level and task interdependence (Mitchell & Silver, 1990). In general, these studies support the intergroup contact hypothesis (for a review Pettigrew, 1998) that suggests that positive effects of diversity occur only in situations marked by four key conditions: equal group status within the situation, common goals, intergroup cooperation, and the support of authorities, law or custom.

Researchers (Bacharach, Bamberger, & Bashdi, 2005; Chatman & Spataro, 2005; Ely & Thomas, 2001) from the field of organizational behavior have only recently begun
to pay serious attention to moderating variables that may explain when diversity leads to increased group performance. Contextual variables such as time (Harrison et al., 1998; Mohammed & Angell, 2004), task interdependency (Jehn, Northcraft, & Neale, 1999; Mitchell & Silver, 1990; Pelled, Eisenhardt, & Xin, 1999), task complexity (Jehn, Northcraft, & Neale, 1999) and organizational culture (Chatman, Polzwer, Barsade & Neale, 1998) have been identified as major moderator variables.

Chatman and Spataro (2005) have also recently demonstrated the importance of context in their study of organizational culture. In particular, their results show that people with different demographic characteristics behave more cooperatively when their business unit emphasizes collectivistic values (i.e., benevolence, tradition, conformity) rather than individualistic values (i.e., power, achievement, hedonism, stimulation, self-direction). Collectivistic values are motivated by serving the interests of others and especially the group as a whole such as understanding, appreciating, and tolerating all people with no regard to their rank. Alternatively, individualistic values are motivated by self-interests, such as possessing social status and prestige, controlling and dominating people and their resources or being considered successful and demonstrating competences based on social standard (Schwartz, 1992). Moreover, based on the results found by Chatman and Spataro (2005), it has been suggested that when organizational culture emphasizes collectivistic values and interchangeable interests (Chatman, Polzer, Barsade, & Neale, 1998), people are more likely to perceive that they share a common identity with different people, and as a result, group performance will increase. This common identity may also be called a collective identity (Pratt, 2003).

Instead of examining the context per se, other researchers have been paying
attention to people’s perception of the context. These researchers have been studying organizational climate instead of organizational culture.\(^1\) For example, Bacharach, Bamberger, and Bashdi, (2005) found that the true benefits of diversity emerge only when intergroup contact is defined in terms of close relationships, and that the climate is perceived as strongly supportive. Such relationships and psychological environments make different people more secure toward each other and thus lead to increased group performance. Another study, conducted by Hobman, Bordia, and Gallois (2004), has shown that perceived openness to diversity can be a moderator of the relationship between visible and informational diversity and group involvement. More precisely, their findings show that when individuals perceive low group openness to diversity, the relationship between diversity and group involvement negative, whereas when individuals perceive high group openness to diversity, the relationship is non significant.

The studies by Bacharach, Bamberger, and Bashdi (2005) and Hobman, Bordia, & Gallois (2004) are the first to have examined the effect of climate as a moderator of the relationship between diversity and group performance. As pointed out by Van der Vegt and Bunderson (2005), very little research has paid attention to the motivational climate for managing diversity appropriately. In fact, most of the research has largely focused on defining what is a climate for diversity (Brief & Barsky, 2000), developing measures of

\(^1\) Compared to organizational culture, organizational climate has a subjective perspective that reflects the sense-making processes by which group members’ collectively understand and share their experiences of organizational events. Organizational culture, instead, has a normative focus that attempts to capture members’ values, beliefs, and assumptions as to the appropriate ways to think, act and behave. Although conceptually these two constructs are distinct, organizational culture and organizational climate are theoretically closely connected. For example, according to Hyde and Hopkins (2004), an organization’s diversity climate reflects the degree to which a primary goal of most diversity intervention models is achieved: the creation a cultural pluralistic setting in which all workers perform at their optimal level (Parker, Baltes, Young, Huff, Altmann, Lacost & Roberts, 2003).
diversity mindset, and studying their antecedents (Hostager & DeMeuse, 2002; Kossek & Zonia, 1993). More research in this area is definitely needed.

The model presented later in this paper will provide an answer to the question “when does diversity lead to increase group performance?” by examining two moderating factors: (1) collective identity salience, and (2) psychological safety climate. These two variables have been proposed by several researchers (Edmondson, 1999; Gebert, Boerner, & Kearney, 2006) as important conditions under which diversity may lead to increased group performance. However, there is limited empirical evidence that demonstrates the effects of these variables. Further theoretical explanations about these concepts and some knowledge of their respective roles in diversity settings will be presented after we have introduced the overall model in the third chapter of this dissertation.

How does Diversity Lead to Increased Group Performance?

Once we know under what conditions diversity is more likely to lead to positive consequences, it becomes important to address how diversity may lead to increased group performance. When the appropriate conditions are implemented, it then may be assumed that such conditions activate underlying psychological mechanisms that mediate the relationship between diversity and increased group performance. Although several mechanisms have already been identified in the literature, our understanding of how diversity may increase group performance is still very limited.

Some Mediator Variables

Williams and O’Reilly (1998) noted in their review of the diversity literature that the most frequently studied mechanisms that may mediate the relationship between diversity and its consequences are: social interaction, communication, and conflicts. In
general, research has suggested that social interaction and communication are negatively related to diversity, whereas task conflict is positively related to diversity. For example, in a study of 53 top management teams, Smith, Smith, Olian, Sims, O’Bannon, and Scully (1994) found that heterogeneity of experience in the industry and within the company was negatively correlated to the amount of informal communication in a group. Although they did not find a direct effect of diversity in experiential background on social interaction, they did find an indirect effect: heterogeneity of experience affected social interaction negatively through its negative impact on information communication.

Researchers interested in the mediating effect of communication in diversity contexts have recently investigated the concept of team reflexivity, which is defined as the extent to which group members overtly reflect upon, and communicate about the groups’ objectives, strategies (e.g. decision-making) and processes (e.g. communication), and adapt them to current or anticipated circumstances (West, Garrod, & Carletta, 1997). According to Schippers, Den Hartog, Koopman, and Wienk’s (2003) longitudinal study conducted with 60 teams from 13 different organizations, it has been found that team reflexivity mediated the interaction effect of demographic diversity and team outcome interdependence as well as the interaction effect of demographic diversity and group longevity on the measures of satisfaction, commitment and performance. In other words, their results provide supportive evidence that team reflexivity affects the influence of outcomes, interdependence and group longevity on the relationship between diversity and team outcomes.

In terms of conflict, research suggests in general that diversity increases conflicts which in return may be beneficial or not, depending on the type of conflict that is
activated. Three types of conflicts may occur in a diverse group: (1) task conflict, (2) socio-emotional conflict or (3) value conflict. Task conflict exists when there are disagreements among group members about the content of the tasks being performed, including differences in viewpoints, ideas and opinions (Jehn, 1995). Socio-emotional conflicts are relationship-focused and refer to emotional tensions and negative feelings among group members (Jehn, 1995). Value conflict refers to differences in terms of people’s expectations about what constitutes a satisfactory outcome and when that outcome may be achieved (Gebert, Boerner, & Kearney, 2006).

Research suggests that different indicators of diversity will activate different types of conflicts (Jehn, 1995; Jehn & Mannix, 2001). It is supposed that when functional/informational diversity is salient, task conflicts are more likely to occur; when demographic diversity is salient, socio-emotional conflicts are more likely to occur; and when cultural diversity is salient, value conflicts are more likely to occur (Jehn, Northcraft, & Neale, 1999). Studies that focus on conflicts related to the task found that this type of conflict has a positive effect on performance, suggesting that when people bring their different expertise together, the number of conflicts regarding how to understand or execute a task may increase but such phenomenon will ultimately improve group performance. Research also suggests that to increase group performance in diverse groups, task conflict has to be free of relationship conflict. For example, a study conducted by Jehn, Northcraft, and Neale (1997) found that functional diversity is related to task conflict and, consequently, to increased performance on cognitive tasks. Jehn et al. (1997) also found that functional diversity is positively related to socio-emotional conflict but unrelated to subsequent performance. However, other studies that examine
the effects of socio-emotional conflict in diverse groups found inconsistent results. For example, Pelled (1996) hypothesized that sex diversity would have a negative impact on group performance through increased level of affective conflict; however, the results show no strong evidence supporting such a prediction (Pelled, Eisenhardt, & Xin, 1999). Similarly, O’Reilly, Williams and Barsade (1997) found no effects of age diversity on affective conflict. Thus, this suggests that the mediating effect of conflict, considering that there are different types of conflict, might be very complex and are not yet well understood.

Research investigating value conflicts has been focused on how cultural diversity affects value conflict, which are predicted to negatively impact group performance. In terms of types of value conflict, research has been paying attention to the similarity between work values (Dose & Klimoski, 1999), differences in power distance (Chan & Goto, 2003), and individualistic versus collectivistic values (Chatman & Spataro, 2005). However, according to Hofstede’s (2001) typology of cultural differences, it would also be interesting to address how diversity affects conflicts about management of uncertainty, and management of time (short versus long term perspective about relationships with others, as well as whether the outcome is considered as satisfying). For example, studying value conflicts in international joint ventures could be beneficial to our understanding of when value conflicts may be detrimental to diverse groups’ performances.

Interestingly, Gerbert, Boerner, and Kearney (2006) have recently proposed a conceptual model of cross-functionality that provides an integrated theoretical model for the understanding of different types of conflicts. Their primary mechanism is called “synergistic communication,” which mediates the relationship between
functional/informational diversity and team innovation. Synergistic communication is defined as the extent to which members’ divergent positions are specified and recombined to generate new and useful solutions (Gebert, Boerner, & Kearney, 2006). Their conceptual model suggests that the innovativeness of a new product development team is a function of synergistic communication, which is influenced by the types of conflicts that arise in a cross-functional team. Basically, the model assumes that cross-functionality engenders interpretive differences that increase task conflict which in turn serves as a catalyst for synergistic communication. However, task conflicts are closely related to socio-emotional conflicts and value conflicts, which impede the members’ acceptance of divergent ideas and thus obstruct synergistic communication in the team. Moreover, the model identifies three variables that may determine the conditions under which synergistic communication is more likely to occur when expertise diversity exists: 1) common social identity, 2) regard for personal identity and 3) a generalist perspective. By identifying mediators and moderators, this integrative model definitely helps to understand the mechanisms that may explain how cross-functionality increase group performance, but also to identify the circumstances under which this is done. In order to advance knowledge about whether this model holds in reality, conducting empirical studies will be required.

Adopting a Strategic Human Resource Management perspective, Richard, Kochan and McMillan-Capehart (2002) have proposed that employees’ affective reactions to diversity are contingent upon their perception of procedural justice. Drawing on studies

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2 The generalist perspective suggests that in order to increase the likelihood of synergistic communication to occur among team members with different expertise, it is vital to let each team member become acquainted with other thought worlds and knowledge, for instance by introducing job rotation programs (Maruyama, 2004).
that address justice perceptions during the recruitment and selection process (Cox, 1991; Kirby & Richard, 1996; Richard & Kirby, 1997), Richard et al. (2002) proposed that procedural fairness mediates the relationship between determinants of visible diversity and affective conflict. Although people’s perceptions of how they are treated (whether they perceive being fairly or unfairly treated) could definitely be conceived as an important psychological mechanism that mediates the relationship between diversity and group process, no empirical study has actually verified such a possibility. Roberson and Colquitt (2005) have even proposed that shared perceptions about justice may be moderating the relationship between diversity, group process and group performance. Again, no empirical study has been conducted to verify these assumptions. Future research is therefore required.

The most current empirical studies have been examining other mechanisms that seem to mediate the relationship between diversity and group performance, such as team learning behaviors (Gibson & Vermeulen, 2003; Van der Vegt & Bundeson, 2005), and identity confirmation (Milton & Westphal, 2005). For example, team learning behavior, defined as a cycle of experimentation, reflective communication and codification (Gibson & Vermeulen, 2003), has been found positively related to diversity. In a study conducted with 156 teams in five pharmaceutical and medical products firms, Gibson and Vermeulen (2003) confirmed that moderately strong demographic subgroups in teams fostered learning behaviors. Examining functional/information diversity (i.e. expertise) instead of demographic variables, Van der Vegt and Bunderson (2005) have been able to replicate these findings and even more, their results support a nonlinear relationship between expertise diversity and both, team learning and performance. More importantly,
they have been able to demonstrate that team learning behavior partially mediates both the linear and nonlinear relationships between diversity and performance. Finally, drawing on the self-verification theory (Swann, Rentfrow, & Guinn, 2005; Milton & Westphal, 2005) demonstrated that mutual identity confirmation (of positive or negative identities) leads to increased cooperation in work group dyads. More specifically, they have been able to provide empirical evidence that identity confirmation indeed mediates the effects of race-based diversity.

With the exception of Milton and Westphal’s (2005) study that focuses on identity confirmation at an individual and dyadic level, all other studies have been examining either individual-level or group-level psychological mechanisms. So far, in the diversity literature, no study has theoretically identified and empirically investigated multi-level psychological processes to provide a more elaborate answer to this complex question: How does diversity increase group performance? The following conceptual model will help to fill this specific and important gap.
CHAPTER 3

CONCEPTUAL MODEL AND PROPOSITIONS

The purpose of this dissertation is to propose a comprehensive understanding of when and how diversity may lead to increased group performance by conceptualizing a research model (see Figure 3.1) that goes beyond the current literature. It is important to specify that this research model adopts a general identity perspective and thus can be applied to understand the effects of any indicator of diversity. In fact, as long as there is an attribute that makes individuals fundamentally distinct in how they define themselves and the context emphasizes such differences, the model could be used to explain the effects of functional/informational diversity, demographic diversity, or any other indicators of diversity such as values and personality differences. In the following section, this general model will be introduced and ensuing propositions will be presented.
Figure 3.1: Proposed research model

- Collective Identity
  - Personal vs. Collective

- Diversity
  - Homogeneous vs. Heterogeneous

- Psychological Mechanisms
  - Individual, Dyadic, Group Levels

- Psychological Safety Climate
  - Safe vs. Unsafe

- Group Performance
  - Social Oriented Behavior
  - Task Oriented Behavior

Symbols: P1a-h, P2a-b, P3a-b, 4a-b, 5, 6

Diagrams show positive (+) and negative (-) relationships.
Model and Propositions

Drawing on social identity theory (Tajfel & Turner, 1986), self-categorization theory (Turner et al., 1987) and research on groupthink (Janis, 1982), the model proposes that collective identity salience and a high psychological safety climate are both important moderators of the relationship between diversity in group composition and group performance. These two psychological conditions may explain situations when diversity leads to increased group performance. Moreover, by applying self-verification theory (Swann, Rentfrow, & Guinn, 2005), and other theories from the literature on close relationships (e.g., Aron, 2005), the model identifies multi-level psychological processes (i.e., individual-, dyadic-, and group-level) that are conceptualized as mediators of the relationship between group composition and group performance. These mechanisms may explain how diversity leads to positive rather than negative outcomes. The key is that these multi-level processes are considered necessary to explain the process of learning from each other’s identities. At an individual level, empathy and self-disclosure are the variables of interest. At a dyadic level, mutual identity confirmation is examined. At a group level, communication, group involvement and trust are the focus of attention. Finally, drawing on the job performance literature (see Motowidlo, 2003), the model conceptualizes group performance in terms of task-oriented behaviors, as well as socially-oriented behaviors. Socially-oriented behaviors refer to both interpersonal citizenship behaviors and interpersonal incivility behaviors manifested in groups.

In the next section, the dependent variables of the model will be defined. Then the multi-level psychological mechanisms identified as mediators of the relationship between diversity and group performance will be presented. Then the two
necessary psychological conditions (i.e., collective identity salience and psychological safety climate) under which these mechanisms should be especially activated will be described.

**Dependent Variables**

The primary outcome variable of interest in the model is performance (and, more specifically, group performance) which can refer to organizational performance (Kochan, Bezrukova, Jackson, Joshi, Jehn, Leonard, Levine, & Thomas, 2003), or smaller group-unit performance such as cross-functional team performance (e.g., Van der Vegt & Bunderson, 2005). According to the proposed model, group performance is defined based on the job performance literature (for a review see Motowidlo, 2003). Job performance is defined as “the total expected value to the organization of the discrete behavioral episodes that an individual carries out over a standard period of time” (Motowidlo, 2003, p. 39). Obviously, this definition of job performance is at an individual level and thus an aggregation of the behavioral performance of each individual (considering all members of the group) is computed in order to be able to analyze performance at a group level.

Thus, the proposed model assumes that performance of a group can be conceptualized based on aggregated behaviors. The size of the group does not matter. The model could be applied to understand either big or small group-units.

According to Borman and Motowidlo (1993), job performance can be divided into two distinct behavioral indicators of performance: task performance and contextual performance\(^3\). Task performance generally refers to behaviors that are relevant for

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\(^3\) This distinction between task performance and contextual performance is similar to the distinction made by Van Dyne, Cummings, and Parks (1995) between in-role behaviors and extra-role behaviors.
accomplishing the task itself, whereas contextual behaviors refer to behaviors that contribute to the overall effectiveness of the group through its effects on the psychological and social context of work. Moreover, behaviors included under either contextual performance and/or task performance can be classified along a continuum of functionality crossed by an axis of intentionality (see Figure 3.2). This suggests that intentional and unintentional behaviors that may have negative or positive consequences are all considered under the definition of job performance. Recent research has also suggested such diversification of types of behavioral performance. However, more attention has been given to functionality (see Miles, Borman, Spector, & Fox, 2002; Dalal, 2005) but there is still limited research examining the classification of behavioral performance based on intentionality.

Figure 3.2: Categorization of job behavioral performance at an individual level
Thus, according to Figure 3.2, behavioral performance can be categorized under four exclusive categories. The first type of behaviors may be dysfunctional with intention. Such behaviors refer to counterproductive behaviors including all negative behaviors with the purpose of hurting a target which can be either the organization or an individual (Robinson & Bennett, 1995). The second type of behaviors may be dysfunctional without intention. Such behaviors refer to accidental behaviors that cause a negative consequence. A third type of behavior refers to functional and intentional behaviors. These behaviors are usually related to the task and they are generally rewarded by the organization. Finally, the fourth type of behavior is functional and unintentional such as discretionary behaviors that have also been named by Organ (1988) as organizational citizenship behaviors (e.g., helping others voluntarily).

The proposed model refers to task performance as well as contextual performance by identifying both task-oriented behaviors and social-oriented behaviors. More precisely, the continuum of functionality versus dysfunctionality characterizing behavioral performance will be considered in the proposed empirical study, especially for social-oriented behaviors. Indeed, social-oriented behaviors will refer to both interpersonal citizenship behavior and interpersonal incivility behavior manifested in groups which respectively refer to the functional and dysfunctional types of behaviors. However, the axis of intentionality in Figure 3.2 will not be considered in the empirical study. Intentionality is a very private variable and may be strongly influenced by social desirability. To obtain a valid measurement of intentionality, specific methodology requiring more than self-report data may be necessary. Methods that carefully scrutinize the context in which the act occurred may definitely help to develop and provide
measurement of intentionality with improved validity.

Researchers that study diversity have not extensively been examining the influence of diversity on performance from a behavioral perspective. The exception is the study conducted by Chatopadhyay (1999) investigating the influence of group composition on organizational citizenship behavior at an individual level. Research in the diversity literature usually examines performance by considering indicators such as creativity and innovation (e.g., De Dreu & West, 2001; Lovelace, Shapiro, & Weingart, 2001), or organizational productivity (e.g., Kochan, et al., 2003). By focusing on an aggregation of behavioral performance, this study will make an interesting contribution to the diversity literature as well as to the job performance literature. Indeed, even in the job performance literature, few studies have been considering behavioral performance at a group-level (for exception see Ehrhart, 2004; Ehrhart & Naumann, 2004). I will now examine the psychological mechanisms that may explain how diversity may increase group performance.

Multi-Level Mechanisms: Explaining How Diversity Increases Group Performance

According to several researchers (Gibson & Vermeulen, 2003; Foldy, 2003; Yeh & Chou, 2005), a learning process is at the core of explaining how diversity may increase group performance. However, the process of learning is a very complex one, because it consists of multiple underlying mechanisms that are interdependent. Several researchers have tried to describe and explain these mechanisms (Argyris & Schön, 1978; Edmondson, 1999; Gibson, 2001; Kolb, 1984). In general, team learning behaviors have been defined as activities by which team members seek to acquire, share, refine or combine task-relevant knowledge through their interactions with one another (Argote, 29
Gruenfeld, & Naquin, 1999; van der Vegt & Bunderson, 2005). In the literature, such behaviors are specifically related to the task and not to learning about others’ identities (see Salas & Fiore, 2004). In general, research on teams has examined cognitive issues such as shared mental models rather than identity issues such as how team members define themselves over time. In this dissertation, the term “team learning behavior” goes beyond what is already studied in the team literature. By incorporating knowledge about team members’ identities, the model expands our comprehension of the necessary knowledge that a heterogeneous group needs to acquire in order to function effectively. This knowledge refers to information about the task as well as information about their common identity. I will define learning from each other’s identity as a complex process by which a person’s identity is transformed by being exposed to, or interacting with other people who belong to different group memberships. Learning from each others’ identities involves several psychological mechanisms: a) including the others’ identity in the self (Aron, 2005), b) confirming people’s personal and social identities (Milton & Westphal, 2005), and c) supporting their identities (Bacharach, Bamberger, & Vashdi, 2005).

Drawing on research on close relationships (Aron, Aron, & Norman, 2004), and self-verification theory (Swann, Rentfrow, & Guinn, 2005), the proposed model identifies multi-level variables that could be used to assess this complex process of learning from each other’s identities. Variables conceptualized at three different levels of analysis are considered (see Table 3.1). At an individual level, the model identifies empathy and self-disclosure as the main mechanisms. At a dyadic level, interpersonal knowledge, mutual identity confirmation and interpersonal trust are identified. Finally, at a group level, communication, group involvement, and group trust are the main focus. Each of these
will now be discussed.

<table>
<thead>
<tr>
<th>Conceptual Level</th>
<th>Psychological Mechanisms</th>
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<td>Individual</td>
<td>• Empathy</td>
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<td></td>
<td>• Self-disclosure</td>
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<tr>
<td>Dyadic (Congruency)</td>
<td>• Interpersonal knowledge</td>
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<td>• Mutual identity confirmation</td>
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<td></td>
<td>• Interpersonal trust</td>
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<tr>
<td>Group (Aggregation)</td>
<td>• Communication</td>
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<td>• Group involvement</td>
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<td>• Group trust</td>
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Table 3.1: Conceptual level of each psychological process identified in the literature

**Individual-Level Variables**

*Empathy.* Empathy is generally conceptualized as an individual psychological process through which people identify with and understand another's situation, feelings, and motives. More precisely, it is defined as another-focused vicarious emotional response congruent with the perceived welfare of another (Batson, 1991). However, it is interesting to mention that empathy may also be experienced at a group level. Indeed, research on emotional contagion (see Hatfield, Cacioppo, & Rapson, 1993) suggests that feelings of empathy could be transmitted among group members by taking social
perspectives (Parr, 2002).

As recently pointed out by Milton and Westphal (2005), empathy may be a key variable that explains the process by which people learn about each other, incorporate other’ identities into their own and, as a result, arrive at better understanding, toleration and cooperation with one another. Consistent with this line of reasoning, Batson, Polycarpou, Harmon-Jones, Imhoff, Mitchener, Bednar, Klein, and Highbberger (1997) proposed an explanation of how empathy may influence helping behaviors. Their rationale is that empathy may increase helping behaviors through “self-other merger.” Self-other merger refers to the psychological state in which people define themselves and the other as an entity or as a unit. Hornstein (1978) identified three conditions under which self-other merger may occur: 1) When the other’s welfare promotes one’s own welfare, 2) when self and other are linked by similarity, and 3) when self and other share a common relationship in a social category or group.

As proposed by social identity theory and self-categorization theory, when groups are heterogeneous, people are more likely to perceive themselves as different from one another and thus they are less likely to empathize with one another or easily adopt other’ perspectives. Indeed, because the categorization process gets activated, having empathy and adopting social perspective taking in heterogeneous groups may be more difficult than when the group is homogeneous. Perspective taking has been defined as the ability to adopt the perspective of another, and is conceptually close to empathy. However, according to Hoffman’s (2000) theory of empathy, even when individuals perceive others as different than themselves, they should still be able to have empathy toward one another. Indeed, as conceptualized by Hoffman, empathy may be part of being human
and therefore may always exist in each individual, whoever the individual is in a relationship with. The level of empathy may vary depending on the level of identification. However, a minimal level of empathy always exists in each of us. Being sensitive to other human beings may simply be a natural phenomenon: a necessity for survival. Indeed, Hoffman conceptualized empathy as a “spark of human concern for others, the glue that makes social life possible” (p. 3).

The Batson et al.’s (1997) study does not provide strong evidence for considering empathy as an important mechanism to explain how diversity may lead to positive rather than negative consequences within a group. However, researchers (Neuberg, Cialdini, Brown, Luce Sagarin, & Lewis, 1997) have continued to claim that this explanation makes sense and that we need better methodology to verify the hypothesis. Research on perspective taking has provided better evidence for supporting such a hypothesis (see Galinsky & Moskowitz, 2000). When people take another’s perspective, empathy is required in order to get an accurate understanding of that perspective that is distinct from the self. In general, the results found by Galinsky and Moskowitz’s studies suggest that perspective taking can be a useful strategy for decreasing the tendency to apply stereotypes, and to increase overlap between representations of the self and representations of the other. Therefore, based on this literature, the proposed model suggests that:

**Proposition 1a:** Empathy will partially mediate the negative relationship between diversity and group performance at an individual level in such a way that diversity will negatively impact empathy which then will positively affect group performance.
Self-disclosure. Substantial benefits can occur when people reveal information about who they are (Jourard, 1971). Self-disclosure signals a willingness to be vulnerable to the other person by sharing personal information with them (Derlega, Metts, Petronio, & Margulis, 1993). Such signals may help individuals to know and understand each others’ identities better, which then lead to more efficient dyadic relationships (Dindia, 2000). Consistently with such thoughts, it has been shown that self-disclosure may lead to a reciprocity effect (Chaiken & Derlega, 1974). This reciprocity effect occurs when the receipt of self-disclosure is viewed as a rewarding experience that creates an obligation to return disclosures as repayment, via standard equity norms (Derlega, Harris, & Chaiken, 1973). Reciprocal self-disclosure is therefore an important psychological mechanism that fosters the development of trusting interpersonal relationships (Kerem, Fishman & Ruthellen, 2001). This mechanism may be especially important within a heterogeneous group when distrust feeling among group members may already exist (Kramer, 2001).

Thus, based on this literature, the model proposes that self-disclosure is a mediator of the relationship between group composition and group performance. However, despite the fact that self-disclosure could be conceptualized as a dyadic level variable when the reciprocity effect occurs, for the purpose of this work, self-disclosure will be conceptualized as an individual psychological process variable. Self disclosure of identities is defined here as what individuals verbally reveal about their personal and social identities. Therefore, the proposed model suggests the following:

**Proposition 1b:** Self-disclosure will partially mediate the negative relationship between diversity and group performance at an individual level in such a way that diversity will negatively impact self-disclosure which then will positively affect
group performance.

Dyadic-Level Variables

Interpersonal knowledge. In their recent study, Van der Vegt and Bunderson (2005) have found that team learning behavior operates as a mediator variable in the diversity performance relationship. Team learning behavior is defined as “a set of activities by which team members seek to acquire, share, refine, or combine task-relevant knowledge through interaction with one another” (p. 534). Thus, in their study, team learning behavior was related to the task and not to learning about others’ identities. In the present model, the term team learning behavior is expanded to incorporate knowledge about each others’ identities. Learning about each others’ identities is considered a necessary psychological mechanism that different people working together have to engage in to be able to confirm others’ respective identities and, as a result, cooperate with one another despite their differences. Learning about each others’ identities occurs when people disclose themselves to others and adopt social perspective taking in order to empathize with one another (Pelham, & Swann, 1994). According to the model, learning about each others’ identities is a dyadic process and must be measured by assessing interpersonal knowledge (Pronin, Kruger, Savitsky, & Ross, 2001) regarding both group members’ personal identities and social identities. Thus, the proposed model suggests the following:

**Proposition 1c:** Interpersonal knowledge will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact interpersonal knowledge which then will positively affect group performance.
Mutual identity confirmation. Drawing on self-verification theory, Milton and Westphal (2005) have recently found that mutual identity confirmation is a mediator of the relationship between diversity and cooperation. The authors define mutual identity confirmation as “a [psychological] state that exists when an individual’s social environment is consistent with his or her ‘self-identities’” (p. 192). Identity confirmation occurs when an individual’s identities are recognized and supported by other group members. The result of identity confirmation is that an individual perceives that he/she is accepted and valued by other group members and thus, as a result, is more likely to cooperate with others. When the identity confirmation process becomes bidirectional the mutual process occurs.

Self-verification theory (Swann, Rentfrow, & Guinn, 2005) suggests that people want to be known, understood and valued by other group members. It is very important for each member to be recognized as a group member, but also as a respected individual with unique characteristics. Drawing on self-verification theory, it is argued that both “Who am I, as an individual?” and “Who am I, as a group member?” are crucial questions that group members have to address and confirm in order for diversity to lead to enhanced group performance. This argument has also been proposed by the optimal distinctiveness theory (Brewer, 1991; for review see Brewer, 2003). According to this theory, the needs for inclusion and for differentiation are people’s basic needs. Social identity derives from a fundamental tension between the human need for inclusion, validation and similarity to others, whereas personal identity comes from this countervailing need for uniqueness and individuality. Both of these needs must be fulfilled in order to motivate group identification.
Based on this literature, the proposed model examines the dyadic level of the identity confirmation process of both personal self-view and social self-view. A mutual identity confirmation process is required; it is proposed that in order to increase ultimately group performance, the identity confirmation process must occur at a dyadic level and possibly must even occur at a group level (Chen, Chen, & Shaw, 2004). However, for purposes of this model, mutual identity confirmation is considered as an essential dyadic psychological mechanism that explains how diversity may lead to positive rather than negative group performance. Therefore, the proposed model suggests the following:

**Proposition 1d**: Mutual identity confirmation will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact mutual identity confirmation which then positively will impact group performance.

**Interpersonal trust/distrust.** Trust has been defined as “a psychological state that encompasses an individual’s expectations, assumptions, or beliefs about the likelihood that another’s future actions will be beneficial, favorable, or at least not detrimental to one’s interests” (Robinson, 1996, p. 576). In diverse contexts, trust and distrust are important elements. As suggested by Kramer (2001a), individuals who belong to distinctive social categories, or those who perceive themselves as being different from others based on any salient attributes, are more likely to feel anxious and self-conscious compared to those who belong to less socially distinctive categories. By perceiving themselves as different, they tend to overestimate the extent to which they are under evaluative scrutiny by other group members (Brewer, 1991; Kanter, 1977a, b; Kramer, 2001a).
This self-awareness may therefore activate paranoid thoughts, making them more distrustful of others.

Trust and distrust can be conceptualized at different levels. Two levels have been identified: 1) interpersonal-based trust, and 2) group-based trust (also named depersonalization-based trust). Trusting individuals versus the group as a whole may be driven by different factors. Different indicators of diversity may have completely different effects on different types of trust. For example, attitudes or values toward a situation are deeper-level diversity variables and may be more influential for determining interpersonal trust, whereas group-based trust maybe more influenced by variables such as demographic diversity. So far, no research has addressed such concerns. In the current model, both levels of trust are considered. At an interpersonal level, the proposed model suggests the following:

**Proposition 1e:** Interpersonal trust will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact interpersonal trust which then will positively impact group performance.

**Group-Level Variables**

**Communication.** Analogous to self-disclosure at an individual level, communication is a group level variable that has also been identified as crucial to explain how diversity may increase group performance (Keller, 2001; Schippers, Den Hartog, Koopman, & Wienk, 2003). Research has examined both the impact of the frequency of communication as well as the content of it. In general, research has shown that functional diversity increased the frequency of communication between different groups.
Surprisingly, within a team, several studies have found a negative relationship between communication frequency and performance (Ancona & Caldwell, 1992; Smith, Smith, Olian, Sims, O’Bannon, & Scully, 1994). Such unexpected results are explained by the underlying reason that communication frequency may be an indicator of conflict (Schippers et al., 2003). However, in diverse work groups, an increased frequency of communication among group members that leads to a reasonable level of conflict may sometimes be required. The avoidance of expressing different opinions and having an open communication may lower the number of conflicts but it may also decrease employees’ performance. Van der Vegt and Bunderson (2005) found a significant positive correlation between team learning behavior and intrateam conflict, suggesting that teams who are more actively engaged in learning behaviors are more likely to experience intrateam conflict.

Acknowledging the inherent natural occurrence of conflicts in diverse settings, Mary Parker Follett pointed out at the beginning of the 20th century that “organizational wrestling with integrating diversity and difference should not count the number of conflicts but, instead, they should analyze the nature of the conflicts and how they are handled” (see Brickson, 2000, p. 94). Following such recommendations, Schippers et al. (2003) have examined the content of communication and its mediating role in the diversity-group performance relationship, instead of focusing on frequency. They operationalized communication as “reflexivity,” which is defined as “the extent to which group members overtly reflect upon, and communicate about the group’s objectives, strategies (e.g. decision-making) and processes (e.g., communication), and adapt them to current or anticipated circumstances” (West, Garrod, & Carletta, 1997, p. 296). As
predicted, reflexivity was shown to mediate the relationship between diversity and team performance.

The quality of the communication is also considered an important psychological mechanism by the proposed model. More specifically, the model suggests that if the content of communication is supportive in terms of identities (recognition of the personal identity of each member as well as collective identity of the entire group), communication becomes a positive psychological mechanism. Therefore, the following hypothesis is presented:

Proposition 1f: The quality of the communication will partially mediate the negative relationship between diversity and group performance at a group level in such a way that diversity will negatively impact the quality of the communication in the group which then will positively impact group performance.

Group involvement. Group involvement is an aggregate level concept of individual involvement in task related processes such as information exchange, collaborative decision making, and how much individuals feel respected and listened to. Group involvement has been defined by Mor-Barak, Cherin and Berkman (1998) as the perception of inclusion-exclusion with regard to employee interaction or involvement within work teams. There is substantial literature on social integration. As pointed out by Hobman, Bordia and Gallois (2004), often group involvement has been investigated under other labels such as behavioral integration (Shaw & Barrett-Power, 1998), instrumental exchange or task-related exchange (Elsass & Graves, 1997), work-group fit (Kirchmeyer, 1995), team integration (Lichtenstein, Alexander, Jinnett, & Ullman, 1997), or teamwork (Baugh & Graen, 1997). In their longitudinal study conducted with nurses in
four departments of a public hospital, Hobman et al. (2004) found that visible
dissimilarity was negatively associated with work group involvement at both times
during the organizational change. Based on this evidence, the proposed model suggests
the following hypothesis:

**Proposition 1g:** *Group involvement* will partially mediate the negative
relationship between diversity and group performance at a group level in such a
way that diversity will negatively impact group involvement which then will
positively impact group performance.

**Group trust.** *Group trust* is also named *presumptive trust* (Kramer, 2001b) or
*depersonalization based-trust* (Brewer, 1981). This type of trust is not specifically
experienced toward one individual in particular based on previous experiences. Instead,
group trust is a type of trust that people experience toward any individuals because of
shared group membership. According to Kramer (2001b), group trust is experienced
among group members when individuals’ collective identity is activated. Brewer (1981)
was the first to articulate this phenomenon:

> Common membership in a salient social categorization can serve as a rule
> for defining the boundaries of a low-risk interpersonal trust that bypasses
> the need for personal knowledge and the costs of negotiating reciprocity
> with individual others (p.365).

Thus, in homogeneous groups, because members share the same identity or group
membership, they will be more likely to experience group trust than members in
heterogenous groups. Moreover, members of heterogeneous groups may be likely to
experience not only a lack of group trust but can even experience group distrust.
According to Kramer (1994), perceiving differences may lead people to feel fear and be suspicious. In small groups, distrust may spread quickly among group members, leading to what Kramer (1994) called “collective paranoia.” Such an epidemic phenomenon disturbs the group and can cause diverse groups to lower their group performance. Consistent with such a prediction, the proposed model suggests the following:

**Proposition 1h:** Group trust will partially mediate the negative relationship between diversity and group performance at a group level in such a way that diversity will negatively impact group trust which then will positively impact group performance.

**Summary**

Thus, the model identifies several psychological mechanisms at different conceptual levels that explain the meta-process of learning from each other’s identity. Including the other’s identities in the self (Aron, 2005) via empathy and self-disclosure, confirming people’s personal and social identities (Milton & Westphal, 2005) through interpersonal knowledge, mutual identity confirmation and interpersonal trust, as well as supporting each others’ identities (Bacharach, Bamberger, & Vashdi, 2005) through communication, group involvement and group trust are all psychological mechanisms that may explain how diverse groups can increase the performance of their group. The complexity of this process requires the measurement of multi-level variables at the individual-level (i.e., empathy and self-disclosure), the dyadic-level (i.e., interpersonal knowledge, mutual identity confirmation and interpersonal trust) and the group-level (i.e., communication, group involvement and group trust).

According to the proposed research model, these “positive psychological
mechanisms” must be activated in order for diverse groups to increase their performance. The model assumes that these mechanisms will be activated in diverse groups when the necessary psychological conditions are implemented. Identifying such psychological conditions leads to address the second research question at the core of the proposed model: When does diversity increase group performance?

Psychological Conditions: Explaining When Diversity Increases Group Performance

The model in Figure 3.1 focuses on two psychological conditions that are crucial to explain when diversity increases group performance: collective identity salience and psychological safety climate. Both variables are conceptualized as group level variables. The role of each of these two variables and their interdependent role in diversity contexts will be explained in the following section.

Collective identity salience. As mentioned earlier, social identity theory (Tajfel, 1978) and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) suggest that people who are different from one another are less likely to collaborate with others than people who are similar because they do not consider themselves in the same social category and thus do not share the same social identity. By not defining themselves based on the same social category, individuals may adopt psychological biases such as favoritism toward people considered as ingroup members and denigration of those people who are considered outgroup members.

The social psychology literature proposes that reducing the salience of ingroup-outgroup distinctions is a key condition to help diversity lead to positive effects (Brewer & Gaertner, 2004). More precisely, research has proposed that having a common ingroup by restructuring or redefining group boundaries at a higher level of category
inclusiveness (also called a superordinate category) may reduce the negative consequences of diversity (Allport, 1954, p. 43). Specifically, the common ingroup identity model (Gaertner & Dovidio, 2000; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993; Gaertner, Dovidio, Nier, Ward, & Banker, 1999) proposes that intergroup biases can be reduced by factors that transform participants’ representations of memberships from two groups to one, more inclusive group (Brewer & Gaertner, 2004). In summary, these theories propose that the recategorization process activates people’s social identification, which is defined by Turner (1982) as “the process of locating oneself or another person within a system of social categorization” (p. 18). Indeed, by redefining group boundaries into a superordinate level category, group members are likely to categorize themselves as well as others under the same category. Then, by putting all individuals under the same category, biases may be reduced and the likelihood increases that diversity will lead to positive consequences.

Consistent with the prediction proposed by social identity theory and self-categorization theory, Chatman, Polzer, Barsade and Neale (1998), found that the purported benefits of demographic diversity are more likely to emerge in organizations that, through their culture, make organizational membership salient and encourage people to categorize one another as having the organizations’ interest in common, rather than those that emphasize individualism and distinctiveness among members.

A recent study conducted by Van der Vergt and Bunderson (2005) tested similar predictions by using field data. More precisely, Van de Vergt and Bunderson (2005) examined whether team identification moderates the relationship between expertise diversity, team learning behavior and team performance. Their results were consistent
with the predictions based on social identity theory and self-categorization theory. Indeed, in teams with low collective identification, expertise diversity was negatively correlated with team learning and performance; however, in teams with high levels of collective identification, those relationships were positive.

Consistent with these results, the proposed research model examines whether personal versus collective identity salience moderates the relationship between diversity and group performance. Personal identity refers to that part of the self-definition based on unique or idiosyncratic aspects of the individual (i.e., personality, cognitive abilities, physical attributes etc.). Personal identity tends to address “Who am I, as a unique individual?” In contrast, collective identity tends to address “Who are we, as a group?” Despite some similarities with social identity, which has been defined by Tajfel (1978) as “that part of an individual’s self-concept which derives from his/her knowledge of his/her membership of a social group together with the value and emotional significance attached to that membership” (p. 63), collective identity is different. As pointed out by Pratt (2003), social identities reside in the individual, whereas collective identities reside within groups of individuals. Collective identities are therefore conceptualized at a higher level of analysis than social identities. Collective identities are group level variables and not individual level variables, like social identities. More precisely, Pratt (2003) has defined collective identity as “those characteristics that members feel are central, enduring and distinctive. Implicit in this conceptualization is the notion of shared, and at least somewhat overlapping beliefs” (p. 168-169).

Social identity theory and self-categorization theory also suggest that the negative effects of diversity on the psychological mechanisms and group performance will be
reduced when collective identity is salient as opposed to when personal identity is salient. This effect has already been tested by a field study conducted by Van de Vergt and Bunderson (2005). The proposed study will attempt to replicate this effect in the laboratory, and more specifically to test the following moderated propositions:

**Proposition 2:** The effects of group composition on psychological mechanisms are moderated by identity salience (personal identity versus collective identity) in such a way that the effects of identity salience on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups (see Figure 3.3):

**Proposition 2a:** When *personal identity is primed*, heterogeneous groups compared to homogeneous groups, are more likely to show reduced levels of empathy, self-disclosure, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.

**Proposition 2b:** When *collective identity is primed*, heterogeneous groups compared to homogeneous groups, are more likely to show increased levels of empathy, self-disclosure, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.
Figure 3.3: Anticipated interaction effect between group composition and identity salience on psychological mechanisms

Propositions predicting interaction effects between group composition and identity salience on the process variables and the dependent variables are also stated:

**Proposition 3**: The effects of group composition on task performance are moderated by identity salience in such a way that:

**Proposition 3a**: When *personal identity is primed*, heterogeneous groups compared to homogeneous groups, are more likely to show a lower quality of decision making.

**Proposition 3b**: When *collective identity is primed*, heterogeneous groups compared to homogeneous groups, are more likely to show a higher
quality of decision making.

**Proposition 4:** The effects of group composition on social-oriented group behaviors are moderated by identity salience in such a way that:

**Proposition 4a:** When *personal identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to show a higher frequency of interpersonal incivility behavior.

**Proposition 4b:** When *personal identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to show a lower frequency of interpersonal citizenship behavior.

**Proposition 4c:** When *collective identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to show a lower frequency of interpersonal incivility behavior.

**Proposition 4d:** However, when *collective identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to show a higher frequency of interpersonal citizenship behavior.

**Psychological safety climate.** Psychological safety climate has been defined as a shared belief among members, stemming from mutual respect and trust, that a group is safe for interpersonal risk taking, including having a sense of confidence that the group will not reject, embarrass, or punish members for speaking up (Edmondson, 1999, 2004). Kahn (1990) described psychological safety as “feeling able to show and employ one’s self without fear of negative consequences to self-image, status, or career” (p. 708).

Research suggests that when employees perceive their environment as safe for interpersonal risk taking, they may be more likely to assert who they are to others, in
terms of both their unique personal identity as well as their social identity. The conditions that activate positive psychological processes, such as self-expression, empathy, learning from other members’ identities, mutual identity confirmation, communication and trust are necessary for enabling diversity to lead to increased performance. However, when employees perceive their environment as unsafe, the likelihood for these positive psychological processes to occur is reduced. Under such circumstances, work diversity may lead to lower performance.

Van der Vegt and Bunderson (2005) have commented that: “a motivational climate [for helping diversity to lead to positive consequences] begins with members’ shared sense of identification with a group” (p. 533). Following up on this line of reasoning, I argue that when individuals' collective-selves become salient or activated, these individuals are more likely to feel psychologically safe as opposed to when individuals’ personal selves are salient. In other words, by being detached from their personal selves, more connected to their collective-selves, and by sharing communalities with others, individuals may have an impression of psychological safety which then leads to the activation of multilevel psychological processes. This relationship explains how diversity leads to positive rather than negative group performance. This argument would suggest that the psychological safety climate could be conceptualized as a mediator of the relationship between identity and group performance.

The proposed research model that will be tested suggests that the psychological safety climate is influenced by group identification as proposed by Van de Vergt and Bunderson (2005). However, identity salience and psychological safety climate are two distinct constructs that need to be discussed separately. In the proposed study, for
practical reasons, psychological safety climate will not be directly manipulated. Directly manipulating the psychological safety climate in an experimental laboratory study would be very difficult because this construct is a group level variable and requires extensive time in order to be perceived by all members of the group. To manipulate such a variable, field experiments would have to be conducted over a long period of time. More importantly, serious ethical concerns could arise if psychological safety climate were manipulated.

For the purpose of this dissertation, psychological safety climate is considered as a process variable between identity salience and group performance as well as between group composition and group performance. Its mediating effect is hypothesized:

**Proposition 5: Psychological safety climate** will mediate the relationship between identity salience and group performance in such a way that collective identity salience will positively impact psychological safety climate which then will positively affect group performance.

**Combined Effects of Collective Identity Salience and Psychological Safety Climate**

As it has been mentioned earlier, according to social identity theory and self-categorization theory, different people are more likely to cooperate when team identification is high than when it is low (Van der Vegt & Bunderson, 2005). However, it is also known from research on groupthink (Janis, 1982) that when group identification becomes too strong, people with different opinions tend to conform more and thus they may rarely take the risks to express their distinct opinions (see Haslam, Ryan, Postmes, Spears, Jetten, & Webley, in press). Therefore, under these circumstances, negative outcomes of diversity may be avoided, but it does not automatically mean that group
identification alone will lead to more positive outcomes. Group identification alone is not sufficient. An optimal level of identification may be required, and psychological safety climate may also be a necessary condition. Indeed, being reluctant to express different opinions because of fear of being rejected may lower the amount of conflict, and may also decreases employees’ performance, especially when sharing differences is a requirement for group performance. Thus, in addition to sharing a collective identity, people in heterogeneous groups may have to feel adequate psychological safety to engage themselves in the positive psychological mechanisms (i.e., empathy, self-disclosure, interpersonal knowledge, interpersonal trust, mutual identity confirmation, communication, group involvement and group trust) that lead to increased group performance. This theoretically suggests that collective identity and psychological safety climate are two distinct constructs but their influence may be co-related. At an individual level, feeling psychological safety refers to this notion of feeling free among a group of people to express who you are without fear of being judged and rejected. This is definitely a completely different feeling than being attached to a group because of shared identities or strong group identification.

Finally, it is important to specify that such types of interaction effects between identity salience and psychological safety climate may be observed with homogeneous groups as well. However, the magnitude of this interaction effect may become stronger when the groups are heterogeneous, meaning that both factors are extremely important to implement in organizations, especially where diversity exists and is promoted. The model emphasizes the moderating effect of psychological safety climate between group composition and group performance. Such effect has not been tested in previous studies.
However, a recent study conducted by Hobman, Bordia and Gallois (2004) found results supporting this moderating effect. Instead of studying the effects of psychological safety per se, Hobman et al. (2004) examined group openness to diversity. Their results show an interaction effect: When individuals perceive low group openness, visible dissimilarity is associated negatively with group involvement, whereas when individuals perceive high group openness, visible dissimilarity is not associated with group involvement. Consistent with these findings, the following moderated mediation hypothesis regarding the effect of psychological safety climate will be tested:

**Proposition 6:** The effects of group composition on psychological mechanisms are moderated by psychological safety climate in such a way that the effects of psychological safety climate on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups (see Figure 3.4).

**Proposition 6a:** When *psychological safety climate is low*, heterogeneous groups, compared to homogeneous groups, are more likely to show reduced levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.

**Proposition 6b:** When *psychological safety climate is high*, heterogeneous groups, compared to homogeneous groups, are more likely to show increased levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.
Summary

Thus, the model contributes greatly to our understanding of the effects of diversity on group performance. Specifically, by emphasizing the importance of collective identity and psychological safety climate, the model helps researchers to understand the conditions under which diversity may increase group performance. Moreover, the model sheds light on the respective but interdependent role of collective identity and psychological safety climate in diversity settings. Also, by identifying multi-level mechanisms, the model provides a more comprehensive understanding of how diversity leads to group performance. Considering individual- (i.e., empathy and self-
disclosure), dyadic- (i.e., interpersonal knowledge, mutual identity confirmation, interpersonal trust) and group-level (i.e., communication, ingroup involvement and group trust) mechanisms in a general conceptualization of workplace diversity has not been proposed before. More importantly, the model proposes that these multi-level psychological mechanisms are at the core of a super-ordinate process called “learning from each other’s identity.” The process of “learning from each other’s identity” has not been clearly defined in the previous literature, but may be a cornerstone that explains how diversity may lead to an increase in group performance, especially when the conditions are favorable and thus activate such mechanisms. To review each proposition stated in Chapter 3, please consult Table 3.2.
<table>
<thead>
<tr>
<th>Main Proposition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P1a)</strong> <em>Empathy</em> will partially mediate the negative relationship between diversity and group performance at an individual level in such a way that diversity will negatively impact empathy which then will positively affect group performance.</td>
</tr>
<tr>
<td><strong>P1b)</strong> <em>Self-disclosure</em> will partially mediate the negative relationship between diversity and group performance at an individual level in such a way that diversity will negatively impact self-disclosure which then will positively affect group performance.</td>
</tr>
<tr>
<td><strong>P1c)</strong> <em>Interpersonal knowledge</em> will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact interpersonal knowledge which then will positively affect group performance.</td>
</tr>
<tr>
<td><strong>P1d)</strong> <em>Mutual identity confirmation</em> will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact mutual identity confirmation which then will positively impact group performance.</td>
</tr>
<tr>
<td><strong>P1e)</strong> <em>Interpersonal trust</em> will partially mediate the negative relationship between diversity and group performance at a dyadic level in such a way that diversity will negatively impact interpersonal trust which then will positively impact group performance.</td>
</tr>
<tr>
<td><strong>P1f)</strong> <em>The quality of communication</em> will partially mediate the negative relationship between diversity and group performance at a group level in such a way that diversity will negatively impact quality of communication in the group which then will positively impact group performance.</td>
</tr>
<tr>
<td><strong>P1g)</strong> <em>Group involvement</em> will partially mediate the negative relationship between diversity and group performance at a group level in such a way that diversity will negatively impact group involvement which then will positively impact group performance.</td>
</tr>
<tr>
<td><strong>P1h)</strong> <em>Group trust</em> will partially mediate the negative relationship between diversity and group performance at a group level in such a way that diversity will negatively impact group trust which then will positively impact group performance.</td>
</tr>
<tr>
<td><strong>P2)</strong> The effects of group composition on psychological mechanisms are moderated by identity salience (personal identity versus collective identity) in such a way that the effects of identity salience on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups:</td>
</tr>
<tr>
<td><strong>P2a)</strong> When <em>personal identity is primed</em>, heterogeneous groups, compared to homogenous groups, are more likely to show reduced levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.</td>
</tr>
<tr>
<td><strong>P2b)</strong> When <em>collective identity is primed</em>, heterogeneous groups, compared to homogenous groups, are more likely to show increased levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust.</td>
</tr>
</tbody>
</table>

Table 3.2: Theoretical propositions

55
Table 3.2 continued

| P3) The effects of group composition on task performance are moderated by identity salience in such a way that: |
| P3a) When personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower quality of decision making. |
| P3b) When collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher quality of decision making. |

| P4) The effects of group composition on social-oriented group behaviors are moderated by identity salience in such a way that: |
| P4a) When personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher frequency of interpersonal incivility behavior. |
| P4b) When personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower frequency of interpersonal citizenship behavior. |
| P4c) When collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower frequency of interpersonal incivility behavior. |
| P4d) However, when collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher frequency of interpersonal citizenship behavior. |

| P5) Psychological safety climate will mediate the relationship between identity salience and group performance in such a way that collective identity salience will positively impact psychological safety climate which then will positively affect group performance. |

| P6) The effects of group composition on psychological mechanisms are moderated by psychological safety climate in such a way that the effects of psychological safety climate on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups. More specifically: |
| P6a) When psychological safety climate is low, heterogeneous groups, compared to homogeneous groups, are more likely to show reduced levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust. |
| P6b) When psychological safety climate is high, heterogeneous groups, compared to homogeneous groups, are more likely to show increased levels of empathy, self-disclosure, interpersonal knowledge, mutual identity confirmation, interpersonal trust, quality of communication, group involvement and group trust. |
CHAPTER 4

METHOD

Design

An experimental study was conducted to test whether the theoretical model presented in Chapter 3 holds in a laboratory setting, under a high level of control. The design is a 4 (group composition) X 2 (identity salience) factorial design. Participants were randomly assigned to one of the eight experimental conditions. Gender was the representative indicator of diversity that was used to manipulate group composition. Under the homogeneous condition, the group was composed of either five females or five males, and under the heterogeneous condition, the group was composed of either two females and three males, or two males and three females. Identity salience (personal identity versus collective identity) was also manipulated while psychological safety climate was assumed to be influenced by collective identity salience. Psychological safety climate is therefore measured, as well as the psychological mechanisms and group performance. It is important to mention that because psychological safety is measured, it can also be considered as a mechanism variable. In the study, the conducted analyses

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4 Although the proposed model could be applied to understand different types of diversity, gender was used as the indicator of diversity for practical purposes. I choose gender instead of any other indicator of diversity because gender can be quickly perceived and thus it can easily trigger the social categorization process which may increase the likelihood for a diverse group to perform poorly. I then become interested to examine the conditions as well as the psychological mechanisms that may deactivate or at least reduce the effects of social categorization processes. Also, as opposed to ethnicity/race or any other variables, manipulating gender in groups is easier under laboratory conditions.
consider psychological safety climate as both a process variable and a psychological condition.

It is important to mention that the other process variables measured in this study are not exactly the same psychological mechanisms as those proposed by the theoretical model (see Chapter 3). Self-disclosure, interpersonal knowledge and mutual identity confirmation are not measured in the current study. Measuring these variables would have required a long term interaction setting. In this study, group members were interacting on a short term basis (i.e., no longer than an hour). The measured process variables of this study are psychological closeness and interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate. The measured dependent variables are task performance, which required a consensus among group members, and group members’ perceptions of interpersonal incivility behavior and interpersonal citizenship behavior. Moreover, although the model acknowledges that psychological mechanisms may have effects at different levels of analyses between group composition and group performance, it is beyond the scope of this empirical study to examine these multi-level effects. For the purpose of this empirical study, only group analyses were conducted (see Chapter 5 for further details about the statistical analyses). To review all the hypotheses that were tested in the study, please consult Table 5.14.

Participants and Data Collection

A total of 440 undergraduate students enrolled in three different sections of an Organizational Behavior course at Max M. Fisher College of Business of The Ohio State University signed up to participate in the study. Based on their availability, students were
scheduled to come to an experimental session. Each group was planned to be composed of five individuals. In total, 66 experimental sessions were scheduled during Winter and Spring Quarters 2007. In case students withdrew their participation from the study, and also to assure that each group would be at least composed of five members, two extra individuals were scheduled to attend each experimental session. Unfortunately, despite this preventive action, 18 experimental sessions were cancelled because there were less than four participants attending the session. However, groups of four members were still allowed to participate in the study. At the end of the data collection, the sample included 32 groups of five individuals, and 15 groups of four individuals. Pre-analyses were conducted to verify whether there are differences between groups of four individuals versus those composed of five individuals in order to consider these two group sizes as part of the sample (see Chapter 5 for more details about this analysis).

In total, 219 undergraduate students participated in the experimental session of the study. 73% are Caucasian, 20% are Asian, 3% are African-American, 3% are Latinos and 1% identify themselves as having another race identity. Finally, 95% are between the age of 18 and 25 years old.

Before conducting the study, a power analysis was conducted to determine the required number of groups per experimental condition. To determine this number, the following parameters were considered: Alpha (α) = 0.05, Power (β) = 0.80, Effect Size ($\omega^2$) = 0.25; and 8 experimental conditions. According to Go*Power (Faul & Erdfelder, 1992), considering these parameters and the types of analyses (i.e., primarily ANOVA) that were performed, the minimal number of groups required is approximately 6 groups per experimental condition. Unfortunately, because of the “no show” problem, this
number was not reached in the current study. The logistic problems encountered in this study during the data collection are attributed to students’ withdraw from the study and lack of participants in the recruitment pool. Therefore, under each experimental condition, data were collected from only three, four or five groups. The number of groups per condition was unbalanced. Table 4.1 shows the number of groups per experimental condition considering types of group compositions and identity salience.

<table>
<thead>
<tr>
<th>Identity Salience</th>
<th>Type of Group Composition</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3M2F</td>
</tr>
<tr>
<td>Collective Identity</td>
<td>4</td>
</tr>
<tr>
<td>Personal Identity</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 4.1: Number of group per experimental condition considering types of group compositions and identity salience

Procedures

The experimental procedures required participants to first sign the consent letter online and to fill out a questionnaire that assesses some variables (i.e., race, age, openness to diversity and gender-based identification). Before completing this questionnaire, participants determined an identification number for themselves. This number was used to keep track of data from the first phase of the study with data from the second phase of the study.

The second phase of the experiment was conducted three weeks later. Participants
were invited to attend an experimental session at the laboratory on Tuesday, Wednesday, Thursday or Friday. The invitation was sent via email and the date they were invited to come to the laboratory was determined based on their availability. Once they were at the laboratory, participants sat around a circular table with four (or three) other individuals. An experimental booklet printed on a different color (i.e., pink, yellow, blue, violet, or green) paper was randomly assigned to each participant. This color was, later on, used by participants to evaluate each member of their respective group in an anonymous manner. The experimenter of this study, also the author of this dissertation, read the instructions out loud. The booklet provided information about the experimental task and the questionnaires that were used to measure the process and dependent variables were attached to it.

It is important to mention that the extra individuals who were invited in case some of the five required individuals would not show up had to write a short essay about why diversity is considered as a competitive advantage in today’s workplace. This task lasted about 30 minutes. These extra individuals were apart from the group and thus they did not interact with the group members. In total, 18 participants wrote an essay. These data collected via this essay have not been analyzed in any way.

**Priming Gender Identity**

Before engaging themselves in the experimental task, participants had to complete a brief questionnaire about their level of identification with their own gender. Two examples of items that were asked are: “I feel strong ties with women/men,” “the fact that I am a woman/man does not mean much to me.” The purpose of asking such questions was to prime participants’ gender identity and thus to reinforce their sensitivity to the
gender composition of the group.

Experimental Task

The experimental task consisted of a focus group about determining the effectiveness of magazine advertisements that lasted about 30 minutes. Participants were told that they were part of an executive team from a marketing agency. They were encouraged to discuss their opinions about 8 different magazine advertisements and rate and rank them based on their level of effectiveness. Effectiveness was defined as, “how effective is the advertisement at getting people's attention and getting people to do what the advertisement wants to”. Participants were first asked to rate individually the overall effectiveness of each advertisement by using a 7 anchor scale. Then with the other group members, participants were asked to come to a consensus about the ranking of these advertisements, from the most effective to the least effective.

Manipulation of Identity Salience

Before performing the task, identity salience was manipulated in a similar way as previous studies (see Haslam, 2004). Under personal identity condition, participants were told that during the discussion they have to make an “individual contribution to the discussion” and to remember three things that they personally will have said during the discussion and that differed from those of most other people in their group. Under the collective identity condition, participants were told to “participate in the group discussion” and to remember three things that people in their group shared about the advertisements.

Debriefing

After having filled out each questionnaire, participants were debriefed and they
provided with additional information about the purpose of the study. Moreover, students were asked to not talk about the content of this study to anyone else, especially any friends or colleagues who may be later participating in the study.

Measures

At the end of the experimentation session, before the debriefing, the following variables were measured: seven psychological mechanisms (i.e., psychological closeness, interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate), and three indicators of group performance (i.e., task performance, interpersonal citizenship behavior and interpersonal incivility behavior). To know precisely what items were used in the experimentation, please consult the “Experimental Booklet” in appendix B.4.

Psychological Mechanisms

All psychological mechanisms are measured by gathering data from individual group members. However, for purpose of the analyses, the constructs are all aggregated at a group level. The computation techniques used to aggregate each construct are explained in Chapter 5.

Group empathy was assessed using a scale similar to the PANAS-X (Watson, Clark, & Tellegen, 1988). Five items were indicators of empathy (e.g., warm, sympathetic, tenderness, compassionate and empathetic). Similar indicators of empathy have been used before by Batson, Sager, Garst, Kang, Rubchinsky, and Dawson (1997), and the Cronbach’s alpha was = .88. It is important to specify that this measure requires people’s perceptions of the group as a whole. In fact participants were asked to indicate
to what extent they thought these feelings had been experienced among group members during the group discussion.

*Psychological closeness* was measured using the Inclusion of Other in the Self Scale (Aron, Aron, & Smollan, 1992). In previous studies, this measure has been used as a proxy for measuring the cognitive component of empathy (see Batson, 1991; Kerem, Fishman, & Ruthellen, 2001). The inclusion of other in the self measure has also been considered as a measure of identification.

Other psychological mechanisms such as communication and group involvement are measured by using items from previous studies (Gibson & Vermeulen, 2003; Hobman, et al. 2004). These two measures required people’s perceptions of the group as a whole. *Communication* was measured using three items that are aggregated among group members. According to Gibson and Vermeulen (2003), the Cronbach’s alpha is = .89 and the ICC is = .85, p <.0001 with a $R_{wg(j)} = .86$. *Group involvement* was measured by using five items that are also aggregated among group members. According to Hobman et al. (2004), Cronbach’s alphas for work group involvement at Time 1 was = .89 and at Time 2 was = .90 (no statistical indicator and interjudge agreement have been identified by a previous study). *Group trust* was measured by using two items that developed for this research, and *interpersonal trust* was assessed using only one item.

To measure *psychological safety climate*, 14 items developed by Fuegen and Biernat (2002) were used. Four factors should be underlying the measure of group climate: (a) treatment (5 items: isolation, well treated, awkwardness, uncertainty, and being listened to, $\alpha = .81$); (b) feeling stereotyped/role entrapment (2 items: judged and stereotypes on the bases of gender, $\alpha = .90$); (c) enjoyment (2 items: enjoyed and felt
comfortable in the group, \( \alpha = .65 \); (d) visibility (2 items: standing out and [reserved] blending in).

Thus, some constructs, such as psychological closeness and interpersonal trust are assessed through items that measure their interpersonal perceptions, whereas other mechanisms, such as group empathy, communication, group involvement, group trust and psychological safety climate are measured via items that ask for people’s perceptions of the group’s characteristics.

**Group Performance Outcomes.**

In this study, the group performance outcomes refer to both task-oriented behaviors and social oriented behaviors.

*Task-oriented behavior:* Task-oriented behavior was measured via group consensus at ranking the effectiveness of eight different magazine advertisements. Effectiveness was defined as: How effective is the advertisement at getting attention and getting people to do what the advertisement wants? Groups’ ranking was then compared to a ranking or baseline created by conducting a pilot study.

The pilot study was conducted with students that were independent from those in the main study. In total, 66 undergraduate students (43 males, 23 females) who enrolled in an Organizational Behavior class during the Fall Quarter of 2006 participated in the pilot study. The experimental task was conducted in a computer laboratory where each student had access to an individual computer. The experimental task consisted of observing and rating 16 different magazine advertisements on three criteria: 1) effective/ineffective, 2) comforting/disturbing, 3) fascinating/boring. A scale with seven anchors was used for each criterion. Only the effectiveness criterion was used to select
and determine the ranking of the advertisements that would be used in the main study. To prevent the carry over effect that could occur due to the order of the advertisements’ presentation, three different random sequences were created. Participants were randomly assigned to one of the three sequences. To review the material that was used to conduct the pilot study, please consult Appendix A.

Table 4.2 presents the results obtained and the selected advertisements (in bold) that were used in the main study. Among the sixteen advertisements used in the pilot study, eight of them were selected based on their respective adjusted mean in order to include advertisements which differ on their adjusted mean and that are attractive to different genders. Among the advertisements that were selected, three were preferred by females (Valient, Propel and GE), three were preferred by males (Nike Shoes, State Farm and Deloitte) and two were equally preferred by males and females (Diversity and LeSportsac). Selecting advertisements that are perceived differently by males and females provides an opportunity for heterogeneous groups based on gender composition to perform better than homogeneous groups because mixed gender groups who share their views should be more likely to accurately match the baseline ranking than homogeneous groups who do not share cross-gender view points. But it is important to stress that this effect would be expected only if there is an effective communication process that occurs among members. This table also presents the effectiveness ranking of the eight selected advertisements.
Table 4.2: Results of the pilot study: The overall means, means per gender, adjusted means and order of the selected advertisements for the effectiveness criteria

Social-oriented behavior. Social-oriented behavior includes a measure of both types of behaviors; interpersonal citizenship behaviors and interpersonal incivility behaviors. Each individual was asked to evaluate the performance of every peer of their group on these behaviors. To measure interpersonal citizenship behaviors, four items from the scale developed by Settoo and Mossholder (2002) were used. The Cronbach’s alpha is estimated at 0.93. To measure interpersonal incivility behaviors, four items from the scale developed by Cortina, Magley, Williams, and Langhout (2001) were used. The Cronbach’s alpha is estimated at 0.89. For each construct, a group aggregation was computed that takes into account all members’ interpersonal perceptions of one another.
Manipulation Check of Identity Salience

To measure whether people well understood the instructions distinguishing participants under the collective identity salience versus those under personal identity salience manipulation, a memory task was administrated. Depending on the condition, this memory task required participants to indicate either three of their own personal opinions about the advertisements that differed from those of most other people in their group (personal identity condition) or to indicate three ideas that other members of your group presented about the advertisements (collective identity condition).
CHAPTER 5

RESULTS

The purpose of this fifth chapter is to report the results obtained by the statistical analyses that were conducted in this study. Two types of analyses were conducted: 1) preliminary analyses, and 2) main analyses.

Preliminary Analyses

The preliminary analyses have three purposes. The first purpose is to verify the efficiency of the manipulation of identity salience. The second purpose is to assess the reliabilities of the measures used. Finally, the last purpose is to test three assumptions that need to be met in order to subsequently test the main hypotheses.

Verifying the Efficiency of the Manipulation of Identity Salience

In general, the memory task that was conducted to verify the manipulation of identity salience seems to reveal that people who were exposed to the personal identity condition focused on their own opinions whereas people who were exposed to the collective identity condition focused on others’ contributions to the group discussion. Words such as “we” and “us” were used as referents to determine whether participants’ collective identity was activated during the group discussion, whereas the word “I” is the indicator used to determine whether participants’ personal identity was activated during the group discussion. Examples of what people reported under each condition are as
follows:

Under the personal identity condition:

- “The GE ad. made little sense because I didn’t know the underlying detail.”
- “I liked the Propel advertisement more than the State Farm one.”
- “I liked the diversity advertisement; it was catchy.”
- “I thought certain ads were blurry and hard to comprehend.”

Under the collective identity condition:

- “Ad #F—We felt that all could identify with this ad since we are all college students are therefore we all ranked it high and it ended up being the highest group ranking.”
- “We liked bright color ads.”
- “The Propel ad was effective to most of us due to its use of H20.”

However, under collective identity salience, it happened that people were not referring the “We” or “Us” in their statements. Examples of such statements are as followed:

- “The Deloitte ad was very boring and unattractive.”
- “Diversity Ad—very eye catching, not much substance.”

Such data may suggest that participants’ collective identity was not really activated. The manipulation of identity salience and especially collective identity salience may have not been effective for every group. However, it is important to mention that no systematic analyses have been performed on these qualitative data. Therefore, the manipulation
check of identity salience remains exploratory in this study.

Assessing the Reliability of the Measures

Before addressing the reliability of the measures used in this study, I would like to clarify the computation that was performed for each construct in order to conduct group level analyses.

Computation of the Measures. Seven process variables and two dependent variables were measured via a self-report questionnaire. Among the seven process variables, five of them were measured by asking participants’ perceptions of the characteristics of the group. These variables are group empathy, communication, group involvement, group trust and psychological safety climate. The computation of these variables required two levels of aggregation. The first level of aggregation is conducted at an item level. Each item takes into account the mean of the group members’ perceptions. The second level of aggregation refers to the overall mean of these group perceptions.

The other two process variables were measured by asking participants’ interpersonal perceptions of one another. These variables are psychological closeness and interpersonal trust. Each of these constructs is assessed using only one item. Therefore, only two levels of aggregation are required. The first level refers to the average of the observations made by one group member. The second level refers to the overall mean of the average of the observations made by all group members.

The dependent variables, interpersonal incivility behavior and interpersonal citizenship behavior were also measured at an interpersonal level. However, these constructs are assessed using four items each. Thus, because of their interpersonal nature
and that the number of items used to assess these constructs is more than one, these variables require three levels of aggregation in order to be analyzed at a group level. The first level refers to the average of the four observations made by one group member toward another group member. The second level of aggregation refers to the mean of the average of observations made by each group member within a group. Finally, the third level of aggregation refers to the overall mean of these observations across all group members.

Task performance reflects the group’s performance at predicting the baseline ranking of eight advertisements based on their level of effectiveness, from the most effective to the least effective. For each of the eight advertisements, the difference between the actual group ranking and the baseline group ranking (derived from the pilot study) was obtained. When the difference is equal to zero, it means that the ranking of the advertisement was correctly predicted. When the difference is equal to a negative or positive value, it means that there was an over- or an under-estimation of the ranking. The differences were weighted equally. How far each ranking deviated from the baseline was the concern, and thus the sum of the absolute value of the differences was considered. The lower the sum, the more accurate the group was.

For interpretability purposes, the sums obtained were rescaled by using the ratio between the group sum and the worst sum (56) that could be obtained. Then, one minus this ratio was computed. The ratio varies from 0 to 1 and the highest value reflects the best group performance. The maximum value found for the task performance is 0.96 and the minimum value is 0.64. The average is 0.81 and the standard deviation is 0.06. Thus, it can be pointed out that there was very little variability among groups on their
task performance.

**Cronbach Alpha.** Analyses of scale reliabilities were performed for the study data. The analyses were conducted by considering all individual observations as well as by considering the mean of each group. When all individual observations are taken into account, the coefficient alphas ($\alpha_1$) range from 0.356 to 0.792, whereas when group means are considered the coefficient alphas ($\alpha_2$) range from 0.578 to 0.877. All reliability estimates for self-report scale variables are reported in Table 5.1. As it is shown, the estimates of group trust are considered as being low. Therefore, interpretation of the results obtained by using these scales will have to be done cautiously. Also, Table 5.2 presents the correlations among the study variables.
<table>
<thead>
<tr>
<th>Constructs</th>
<th>Cronbach Alphas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nb. items</td>
</tr>
<tr>
<td>Process Variables</td>
<td></td>
</tr>
<tr>
<td>Group Empathy</td>
<td>5</td>
</tr>
<tr>
<td>Group Communication</td>
<td>3</td>
</tr>
<tr>
<td>Group Involvement</td>
<td>5</td>
</tr>
<tr>
<td>Group Trust</td>
<td>2</td>
</tr>
<tr>
<td>Psychological Safety Climate</td>
<td>14</td>
</tr>
<tr>
<td>Psychological Closeness</td>
<td>1</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>1</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td></td>
</tr>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>4</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5.1 Cronbach alphas for each self-report measure
<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diversity</td>
<td>.020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Identity Salience</td>
<td>-.142</td>
<td>-.225</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Group Empathy</td>
<td>-.069</td>
<td>-.110</td>
<td>.479**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Communication</td>
<td>-.186</td>
<td>.010</td>
<td>.382**</td>
<td>.685**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Group Involvement</td>
<td>-.016</td>
<td>-.230</td>
<td>.254</td>
<td>.423**</td>
<td>.619**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Group Trust</td>
<td>.418**</td>
<td>.090</td>
<td>-.218</td>
<td>-.432**</td>
<td>-.562**</td>
<td>-.564**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Psych. Closeness</td>
<td>.048</td>
<td>-.055</td>
<td>.315*</td>
<td>.118</td>
<td>.251</td>
<td>.430**</td>
<td>-.250</td>
<td>.131</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Interpersonal Trust</td>
<td>.130</td>
<td>-.006</td>
<td>-.083</td>
<td>-.105</td>
<td>-.212</td>
<td>-.170</td>
<td>.196</td>
<td>.048</td>
<td>-.192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Incivility Behavior</td>
<td>-.144</td>
<td>.006</td>
<td>.402**</td>
<td>.331*</td>
<td>.574**</td>
<td>.441**</td>
<td>-.269</td>
<td>.142</td>
<td>.564**</td>
<td>-.321*</td>
<td></td>
</tr>
<tr>
<td>11. Citizenship Behavior</td>
<td>.081</td>
<td>-.217</td>
<td>-.068</td>
<td>.017</td>
<td>.109</td>
<td>.172</td>
<td>.019</td>
<td>.028</td>
<td>.137</td>
<td>-.153</td>
<td>.058</td>
</tr>
<tr>
<td>12. Task Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01

Table 5.2: Correlations among study variables
Verifying the Required Assumptions for Subsequently Testing the Main Analyses

Before conducting the main analyses three assumptions must be met. To verify whether the assumptions are met, preliminary analyses must be conducted. Each of these assumptions will be now identified.

First of all, it is assumed that within heterogeneous groups, there should be no significant differences between female subgroups and male subgroups. In fact, in order to be able to compare homogeneous groups to heterogeneous groups, it is important to examine within heterogeneous groups, whether female versus male subgroups can be collapsed together to form one group measure. Differences between these two types of subgroups must not exist in order to pursue the main analyses.

The second assumption is that there should be no significant differences between types of group composition. The research design was set up in such a way that there were two different types of homogeneous groups (only females or only males) and two types of heterogeneous groups (dominated females, or dominated males). In order to conduct the main analyses, which require comparative analyses between heterogeneous groups and homogeneous groups, differences between types of homogeneous groups and types of heterogeneous groups must not exist.

The last assumption refers to differences between different group sizes: groups composed of five members should not be significantly different than groups composed of four members. Because of some logistical problems experienced during the data collection, some groups are composed of five individuals and others are composed of four individuals. In order to be able to use data from both group sizes, it is important to verify that there are no significant differences between these groups of different sizes.
In the following section, the preliminary analyses conducted to verify each assumption will be presented sequentially.

Testing for Differences between Subgroups within Heterogeneous Groups

Within heterogeneous groups, compared to females, do males perceive the process and dependent variables differently? To test if these subgroups are significantly different on the process and the performance variables, univariate analyses of variance with repeated measure were conducted. For each of the five process variables that are assessed by required a two levels aggregation (i.e., group empathy, communication, group involvement, group trust and psychological safety climate), the univariate analyses of variance were conducted to test whether there are differences between female subgroups and male subgroups. The Mauchly’s W Test of Sphericity\(^5\) was first conducted and its results suggest that a correction does not have to be applied to the F. The Fs reported in Table 5.3 refer to the usual F.

\(^5\) The Mauchly’s W Test of Sphericity is commonly used in repeated measurements designs. The test verifies whether a covariance matrix can be assumed to be proportional to a given matrix. If the assumption is supported, no correction needs to be applied to the F of an ANOVA as a repeated measure. However, if the assumption is violated, an adjustment to the F must be applied. The Greenhouse-Geisser indicator takes into account this adjustment.
As it is shown by Table 5.3, gender subgroups are significantly different only regarding communication ($F = 5.32; p = 0.03; df_1 = 1; df_2 = 21$). The mean for females is 4.25 and the mean for males is 3.94. This suggests that compared to males, females perceived the communication of the group as more effective. The magnitude of the effect is relatively small with a Partial Eta Squared of 0.20.

For the variables that are assessed at an interpersonal level, which are the two process variables (i.e., psychological closeness and interpersonal trust) and the two dependent variables (i.e., interpersonal incivility behavior and interpersonal citizenship behavior), univariate analyses of variance with repeated measure were conducted to verify whether there are differences between members’ perceptions of their ingroup
versus outgroup members.

Again, the Mauchly’s W Test of Sphericity was conducted; its results suggest that a correction must be applied to the F such as reported by the Greenhouse-Geisser. The Fs reported in Table 5.4 refer to the Greenhouse-Geisser indices.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Closeness</td>
<td>7.48</td>
<td>2.51</td>
<td>50.11</td>
<td>0.003*</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>2.61</td>
<td>2.65</td>
<td>55.73</td>
<td>0.07</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>0.37</td>
<td>1.72</td>
<td>36.05</td>
<td>0.66</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>6.36</td>
<td>2.67</td>
<td>56.15</td>
<td>0.009*</td>
</tr>
</tbody>
</table>

* p < .05

Table 5.4: Significance F tests for the main effect of members’ perception of ingroup-outgroup members on psychological closeness, interpersonal trust, interpersonal incivility behavior and interpersonal citizenship behavior

As Table 5.4 shows, the analysis of variance reveals that there are difference between members’ perceptions of their ingroup-outgroup members on psychological closeness (F = 7.48; p = 0.003; df₁ = 2.51; df₂ = 50.11) and citizenship behavior (F = 6.36; p = 0.009; df₁ = 2.67; df₂ = 56.15). The magnitude of the effect size is relatively
small; indeed the Partiel Eta Squared is equal to 0.27 for psychological closeness and
0.23 for citizenship behavior. It could also be mentioned that the effect of members’
perceptions of their ingroup-outgroup members on interpersonal trust is barely significant
with a F = 2.61 at p = 0.07 (df₁ = 2.61; df₂ = 55.73). Table 5.5 shows the means of each
subgroup (female and male subgroups) of their perceptions toward ingroup and outgroup
members on psychological closeness, interpersonal trust and interpersonal citizenship
behavior respectively.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Gender</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ingroup Member</td>
</tr>
<tr>
<td>Psychological Closeness</td>
<td>Female</td>
<td>2.64</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3.07</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>Female</td>
<td>3.38</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3.54</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>Female</td>
<td>3.48</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3.15</td>
</tr>
</tbody>
</table>

Table 5.5: The mean of group members’ perceptions of their ingroup and outgroup
members on psychological closeness, interpersonal trust and interpersonal citizenship
behavior

In summary, the analyses conducted to verify whether there are, within
heterogeneous groups, significant differences between female versus male
subgroups, reveal that there is indeed a significant difference between these two subgroups on communication. Further analyses considering members’ interpersonal perceptions found significant differences between members’ perceptions of ingroup versus outgroup members on psychological closeness and interpersonal citizenship behavior. These variables that showed significant differences should not be taken into account in the subsequent main analyses. However, even though they are statistically significant, these differences will be ignored and the main analyses will be conducted for communication, psychological closeness and interpersonal citizenship behavior.

Testing for Differences between Types of Group Composition and Group Size

The diversity theory used to develop the hypotheses assumes that there are no differences between homogeneous female groups and homogeneous male groups, and between heterogeneous male-dominated groups and heterogeneous female-dominated groups. However, according to the literature on gender differences (e.g. see Powell, 1999), it is known that members of different demographic groups may respond differently to being dissimilar or similar to others (e.g., Chatman & O’Reilly, 2004). Therefore, in order to collapse homogeneous male groups with homogeneous female groups, and heterogeneous female-dominated groups with heterogeneous male-dominated groups, it is important to establish that there are no significant differences between these types of gender-based groups.

In the planned experimental design, groups were supposed to be composed of five members only. However, because of some logistical problems during the recruitment process, it was not possible to collect data with only groups composed of five members. Some groups are composed of four individuals. In order to collapse data collected from
groups of four members with data collected from groups of five members, comparative analyses must be conducted to establish whether groups of different size differ on the process and dependent variables. Table 5.6 presents the number of group per treatment combination.

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Types of Gender-Based Groups</th>
<th>Four Individuals</th>
<th>Five Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogeneous Groups</td>
<td>Male</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Heterogeneous Groups</td>
<td>Male-Dominated</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Female-Dominated</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Equal Females/Males</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>GRAND TOTAL:</td>
<td></td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.6: Number of groups per treatment combination

First, a general hypothesis (hypothesis 00) that compares the overall mean of each group composition will be tested for each construct by using an overall analysis of variance to verify whether there are differences between these types of groups. Table 5.7 identifies the group label for each type of group.

\[ H_{00}: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 \]
Then, if the results report any significant differences, four contrast analyses will be conducted. The four contrasts are stated as followed:

Contrast 1:

\[ H_{01}: \frac{(\alpha_1 + \alpha_3)}{2} - \frac{(\alpha_2 + \alpha_4)}{2} = 0 \]

Hypothesis 01 predicts that there will be no significant difference between homogeneous male groups and homogeneous female groups.

Contrast 2:

\[ H_{02}: \frac{(\alpha_1 + \alpha_2)}{2} - \frac{(\alpha_3 + \alpha_4)}{2} = 0 \]

Hypothesis 02 predicts that there will be no significant difference between

---

<table>
<thead>
<tr>
<th>Types of Gender-Based Groups</th>
<th>Group Size</th>
<th>Four Individuals</th>
<th>Five Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogeneous Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>( \alpha_1 )</td>
<td>( \alpha_3 )</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>( \alpha_2 )</td>
<td>( \alpha_4 )</td>
<td></td>
</tr>
<tr>
<td>Heterogeneous Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Dominated</td>
<td>( \alpha_5 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Dominated</td>
<td>( \alpha_6 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal Females/Males</td>
<td>( \alpha_7 )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.7: Label for each type of group
homogeneous groups that are composed of four individuals and those that are composed of five individuals.

Contrast 3:

\[ H_{03}: \frac{(\alpha_5 + \alpha_6)}{2} - \alpha_7 = 0 \]

Hypothesis 03 predicts that there will be no significant difference between heterogeneous groups composed of four individuals and those composed of five individuals.

Contrast 4:

\[ H_{04}: \alpha_5 - \alpha_6 = 0 \]

Hypothesis 04 predicts that there will be no significant difference between heterogeneous male groups and heterogeneous female groups.

Table 5.8 presents the results obtained on the overall analysis of variance conducted to test Hypothesis 00 on each construct. As the table shows, only psychological safety climate shows a significant effect. Contrast analyses must therefore be conducted for this construct. However, for all the other constructs, since there is no significant result the null hypothesis is not rejected and the subsequent contrasts will also not be rejected.
Table 5.8: Significance F tests for the hypothesis 00 on each construct

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Empathy</td>
<td>0.92</td>
<td>6</td>
<td>40</td>
<td>0.49</td>
</tr>
<tr>
<td>Group Communication</td>
<td>0.13</td>
<td>6</td>
<td>40</td>
<td>0.99</td>
</tr>
<tr>
<td>Group Involvement</td>
<td>0.70</td>
<td>6</td>
<td>40</td>
<td>0.65</td>
</tr>
<tr>
<td>Group Trust</td>
<td>0.30</td>
<td>6</td>
<td>40</td>
<td>0.93</td>
</tr>
<tr>
<td>Psychological Safety Climate</td>
<td>3.07</td>
<td>6</td>
<td>40</td>
<td>0.01*</td>
</tr>
<tr>
<td>Psychological Closeness</td>
<td>1.01</td>
<td>6</td>
<td>35</td>
<td>0.44</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>1.57</td>
<td>6</td>
<td>38</td>
<td>0.18</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>1.01</td>
<td>6</td>
<td>40</td>
<td>0.43</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>1.05</td>
<td>6</td>
<td>40</td>
<td>0.41</td>
</tr>
<tr>
<td>Task Performance</td>
<td>0.98</td>
<td>6</td>
<td>40</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Table 5.9 shows that none of the contrast analyses on psychological safety climate are significant. This results confirm that for each construct, there is no significant difference between homogeneous male groups and homogeneous female groups (hypothesis 01 is not rejected), there is no significant difference between homogeneous groups that are composed of four individuals and those that are composed of five individuals (hypothesis 02 is not rejected), there is no significant difference between heterogeneous groups composed four individuals and those composed of five
individuals (hypothesis 03 is not rejected), and finally there is no significant difference between heterogeneous male groups and heterogeneous female groups (hypothesis 04 is not rejected).

<table>
<thead>
<tr>
<th>Contrasts</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast 1.</td>
<td>0.01</td>
<td>1</td>
<td>40</td>
<td>0.08</td>
</tr>
<tr>
<td>Contrast 2.</td>
<td>0.17</td>
<td>1</td>
<td>40</td>
<td>0.32</td>
</tr>
<tr>
<td>Contrast 3.</td>
<td>0.04</td>
<td>1</td>
<td>40</td>
<td>0.15</td>
</tr>
<tr>
<td>Contrast 4.</td>
<td>0.05</td>
<td>1</td>
<td>40</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Table 5.9: Significance F tests for the contrast analyses (hypothesis 01, 02, 03, and 04) on psychological safety climate

Main Analyses: Testing Hypotheses

The main analyses will first focus on testing for significant interaction effects between group composition and identity salience on processes and dependent variables. More specifically, these analyses are conducted to test hypotheses 2, 2a, 2b, 3, 3a, 3b, 4, 4a, 4b, 4c, and 4d. By the same token, the analyses that verify hypotheses 3 and 4 will reveal whether or not there is a main effect between group composition and group performance. If this relationship is significant, the hypotheses 1a to 1g that predict that psychological closeness, interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate mediate the relationship between group composition and group performance will be tested. Indeed, because
hypotheses 1a to 1g presume that there is a significant relationship between group composition and group performance, it makes sense to conduct statistical analyses that verify hypotheses 1a to 1g only if main effects exist between group composition and the dependent variables. Finally, hypothesis 5 will be tested as a requirement to verify hypothesis 6. Table 5.10 presents the mean and standard deviation for each process and dependent variable under each experimental condition. To review all the hypotheses that were tested in the study, please consult Table 5.15.

The general statistical model that will be used is:

$$y_{ijk} = \mu + \alpha_i + \beta_j + \alpha\beta_{ij} + \varepsilon_{ijk}$$

Where:

- $y_{ijk}$ is the ___________ of the $k^{th}$ group in the $i^{th}$ level composition factor (heterogeneous vs. homogeneous) and the $j^{th}$ level of identity salience factor (personal vs. collective).
- $\mu$ is the overall mean
- $\alpha_i$; is the main effect of the $i^{th}$ level of the composition factor
- $\beta_j$ is the main effect of the $j^{th}$ level of the identity salience factor
- $\alpha\beta_{ij}$ is the interaction between the $i^{th}$ and the $j^{th}$ levels of composition and identity salience
- $\varepsilon_{ijk}$ ~ independent and identically distributed normal random variables with mean 0 and variance $\sigma^2$
## Table 5.10: Mean and standard deviation for each process and dependent variable under each experimental condition

<table>
<thead>
<tr>
<th>Experimental Conditions</th>
<th>Homogeneous Groups</th>
<th>Homogeneous Groups</th>
<th>Homogeneous Groups</th>
<th>Homogeneous Groups</th>
<th>Homogeneous Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collective Id.</td>
<td>Personal Id.</td>
<td>Collective Id.</td>
<td>Personal Id.</td>
<td>Total Mean</td>
</tr>
<tr>
<td><strong>Process Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Empathy</td>
<td>2.296 (0.35)</td>
<td>2.458 (0.49)</td>
<td>2.162 (0.28)</td>
<td>2.366 (0.48)</td>
<td>2.321 (0.40)</td>
</tr>
<tr>
<td>Communication</td>
<td>4.135 (0.28)</td>
<td>4.132 (0.27)</td>
<td>4.018 (0.36)</td>
<td>4.164 (0.35)</td>
<td>4.112 (0.32)</td>
</tr>
<tr>
<td>Gr. Involvement</td>
<td>4.245 (0.28)</td>
<td>4.165 (0.19)</td>
<td>4.079 (0.17)</td>
<td>4.157 (0.27)</td>
<td>4.162 (0.23)</td>
</tr>
<tr>
<td>Gr. Trust</td>
<td>3.644 (0.41)</td>
<td>3.706 (0.20)</td>
<td>3.564 (0.23)</td>
<td>3.770 (0.26)</td>
<td>3.671 (0.28)</td>
</tr>
<tr>
<td>Psy. Safety</td>
<td>2.086 (0.21)</td>
<td>2.066 (0.15)</td>
<td>2.239 (0.14)</td>
<td>2.202 (0.14)</td>
<td>2.148 (0.16)</td>
</tr>
<tr>
<td>Psy. Closeness</td>
<td>2.602 (0.45)</td>
<td>2.644 (0.42)</td>
<td>2.593 (0.26)</td>
<td>2.730 (0.31)</td>
<td>2.642 (0.36)</td>
</tr>
<tr>
<td>Interp. Trust</td>
<td>3.415 (0.31)</td>
<td>3.363 (0.23)</td>
<td>3.356 (0.21)</td>
<td>3.467 (0.25)</td>
<td>3.400 (0.25)</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incivility Beh.</td>
<td>1.101 (0.06)</td>
<td>1.131 (0.18)</td>
<td>1.165 (0.10)</td>
<td>1.136 (0.15)</td>
<td>1.133 (0.12)</td>
</tr>
<tr>
<td>Citizenship Beh.</td>
<td>3.413 (0.43)</td>
<td>3.360 (0.29)</td>
<td>3.261 (0.30)</td>
<td>3.308 (0.42)</td>
<td>3.335 (0.36)</td>
</tr>
<tr>
<td>Task Performance</td>
<td>0.807 (0.52)</td>
<td>0.813 (0.49)</td>
<td>0.795 (0.72)</td>
<td>0.844 (0.68)</td>
<td>0.815 (0.60)</td>
</tr>
</tbody>
</table>
Testing Hypothesis 2

Hypothesis 2 predicts that the effects of group composition on psychological processes are moderated by identity salience in such a way that the effects of identity salience on psychological processes will be stronger for heterogeneous groups than for homogeneous groups. More specifically, hypothesis 2a suggests that when personal identity is primed, heterogeneous groups are more likely to demonstrate a reduced level of psychological closeness, interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate compared to homogeneous groups. Hypothesis 2b predicts that when collective identity is primed, heterogeneous groups are more likely to show an increased level of psychological closeness, interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate compared to homogeneous groups.

To test hypothesis 2, a 2 x 2 factorial analysis of variance was first conducted in order to determine whether there is a significant difference among groups’ means. If a significant difference would be detected, contrast analyses would be conducted to verify hypotheses 2a and 2b.
However, as presented in Table 5.11, none of the analyses of variance reveal that there is a significant interaction effect between group composition and identity salience on the process variables. Thus hypothesis 2 is not supported and contrast analyses were not performed.

Despite a lack of significance for the interaction effect, it is interesting to mention that a main effect of group composition on psychological safety was found (F = 9.13; \( p = 0.00; \text{df}_1 = 1; \text{df}_2 = 43 \)). Members in heterogeneous groups (M = 2.22) perceived the psychological climate to be safer than members in homogeneous groups (M = 2.08).
Testing Hypotheses 3 and 4

Hypothesis 3 predicts that the effects of group composition on task performance are moderated by identity salience. More specifically, hypothesis 3a predicts that when personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower quality of decision making, and hypothesis 3b predicts that when collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher quality of decision making.

Hypothesis 4 predicts that the effects of group composition on social-oriented group behaviors are moderated by identity salience. Hypotheses 4a, 4b, 4c and 4d are more specific regarding the orientation of the effect under each condition, for both interpersonal incivility behavior and interpersonal citizenship behavior. Hypothesis 4a predicts that when personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher number of interpersonal incivility behavior. Hypothesis 4b predicts that when personal identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower number of interpersonal citizenship behavior. Hypothesis 4c predicts that when collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a lower number of interpersonal incivility behavior. Hypothesis 4d suggests that when collective identity is primed, heterogeneous groups compared to homogeneous groups are more likely to show a higher number of interpersonal citizenship behavior.

To test hypotheses 3 and 4, analyses of variance were first conducted in order to determine whether there are significant differences among the targeted groups’ means. If significant differences were detected, contrast analyses would be conducted to verify the
sub-hypotheses (3a & 3b, 4a, 4b, 4c & 4d).

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>0.58</td>
<td>1</td>
<td>43</td>
<td>0.45</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>0.22</td>
<td>1</td>
<td>43</td>
<td>0.64</td>
</tr>
<tr>
<td>Task Performance</td>
<td>1.43</td>
<td>1</td>
<td>43</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Table 5.12: Significance F tests for the interaction effect between group composition and identity salience on interpersonal incivility behavior, interpersonal citizenship behavior and task performance

As shown by Table 5.12, none of the analyses of variance reveal that there is a significant interaction effect between diversity and identity salience on the three dependent variables. Thus hypotheses 3 and 4 are not supported and contrast analyses were not performed.

Testing Hypotheses 1a to 1g

Hypotheses 1a to 1g predict the mediating effect of each psychological mechanism (i.e., psychological closeness, interpersonal trust, group empathy, communication, group involvement, group trust and psychological safety climate) between group composition and group performance. However, because there was no significant difference between homogeneous and heterogeneous groups with respect to social-oriented behaviors (i.e., interpersonal incivility behavior and interpersonal
citizenship behavior) and task performance, the mediating analyses was not performed.

Table 5.13 reports the analysis of variance for the main effects of group composition on the three dependent variables. As the table shows, no significant result was found.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>0.77</td>
<td>1</td>
<td>43</td>
<td>0.39</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>0.93</td>
<td>1</td>
<td>43</td>
<td>0.34</td>
</tr>
<tr>
<td>Task Performance</td>
<td>0.32</td>
<td>1</td>
<td>43</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Table 5.13: Significance F tests for the main effects of group composition on interpersonal incivility behavior, interpersonal citizenship behavior, and task performance.

Testing Hypotheses 5 and 6

Hypothesis 5 predicts that psychological safety climate mediates the relationship between identity salience (personal/collective) and group performance. This fifth hypothesis must be supported in order for hypothesis 6 to be tested. Hypothesis 6 predicts that the effects of group composition on psychological processes are moderated by psychological safety climate in such a way that the effects of psychological safety climate on psychological processes will be stronger for heterogeneous groups than for homogeneous groups.

In order to be able to test for a mediating effect of psychological safety climate between identity salience and group performance (Hypothesis 5), a significant
relationship must already exist between these two last variables. However, as Table 5.14 presents, the analyses of variance do not show significant main effects of identity salience on any of the dependent variable. Therefore analyses to verify hypotheses 5 and 6 cannot be performed.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Incivility Behavior</td>
<td>0.00</td>
<td>1</td>
<td>43</td>
<td>0.99</td>
</tr>
<tr>
<td>Interpersonal Citizenship Behavior</td>
<td>0.00</td>
<td>1</td>
<td>43</td>
<td>0.98</td>
</tr>
<tr>
<td>Task Performance</td>
<td>2.47</td>
<td>1</td>
<td>43</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Table 5.14: Summary of the significance F tests for the main effects of identity salience on interpersonal incivility behavior, interpersonal citizenship behavior and task performance
### Main Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1a)</strong></td>
<td><em>Group empathy</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1b)</strong></td>
<td><em>Psychological closeness</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1c)</strong></td>
<td><em>Interpersonal trust</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1d)</strong></td>
<td><em>The quality of communication</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1e)</strong></td>
<td><em>Group involvement</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1f)</strong></td>
<td><em>Group trust</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H1g)</strong></td>
<td><em>Psychological safety climate</em> partially mediates the negative relationship between diversity and group performance.</td>
<td>X</td>
</tr>
</tbody>
</table>

**H2)** The effects of diversity on psychological mechanisms (at group level) are moderated by identity salience in such a way that the effects of identity salience on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups:

- **H2a)** When *personal identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to demonstrate reduced levels of psychological closeness, interpersonal trust, group empathy, quality of communication, group involvement, group trust and psychological safety climate. | X |

- **H2b)** When *collective identity is primed*, heterogeneous groups, compared to homogeneous groups, are more likely to show increased levels of psychological closeness, interpersonal trust, group empathy, quality of communication, group involvement, group trust and psychological safety climate. | X |

Table 5.15: Summary of the tested hypotheses
### Table 5.15 continued

<table>
<thead>
<tr>
<th>H3) The effects of diversity on task performance are moderated by identity salience in such a way that:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H3a)</strong> When <em>personal identity is primed</em>, heterogeneous groups compared to homogeneous groups are more likely to show a lower quality of decision making.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H3b)</strong> When <em>collective identity is primed</em>, heterogeneous groups compared to homogeneous groups are more likely to show a higher quality of decision making.</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H4) The effects of diversity on social-oriented group behaviors are moderated by identity salience in such a way that:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H4a)</strong> When <em>personal identity is primed</em>, heterogeneous groups, compared to homogeneous groups, are more likely to show a higher frequency of interpersonal incivility behavior.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H4b)</strong> When <em>personal identity is primed</em>, heterogeneous groups, compared to homogeneous groups, are more likely to show a lower frequency of interpersonal citizenship behavior.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H4c)</strong> When <em>collective identity is primed</em>, heterogeneous groups, compared to homogeneous groups, are more likely to show a lower frequency of interpersonal incivility behavior.</td>
<td>X</td>
</tr>
<tr>
<td><strong>H4d)</strong> However, when <em>collective identity is primed</em>, heterogeneous groups, compared to homogeneous groups, are more likely to show a higher frequency of interpersonal citizenship behavior.</td>
<td>X</td>
</tr>
</tbody>
</table>

| H5) *Psychological safety climate* mediates the relationship between identity salience (personal versus collective) and group performance. | X |

96
H6) The effects of diversity on psychological mechanisms are moderated by psychological safety climate in such a way that the effects of psychological safety climate on psychological mechanisms will be stronger for heterogeneous groups than for homogeneous groups. More specifically:

H6a) When *psychological safety climate is low*, heterogeneous groups, compared to homogeneous groups, are more likely to show reduced levels of *psychological closeness, interpersonal trust, group empathy, quality of communication, group involvement, and group trust*.

H6b) When *psychological safety climate is high*, heterogeneous groups, compared to homogeneous groups, are more likely to show increased levels of *psychological closeness, interpersonal trust, group empathy, quality of communication, group involvement, and group trust*. 

<table>
<thead>
<tr>
<th>H6</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>H6a</td>
<td>X</td>
</tr>
<tr>
<td>H6b</td>
<td>X</td>
</tr>
</tbody>
</table>
CHAPTER 6
DISCUSSION

Summary of Findings

None of the predicted hypotheses were supported. Hypotheses 2, 3 and 4, examining the interaction effects between group composition and identity salience on the process variables and dependent variables were not significant. Therefore, further contrast analyses could not be performed. Moreover, because the relationship between group composition and group performance was not significant, the mediating effects of each psychological mechanism as predicted by hypotheses 1a to 1g could not be tested. Finally, the analyses that were supposed to be conducted to verify hypothesis 6, that predict a moderating effect of psychological safety climate on the relationship between diversity and group performance, could not be performed because its requirement (hypothesis 5) was not met. A number of limitations to this study can explain why none of the predicted hypotheses were supported. These limitations will be identified in the subsequent section.

However, before addressing the limitations of the study, it is important to highlight that some significant results were found in the preliminary analyses. For example, the analyses conducted within heterogeneous groups revealed that significant differences exist in communication between female subgroups and male subgroups.
Female subgroups perceived the communication of the group as more effective than male subgroups perceived it. Moreover, for the variables that were measured at an interpersonal level, the preliminary analyses suggest that there are differences between males’ and females’ perceptions of their ingroup versus outgroup members on psychological closeness and citizenship behavior. In terms of psychologically closeness, both female and male group members perceived being psychological closer to their ingroup members than their outgroup members. These results are consistent with a large number of studies on ingroup-outgroup phenomenons showing that people tend to perceive other members of their “ingroup” in relatively positive terms (as being, for example, more cooperative, honest and trustworthy) compared to outgroup members (for a review see Brewer & Brown, 1998).

Limitations of the Study

This section identifies several limitations that need to be addressed in order to understand the failure to obtain significant results. These limitations consist of issues regarding the statistical power analysis, the internal validity and external validity of this study.

Statistical Power Analysis

The first limitation that is inherent to group-level research is the relatively small sample size. The study consisted of only 47 groups. Groups were not equally distributed under the eight experimental conditions because some students who signed in to participate in the study withdrew their participation later on at the laboratory. Under some conditions, the data were collected from only three groups whereas under other conditions the data were collected from either four or five groups. In order to have
sufficient statistical power ($\beta = 0.80$), the required number of groups per condition should have been at least six groups per condition (Faul & Erdfelder, 1992). This small number of groups per condition may have reduced the capacity of this study to detect any of the predicted significant differences. Future studies should increase the number of groups per condition when conducting such an experimental study.

**Internal Validity Issues**

Despite the fact that this was an experimental study with a high level of control over each condition, there are some factors that may have decreased the level of internal validity of the study. These factors are the manipulation of group composition, the manipulation of identity salience, some measurement issues, the standardization of the experimentation, and some uncontrolled individual differences. Each of these issues will be addressed in the following section.

The manipulation of group composition. The manipulation of group composition may have been problematic by not triggering participants’ categorization process under the diversity condition. This could explain why significant main effects of diversity on the process variables and the dependent variables were not found. Participants in heterogeneous groups might not have been sensitive to the gender-based manipulation of group composition because of their previous exposure to gender diversity. In fact, all Ohio State University undergraduate students attend classes in which they are encouraged to work on group projects that require interactions with both genders. As suggested by the contact hypothesis (Allport, 1954), these previous experiences to gender diversity may have decreased the likelihood of triggering critical social categorization processes in similar situations. Interestingly, the data support such an explanation. As reported in the
results section (Chapter 5), the data shows a significant main effect of diversity on psychological safety climate. The result suggests that members of diverse groups perceived the psychological climate as being safer than members of homogeneous groups. Another potential explanation for finding such a result is related to the effects of the items that were asked in the first phase of the study. Asking questions about openness to diversity and gender identification may have given participants a clue about the purpose of the study and affected their way to behave under the different conditions. If this study were to be replicated, these items should be removed.

The manipulation of identity salience. As mentioned in the result section (Chapter 5), identity salience manipulation may have been problematic in this study. First of all, a systematic analysis of the data collected by the manipulation check had not been performed. Therefore, it is difficult to assess with accuracy the efficiency of the manipulation of identity salience. Moreover, even if a systematic analysis would have been performed, the nature of the manipulation check was memory based and thus it may have lead participants to respond in a biased way. Depending on the condition, participants were asked to report retrospectively either three of their own personal opinions about the advertisements that differed from those of most other people in their group (personal identity condition) or to indicate three ideas that other members of your group presented about the advertisements (collective identity condition). This request to verify the manipulation of identity salience may have lead participants to reconstruct their own past experience instead of actually reporting the psychological state at the time they were exposed to the manipulation (either personal identity salience or collective identity salience). Studies in social psychology examines these biases (for a review, see Ross, 101.
1989). Also, as reported in the results section, the indicators used to verify the identity salience manipulation were not always found in the memory task, especially under the collective identity salience. Participants did not specifically write down “we” or “us” when they were reporting their shared opinions about the advertisements. This suggests that the manipulation under the collective identity condition might not have been as effective as it was expected to be. In order to strengthen the manipulation, future research should reinforce the directions under each condition. Also, instead of using a memory task, participants could be allowed to take notes during the experimental session.

**Measurement issues.** In general, the indicator of reliability (Cronbach alphas) of the measures used to assess the group processes and the dependent outcomes were acceptable, except for the group trust variable which was considered relatively low (\( \alpha_1 = 0.36; \alpha_2 = 0.58 \)). All measures were perception-based except task performance, which was a consensus-based measure. Using only self-report measures might have introduced a bias of desirability or fatigue. Hence, obtaining direct measures of the process variables could have improved the internal validity of the study. For example, video recordings of group members’ interactions with one another during the group discussion would have been an alternative way of capturing the group dynamic. Blind observers could have been involved in evaluating the group processes and behaviors. Future studies should definitely consider using both types of measurements in order to capture as accurately as possible the effects of diversity on the group dynamic.

Another limitation of this study that refers to the measurement issues is related to the level of aggregation. All data, except for task performance, were collected from individual team members and then aggregated to the group level. Such a computation
may be critical for the construct-level validity in the absences of substantial within-group agreement (Klein & Kozlowski, 2000). This becomes even more critical for constructs that require three levels of aggregation, for example those variables that require measuring interpersonal perceptions within a group (i.e., psychological closeness, interpersonal trust, interpersonal incivility and interpersonal citizenship behavior). By aggregating across multiple interpersonal perceptions, some important information concerning the dynamic of the group is lost. Such aggregation weakens the validity of the measures used and affects the quality of the results obtained. Future study might consider other alternatives. For example, inter-rater variability indicators could be useful to examine the effects of diversity and identity salience on group members’ ratings of one another.

**Standardization of the experimentation.** Before each experimental session, some participants were waiting a certain amount of time for the arrival of other participants to the laboratory. These previous interactions may have affected the way group members perceived one another as well as their reactions toward one another during the experimental task. During these previous interactions, participants may have perceived similarities or differences between them that affected their categorization process and thus interfered with the effects of group composition. For example, it is possible that some participants were able to recognize whether the other participants were coming from the same or different class than them. This may have been enough to activate their categorization process. On the other hand, consistent with the contact theory (Pettigrew, 1998) and specifically the contact hypothesis (Allport, 1954), it is suggested that positive contacts between members of different groups reduce the negative effects of the
categorization process. Thus, these previous contacts are considered as an uncontrolled source of error in the current study. They may have interfered with the effects of group composition and thus future studies should try to reduce this source of error by not allowing participants to interact with one another before their participation in the experimental task.

**Uncontrolled individual differences.** Although the experimental conditions were randomly determined, individuals were not randomly assigned to them. Participants were assigned to a condition based on their availabilities to show up on certain days. Therefore, individual differences within a group may have had an effect that was not taken into account in this study. For example, personality traits such as predisposition to trust (see Rotter, 1980) and relationships orientation (see Clark & Judson, 2004) could have been measured and multilevel analyses could have been performed to control for these individual differences. Future studies should definitely take into account the impact of individual differences within a group, especially if a complete randomization of the subjects and conditions cannot be performed.

**External Validity Issues**

The generalizability of the study is limited. First of all, the study was conducted in a laboratory setting, where participants were exposed to highly controlled conditions. Such a type of setting ignores many rich and complex factors that are usually influential in real group interactions. For example, the nature of the task, the time spent with a group, etc., could all have been variables that could have had an impact on how people respond to diversity in the real world. Laboratory studies have been criticized on the grounds that they create a contrived and artificial environment. Because of this lack of
realism, some assume that any results they produce cannot be extended to actual organizational contexts with confidence (Babbie, 1975; Fromkin & Streufert, 1976).

Moreover, in this dissertation, it is assumed that the proposed theoretical model could be applied to any type of diversity (i.e., demographic, functional or personal). However, in the empirical study, the only indicator of diversity that is manipulated refers to gender-based diversity. Therefore, in order to know if this model can be indeed applied to other types of diversity, more studies using other indicators of diversity will have to be conducted.

Moreover, in order to know whether the theoretical model will hold for the population in general, more studies using samples with different characteristics should be conducted and compared with the current study which uses undergraduate students from a major Midwest university. Also, conducting experimental field studies or quasi experimental studies could be an alternative to increase the level of generalizability of the data obtained.

Theoretical Implications

From a theoretical perspective, this dissertation has contributed to the literature by identifying conditions that may facilitate diverse work groups to increase their performance. Collective identity and psychological safety climate were the primary focus of investigation to answer the first research question: When does diversity increase group performance? To answer the first question, different theories such as social identity theory, self-categorization theory and research on groupthink are applied and suggest that collective identity as well as psychological safety climate might be two important psychological conditions that facilitate diverse work groups to increase their performance.
performance. The theoretical argument that explains why collective identity salience may help to increase the group performance of diverse work groups is that this type of identity redefined individuals’ categorization process by emphasizing a superordinate identity. By creating recategorization, collective identity reduces biases and stereotypes. Thus, the collective identity condition enhances the identification process and the inclusion process of the other’s identity in the self. However, according to the dual-identity model of conflict resolution proposed by Dovidio and Gaertners (1999), both group identity and individual identity must be salient in order for diversity to increase group performance. Similarly, the optimal distinctiveness theory (Brewer, 1991; Brewer & Gaertner, 2003), the self-verification model (Swann, Polzer, Seyler, & Ko, 2004), and the personalization model (Ensari & Miller, 2006) all suggest that creating conditions that facilitate inclusion might not be enough in order to manage diversity effectively. Conditions that facilitate personalization or individualization must also be required in order to gain advantage of the uniqueness of each individual. Such conditions may be promoted by providing opportunities for individuals to be known for who they are and for their unique characteristics. Implementing a climate that fosters psychological safety climate might enhance the likelihood of the occurrence of distinctiveness. Indeed, when the climate is warm and trust is salient, people may feel comfortable expressing opinions that differ from most of those of other people without feel scared to be judged or rejected by other group members.

Moreover, by drawing on several theories from social psychology, this dissertation has identified important psychological mechanisms that may explain how diversity increases group performance. In fact, assuming that there are conditions under
which diversity increases group performance, it is interesting to identify and examine what are these “positive” psychological mechanisms that may explain the process through which diversity can increase group performance. According to the proposed mode, these mechanisms are conceptualized at different levels such as empathy at an individual level, identity confirmation at a dyadic level and communication at a group level. No previous study has taken into account all of these different mechanisms. Therefore, this dissertation has also contributed to the literature by identifying relevant psychological mechanisms that can explain theoretically how diversity can increase group performance.

Practical Implications

Unfortunately, based on the results obtained in this study, strong practical advice cannot be provided. However, the proposed model, strongly grounded in theories, suggests some speculative practices for managing diversity effectively.

First, according to the model, activating employees’ collective identity is considered as an important factor that facilitates the functioning of diverse work groups. Managers can activate employees’ collective identity by setting collective goals among employees. They may also reinforce this activation process by offering team-based incentives and group profit sharing as compensation techniques as well as by using the 360-degree performance appraisal (Milkovich & Newman, 2004). However, according to the theoretical model, activating employees’ collective identity might not be a sufficient condition for managing diversity effectively.

The model also suggests that creating an environment in which employees feel welcome to express themselves as who they are is critical. Not considering that
psychological safety climate is an important factor to implement in order to improve the management of diversity may lead organizations to experience high costs. For example, in the US military, the "don't ask, don't tell" policy, adopted by Congress in 1993, requires homosexual individuals to be silent about their identity. Those who acknowledge that they are gay or lesbian must be discharged. Such policy creates fear for those people who are indeed homosexuals and even among those who are not but who could still be miscategorized as being sexually oriented toward their own gender. This policy in the US military has brought lots of public attention and controversy. It has also been very costly. It has been estimated that US military has had to spend about $200m on replacing service members lost under its policy on homosexuals (BBC News, 2005) and this is not considering the fees incurred for resolving legal actions that have often been taken against the US military for their policy about homosexuality (Commondreams, 2007).

Thus, the question is how can managers create a psychological safety climate? Psychological safety climate among employees may be created by implementing policies and managerial practices that increase interpersonal knowledge and self-disclosure among employees. Indeed, as suggested by Ensari and Miller (2006), when the context allows employees to learn about each others’ personal lives and identities, they have a chance not only to discover similarities between themselves and others, but also to develop mutual understanding of differences. According to the literature, understanding and having empathy for one another reduces the categorization process and thus helps diverse groups to work effectively (Galinsky & Moskowitz, 2000). From an organizational perspective, implementing a psychological safety climate for diversity may start by cherishing diversity as a core corporate value. From a day to day managerial
perspective, it might mean embracing and celebrating different identities in the workplace, for example, by acknowledging Chinese New Year, Martin Luther King Jr. Day, Mother’s Day, etc. Offering diversity training programs may also help to increase employees’ interpersonal knowledge and provides tools to resolve conflicts they may experience in a diverse environment. Thus, implementing such organizational practices may help employees to develop tolerance and acceptance of differences as well as the benefits that will derive.

Future Research

As a result of this study, several directions for future research can be recommended. First, if this study were to be replicated, a bigger sample size would have to be considered in order to obtain enough power to detect significant differences. One of the main reasons why none of the predicted hypotheses were supported may be attributed to the sample size used in this study. Indeed, the effect sizes are relatively small and thus having access to only 47 groups distributed unequally under eight experimental conditions was definitely a major limitation to this study. Thus, future studies should increase the number of groups per condition.

Another major limitation in this study was the strength of the manipulation of the group composition. Participants’ categorization process did not seem to be triggered by being exposed to the diversity condition. Some results suggest that participants perceived the psychological climate as being safer in heterogeneous groups than in homogeneous groups. To strengthen the manipulation of group composition and thus increases its effectiveness at triggering participants’ social categorization process, future research that focuses on pursing the study of gender diversity could recruit participants from already
existent groups that are gender specific, such as a fraternity and a sorority organization, or from departments where little gender diversity exists such as in nursing which is female dominated or engineering which is male dominated. As suggested by the research on faultlines (Lau, & Murnighan, 1998, 2005), by aligning more than one indicator (such as being all females from the same sorority or all males from the same fraternity) the likelihood increases that social categorization will be triggered. However, it is important to highlight that conducting a study by using such a sample pool would introduce a bias: It would be impossible to disentangle the impact of diversity due to gender identity and due to the organization or profession to which they belong to.

Future research could also try to find indicators of diversity that are more likely to trigger the social categorization process. Different samples might be sensitive to different indicators. For example, race could have been a more relevant indicator to use with undergraduate students. Indeed, undergraduate students are still very young and may not have been exposed to racial diversity as much as they have been exposed to gender diversity. Because of their lack of exposure to race diversity, their categorization process may still be sensitive to that indicator. However, in order to manipulate group composition by using race diversity as an indicator, the sample pool from which participants are recruited must be ethnically broad.

Another alternative to counteract the limitation encountered in this study regarding the manipulation of group composition could be to create artificial group identity in the laboratory. This would be done by assigning people to different groups and reinforcing the differences between these groups’ identity during the experimentation. Research in social psychology examining the effects of group identity often uses this
Moreover, one of the main focuses of this dissertation was to examine the psychological conditions that facilitate diverse groups to increase performance. Despite the fact that in this study identity salience was not found as having moderating effects on the relationship between group composition, the process variables and the group performance, previous studies were able to show results that suggest the importance of this variable in managing the negative effects of diversity. Indeed, Chatman, Polzer, Barsade and Neal (1998), found that the benefits of demographic diversity are more likely to occur in organizations that focus on collective identity rather than personal identity. In a field study, Van der Vergt and Bunderson (2005) found similar results by considering expertise diversity instead of demographic diversity. Thus, priming collective identity seems to be an important determinant that increases the likelihood for diverse groups to perform better. However, as it is suggested in this dissertation, collective identity salience might not be a sufficient condition. Other environmental factors, such as psychological safety climate, must also be taken into account. Psychological safety climate is a brand new concept in the literature. Little is known about its impact on diverse groups. This study was the first to emphasize the importance of this variable in managing diversity. However, as mentioned in the section about the practical implications of this dissertation, real work examples remind us that a lack of psychological safety climate in a working environment may be very costly for an organization. Future research should continue to investigate the role of psychological safety climate in combination with priming collective identity in managing diversity. Conducting field experiments might be the best way to design studies that might capture
the essence of psychological safety climate. In order to be perceived by all group
members, climate requires a certain amount of time and interaction among group
members. For example, organizations could be selected to participate in the study based
on their level of psychological safety climate. Then, within these organizations
employees could be randomly assigned to identity salient condition. Such a type of
design would refer to a quasi-experimental design.

This dissertation has theoretically identified several psychological mechanisms
that explain how diversity increases group performance. According to the literature, some
mechanisms are conceptualized at an individual level whereas others are conceptualized
at a dyadic, or group level. However, for the purposes of this dissertation, the focus of
the analysis was only at a group level. Conducting multilevel analyses could be the
purpose of future research. These analyses would examine the role of each psychological
mechanism and increase our understanding of how each conceptual level operates in
mediating the effect of diversity on group performance. They would also help to reduce
the validity concerns about the level of aggregation involved in considering group
analyses only. Finally, conducting multi-level analyses would allow researchers to
develop theories that explain the interdependence of these mechanisms in mediating the
effects of diversity on group performance.

Moreover, future research should consider other psychological mechanisms that
were not measured in this study, such as self-disclosure and interpersonal knowledge.
However, studying these mechanisms would require conducting research with groups in
which members interact with one another for longer periods of time than the short term
setting used in the current study.
Finally, in theory, the proposed model could be applied to any workplace setting where people perceive one another as different. For example, the model could be applied to cross functional teams as well as international joint ventures. However, more empirical work is required in order to assess the generalizability of this research model in such working conditions.

Conclusion

This dissertation has contributed the understanding of two research questions: “when and how does diversity increase group performance.” Until today, very little research has paid attention to the conditions required for managing workplace diversity appropriately and the underlying psychological mechanisms that may explain how diversity at work may lead to increased group performance. Most research has largely been developing measures of climate for diversity and studying their antecedents (Hostager & DeMeuse, 2002; Kossek & Zonia, 1993) or testing direct effects of diversity that have been found inconsistent (Williams, & O’Reilly, 1998). Therefore, by emphasizing the role of collective identity salience and psychological safety climate as moderators of the relationship between diversity and group performance, and by highlighting three levels of psychological mechanisms that may mediate the relationship between diversity and performance outcomes, the proposed theoretical model presented in Chapter 3 of this dissertation contributes theoretically to advance knowledge in the diversity literature.

However, the empirical study conducted in this dissertation that verified whether parts of the theoretical model holds in laboratory setting did not show significant results. None of the predicted hypotheses were supported. However, this lack of significant
results may be attributed to several limitations of the study that were discussed in Chapter 6. Because the proposed research model is strongly grounded by theories, research should continue to investigate the validity of the proposed model.
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119


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APPENDIX A:

MATERIAL OF THE PILOT STUDY
APPENDIX A.1

Recruitment Form

I am here today to ask you whether you would be interested in participating in my research. I need to recruit approximately 100 students. The experiment requires you to observe and rate different advertisements online. No more than 30 minutes of your time should be required to complete the ratings. Every student who will participate in my research must be at least 18 year old.

Your participation is a voluntary but you will earn 5 extra points on your performance in BUS-MHR 700. If you decide to not participate in my study but still want to have a chance to earn 5 extra points, you are invited to complete an alternative work which consists of finding one companies’ website on which they present their corporate values and make a summary of these statements. This work must be at least one or two pages long. Participants will still receive the extra credit points even if they begin the study and then withdraw.

Those who are interested in participating to my study, please write your email address down on this sheet of paper. I will contact you to give you information about where to go to complete the survey.
APPENDIX A.2

The Ohio State University Consent to Participate in Research

Study Title: Pilot study testing for difference in gender responses to different advertisements.

Researcher: A. Roy Lewicki and Marie-Elene Roberge

Sponsor: B. Labor and Human Resource Management

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.
Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:
The purpose of this study is about perception and interpretation of advertisements.

Procedures/Tasks:
The studies will invite you to observe and rate different advertisements for approximately 30 minutes.

Duration:
You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:
There are no risks to participate in this experiment beyond what you would encounter on a daily basis. This study will not have any direct benefit to you as a student other than by providing you academic credit, but it will benefit the field of management psychology in general by allowing us to develop theories of behavior.
II. Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:
You will receive 5 extra credits for participating in the study. Participants will still receive the extra credit points even if they begin the study and then withdraw.

III. Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

IV. Contacts and Questions:
For questions, concerns, or complaints about the study you may contact Professor Roy Lewicki at 614-292-0258 or by email at lewicki_1@cob.osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.
If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Professor Roy Lewicki at 614-292-0258 or by email at lewicki_1@cob.osu.edu.

V. Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

I agree to participate: □
I disagree to participate: □

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

What is your gender?

Female □
Male □
APPENDIX A.3

Experimental Task

Welcome to this study!

You are invited to rate 16 different magazine advertisements on three different criteria. You MUST rate all three criteria for every advertisement.

Here is a definition of each criterion that you will be using to rate each ad.:

- Effective vs. Ineffective: How effective is the advertisement at getting attention and getting people to do what the advertisement wants?
- Comforting vs. Disturbing: How easy and enjoyable is reviewing the advertisement for you
- Fascinating vs. Boring: How interesting is the advertisement for you
Please, look at each of the following advertisements and rate the advertisement on the following dimensions. Circle the number that correspond to your answer.

**ADVERTISEMENT**

1. How effective/ineffective is this advertisement?
   Effective 1----2----3----4----5----6----7 Ineffective

2. How comforting/disturbing is this advertisement?
   Comforting 1----2----3----4----5----6----7 Disturbing

3. How fascinating/boring is this advertisement?
   Fascinating 1----2----3----4----5----6----7 Boring
APPENDIX B

MATERIAL FOR THE MAIN STUDY
APPENDIX B.1

Recruitment Form

My name is Marie-Elene Roberge. I am a fourth year doctoral student and I am here today to ask you whether you would be interested in participating in my research. I need to recruit approximately 280 students. The experiment is conceived in two phases. The first phase will require you to fill out a questionnaire online for about 15 minutes. The second phase takes place in a research laboratory and will last for approximately 60 minutes. The experimental task will consist of discussing magazine advertisements with four other individuals. Once this focus group will be done, participants will have to fill out some additional questionnaires. No longer than 90 minutes of your time should be required. Every student who will participate in my research must be at least 18 year old. Participants will still receive the extra credit points even if they begin the study and then withdraw.

Your participation is a voluntary but you will earn 10 extra points on your performance in BUS-ADM 499 or BUS-MHR 701. If you decide to not participate in my study but still want to have a chance to earn 10 extra points, you are invited to complete an alternative work which consists providing a description and a critical analysis of three companies and their corporate values. This work must be no longer than three or four pages long. If you are interested in this alternative work, please do inform your professor.
Those who are interested in participating to my study, go to this website XXXX and fill out the survey. At the beginning of the survey, you will have to complete the consent letter. At the end of this letter, you will have to indicate which day you are mostly available to participate in the laboratory session of the experiment. In two weeks, I will contact you to schedule with you a time for you to show up to the laboratory.

If you have any questions about this study, please do not hesitate to contact the primary investigator of this study, Professor Roy Lewicki at lewicki_1@cob.osu.edu or, if you have questions or concerns about your rights as a research participant, contact Sandra Meadows at The Office of Responsible Research Practices, 1-800-678-6251.
APPENDIX B.2
The Ohio State University Consent to Participate in Research

Study Title: Group Decision Making
Researcher: A. Roy Lewicki and Marie-Elene Roberge

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.
Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:
The purpose of this study is about group decision making.

Requirement:
You must be at least 18 years old to participate in the study.

Procedures/Tasks:
The studies will invite you to observe, discuss and rate different advertisements for approximately 1 hour. A group discussion with four other members will take place in laboratory. Previous to this discussion, online questionnaires will have to be completed. No more than 15 minutes will be required to fill out these questionnaires.

Duration:
You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:
There are no risks to participate in this experiment beyond what you would encounter on a daily basis. This study will not have any direct incentive to you as a student other than
by providing you academic credit, but it will benefit the field of management psychology in general by allowing us to develop theories of behavior.

VI. Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:
You will receive 10 extra credits for participating in the study. Participants will still receive the extra credit points even if they begin the study and then withdraw.

VII. Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

VIII. Contacts and Questions:

For questions, concerns, or complaints about the study you may contact Professor Roy Lewicki at 614-292-0258 or by email at lewicki_1@cob.osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you
may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Professor Roy Lewicki at 614-292-0258 or by email at lewicki_1@cob.osu.edu.

IX. Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by authorizing my participation. I will be given a copy of this form.

I agree to participate in this study □
I disagree to participate in this study □

Please print a copy of this page for your own record.

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Which class are you from: □ BUS-ADM 499 Winter 2006
□ BUS-ADM 499 Winter 2007
□ BUS-MHR 701 Winter 2006

Indicate which date are you more likely to be available

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144
Welcome to this study. This is the first part of this study, an online questionnaire. Before you start filling out the questionnaire, we invite you to determine an identification number that you will easily remember such as your date of birth followed by the number of brothers and sisters you have.

For example, if your birthday is March 3, 1983, and you have three brothers and sisters, your number would be 030319833.

Please, enter your 9-digit identification number:

__ __/__ __/__ __ __/ __
Please read each item below carefully. Circle the number that corresponds to the answer that best describes you. Answering all of these questions, should not take you more than 15 minutes. You are free to skip any questions you are not comfortable answering.

1. In general, I enjoy doing jobs with people of different ethnicity, gender, and/or age.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree

2. I usually make an extra effort to listen to people of different ethnicity, gender, and/or age.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree

3. I identify with women/men.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree

4. I feel strong ties with women/men.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree

5. Being a woman/man has nothing to do with my identity.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree

6. The fact that I am a woman/man does not mean much to me.

   1----------------2----------------3----------------4----------------5
   Strongly Disagree Neutral Agree Strongly Agree
   Disagree
7. For me, it is important to be a woman/man.

\[ \begin{array}{ccccccc}
\hline
& 1 & 2 & 3 & 4 & 5 \\
Strongly & Strongly & Strongly & Strongly & Strongly & Strongly \\
Disagree & Disagree & Neutral & Agree & Strongly & Agree \\
\hline
\end{array} \]

8. I perceive myself as a woman/man.

\[ \begin{array}{ccccccc}
\hline
& 1 & 2 & 3 & 4 & 5 \\
Strongly & Strongly & Strongly & Strongly & Strongly & Strongly \\
Disagree & Disagree & Neutral & Agree & Strongly & Agree \\
\hline
\end{array} \]
Please check the appropriate box for the next three items:

9. What is your ethnicity?
   - Asian
   - Latinos
   - American Indian
   - African American
   - Caucasian
   - Other

10. How old are you?
    Between:
    - 18-20
    - 21-25
    - 26-30
    - 31-35
    - 36-older

11. What is your gender?
    - Female
    - Male

12. Would you be interested in attending the experimental session? YES NO
    If YES, Please write your email:

   ________________________________
Email Information provided once Participants have filled out the Online Questionnaire

Hi,

Thank you for your interest in participating in the study on group decision making conducted by Professor Roy Lewicki and doctoral student Marie-Elene Roberge. You are now invited to participate in the second part of the experimental study. The experimental session will be on XXXX (either Tuesday, Wednesday, Thursday or Friady) at XXXX o’clock. The location where the experiment will take place is (either Schoenbaum Hall, 250 Woodruff Ave. room 209 or 200; or Gerlach Hall, 2108 Neil Ave., room 318).

If you need more information, please do not hesitate to communication via email with Marie-Elene Roberge at roberge.8@osu.edu.

Thank you again for your interest in participating in this study.

Roy Lewicki and Marie-Elene Roberge
Welcome to this experimentation! I would first like to thank you for being interested in participating to the study. This research study is conducted by researchers from the Department of Management at Fisher College of Business of the Ohio State University. Your participation in this experiment will help to provide information about group decision making. No more than an hour of your time should be required. In return for you having participated in this study, you will receive ten extra credit points. Listen carefully to the vocal instructions and do not turn the pages of the experimental booklet until you are asked to do so.

To link your response from the first phase of the experiment to data from the second phase of the experiment, an identification number is required. This number should refer to your date of birth followed by the number of siblings. Please indicate your identification number at the top of each page of the experimental booklet.

Now we will assign a color (e.g. pink, yellow, blue, violet and green) to each individual of your group by giving you an experimental booklet printed out in a specific color.

Your participation is voluntary. You may quit this experiment at any time with no penalty. Please do not write your name anywhere on the post-experiment survey. There are no risks to participate in this experiment beyond what you would encounter on a daily basis.

____________________________________
Marie-Elene Roberge
Candidate doctorale

____________________________________
Roy J. Lewicki
Dean's Distinguished Professor
Please read each item below carefully. Circle the number that corresponds to the answer that **best describes you.**

1. I identify with women/men.
   
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. I feel strong ties with women/men.
   
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Being a woman/man has nothing to do with my identity.
   
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. The fact that I am a woman/man does not mean much to me.
   
<table>
<thead>
<tr>
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<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. For me, it is important to be a woman/man.
   
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. I perceive myself as a woman/man.
   
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Experimental Instructions

You are part of an executive team from an advertisement agency. You are required to perform an experimental task with four other people. For a period of 30 minutes you will be encouraged to discuss your opinions about 8 different magazine advertisements.

“During that task, you will have…”

• To make an “individual contribution to the discussion”

• To remember:

  Three things that you personally said during the discussion about the advertisements and that differed from those of most other people in your group.
Experimental Instructions

You are part of an executive team from an advertisement agency. You are required to perform an experimental task with four other people. For a period of 30 minutes you will be encouraged to discuss your opinions about 8 different magazine advertisements.

“During that task, you will have…”

- To “participate in the group discussion”
- To remember
  
a) Three views that other members of your group shared about the advertisements.
Experimental task

Individually, you are invited to **look at each of these magazine advertisements and rate their effectiveness**: How effective is the advertisement at getting attention and getting people to do what the advertisement wants?

Advertisement A:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement B:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement C:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement D:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective
Advertisement E:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement F:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement G:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective

Advertisement H:

Overall, this advertisement is effective…

Effective 1-----2-----3-----4-----5-----6-----7 Ineffective
Now, with your peers, you are invited to discuss and rank these advertisements from the most effective to the least effective. Use the letters to identify the ads. and try the best you can to reach an agreement about ranking each of these ads:

<table>
<thead>
<tr>
<th>RANKING of EFFECTIVENESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Letter: ______________</td>
</tr>
<tr>
<td>2. Letter: ______________</td>
</tr>
<tr>
<td>3. Letter: ______________</td>
</tr>
<tr>
<td>4. Letter: ______________</td>
</tr>
<tr>
<td>5. Letter: ______________</td>
</tr>
<tr>
<td>6. Letter: ______________</td>
</tr>
<tr>
<td>7. Letter: ______________</td>
</tr>
<tr>
<td>8. Letter: ______________</td>
</tr>
</tbody>
</table>

Most effective

Least effective
The following scales consist of a number of words that describe different feelings and emotions. Read each word and then mark the appropriate answer in the space next to that word. Indicate **to what extent you think this feeling had been experienced among group members during the group discussion**. Use the following scale to rate your answers:

1----------------2----------------3----------------4----------------5
Not at all       A little       Moderate      Quite a bit     Extremely

**Rate each word:**

______ sad           ______ warm           ______ lonely     ______ sympathetic

______ tenderness _____ happy  _____ excited  _____ determined

______ inspired     _____ bold       _____ joyful    _____ compassionate

______ empathetic______ amazed______ surprised _____ distressed
INSTRUCTIONS

In the next 8 pages, rate the other four members of your group.

There are 2 pages for evaluating each individual.
In the next section, the questions have to do about **how you perceive others**. You have to evaluate how you perceive on each group member. Please, circle the assigned color of the group member you are evaluating:

**PINK**  **YELLOW**  **BLUE**  **VIOLET**  **GREEN**

1. Please circle the number below which **best describes your relationship with this group member**:

![Circle options](image)

Where 5 = I feel very close psychologically to this individual.
1= I do not feel at all close psychologically to this individual.

2. I trust this individual:

1----------------2----------------3----------------4----------------5
Strongly   Disagree   Neutral   Agree   Strongly
Disagree   Disagree   Neutral   Agree   Agree
For the next eight items, please rate how you perceive this group member on the following behaviors:

1. Listens to you when you have something to say.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

2. Takes time to listen to your point of view.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

3. Takes a personal interest in your point of view.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

4. Tries to help you up when you had problem expressing your point of view.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

5. Put you down or was condescending to you.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

6. Paid little attention to your statements or showed little interest in your opinion.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

7. Made demeaning or derogatory remarks about you.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time

8. Addressed to you in an unprofessional way.

   1----------------2----------------3----------------4----------------5
   Never               Once           Sometime           Often         All the time
In the next section, the questions have to do about **how you perceive others**. You have to evaluate how you perceive on each group member. Please, circle the assigned color of the group member you are evaluating:

**PINK            YELLOW           BLUE       VIOLET       GREEN**

1. Please circle the number below which best describes your relationship with this group member:

   ![Image showing relationship scale from 1 to 5]

   Where 5 = I feel very close psychologically to this individual.
   1= I do not feel at all close psychologically to this individual.

2. I trust this individual:

   ![Image showing trust scale from 1 to 5]

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Disagree</td>
<td>Agree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the next eight items, please rate how you perceive this group member on the following behaviors:

1. Listens to you when you have something to say.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

2. Takes time to listen to your point of view.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

3. Takes a personal interest in your point of view.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

4. Tries to help you up when you had problem expressing your point of view.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

5. Put you down or was condescending to you.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

6. Paid little attention to your statements or showed little interest in your opinion.

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1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time

8. Addressed to you in an unprofessional way.

1----------------2----------------3----------------4----------------5
Never               Once           Sometime           Often         All the time
In the next section, the questions have to do about **how you perceive others**. You have to evaluate how you perceive on each group member. Please, circle the assigned color of the group member you are evaluating:

![Color Assignments]

1. Please circle the number below which best describes your relationship with this group member:

![Relationship Ratings]

Where 5 = I feel very close psychologically to this individual.
1= I do not feel at all close psychologically to this individual.

2. I trust this individual:

![Trust Levels]

1 = Strongly Disagree  2 = Disagree  3 = Neutral  4 = Agree  5 = Strongly Agree
For the next eight items, please rate **how you perceive this group member** on the following behaviors:

1. Listens to you when you have something to say.

   1----------------2-----------------3-----------------4-----------------5
   Never       Once        Sometime        Often        All the time

2. Takes time to listen to your point of view.

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In the next section, the questions have to do about **how you perceive others**. You have to evaluate how you perceive on each group member. Please, circle the assigned color of the group member you are evaluating:

**PINK**  **YELLOW**  **BLUE**  **VIOLET**  **GREEN**

1. Please circle the number below which **best describes your relationship with this group member:**

   ![Circle Options](image)

Where 5 = I feel very close psychologically to this individual.
1= I do not feel at all close psychologically to this individual.

2. I trust this individual:

   ![Trust Scale](image)
For the next eight items, please rate how you perceive this group member on the following behaviors:

1. Listens to you when you have something to say.

   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

2. Takes time to listen to your point of view.

   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

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   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

4. Tries to help you up when you had problem expressing your point of view.

   1----------------2-----------------3------------------4------------------5
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   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

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   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

7. Made demeaning or derogatory remarks about you.

   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time

8. Addressed to you in an unprofessional way.

   1----------------2-----------------3------------------4------------------5
   Never           Once             Sometime           Often             All the time
The following questions do not require your perception of a specific individual but instead your perception of the group as a whole. Please circle the number that corresponds to your agreement with each of these items.

1. There was open communication in this group.

2. Everyone had a chance to express their opinion.

3. During the exercise, group members maintained a high level of idea exchange.

4. I felt part of the informal discussion in the group.

5. I felt isolated from the work group.

6. People in the group listened to what I said.
7. My judgment was respected by members of the group.

   1---------2---------3---------4---------5
   Strongly   Disagree   Neutral   Agree   Strongly
   Disagree   Agree

8. Group members made me feel a part of the group decision.

   1---------2---------3---------4---------5
   Strongly   Disagree   Neutral   Agree   Strongly
   Disagree   Agree

9. We are all certain that we can fully trust each other.

   1---------2---------3---------4---------5
   Strongly   Disagree   Neutral   Agree   Strongly
   Disagree   Agree

10. We respected each other’s point of view.

    1---------2---------3---------4---------5
    Strongly   Disagree   Neutral   Agree   Strongly
    Disagree   Agree

11. How comfortable or uncomfortable did you feel about being a member of this group?

    1---------2---------3---------4---------5
    Very       Very
    Comfortable Uncomfortable

12. How enjoyable was it to be in this group?

    1---------2---------3---------4---------5
    Very       Not at all
    Enjoyable  Enjoyable
13. How confident did you feel in expressing your opinion in this group?

1----------------2----------------3----------------4----------------5
Very Confident
Not at all Confident

14. To what extent did you feel you were treated well by your group mates?

1----------------2----------------3----------------4----------------5
I was treated I was treated
Very well Very badly

15. How awkward did you feel in this group?

1----------------2----------------3----------------4----------------5
Not at all Very
Awkward Awkward

16. To what extent did you feel isolated in the group?

1----------------2----------------3----------------4----------------5
Very Very
Uninteresting Interesting

17. To what extent did you feel like you “stood out” in the group?

1----------------2----------------3----------------4----------------5
Not at all Very much so

18. To what extent did you feel like you blended into the group?

1----------------2----------------3----------------4----------------5
Not at all Very much so

19. How willing were you to contribute your ideas to the group?

1----------------2----------------3----------------4----------------5
Very Very
Willing Unwilling
20. To what extent did you feel that members of your group really listened to what you had to say?

1----------------2----------------3----------------4----------------5  
Not at all                      Very much so

21. How anxious did you feel in the group?

1----------------2----------------3----------------4----------------5  
Not at all                      Very much so

22. To what extent did you feel uncertain about expressing your opinion in the group?

1----------------2----------------3----------------4----------------5  
Not at all                      Very much so

23. To what extent did you feel that members of your group were judging you on the basis of your gender?

1----------------2----------------3----------------4----------------5  
Not at all                      Very much so

24. To what extent did you feel that members of your group were stereotyping you on the basis of your gender?

1----------------2----------------3----------------4----------------5  
Not at all                      Very much so
25. Finally, you are asked to reward each of the members of your team according to each of their performance. Imagine that you have five sets of 100 chips. **You need to assign between 0 and 100 chips to each team member (including yourself)** on the basis of their contribution to the team discussion and decisions.

   Teammate # PINK: ___________ out of 100 chips

   Teammate # YELLOW: ___________ out of 100 chips

   Teammate # BLUE: ___________ out of 100 chips

   Teammate # VIOLET: ___________ out of 100 chips

   Teammate # GREEN: ___________ out of 100 chips
MEMORY TASK

Please, write down **three of your own personal opinions** about the advertisements that differed from those of most other people in your group.

1. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
MEMORY TASK

Please, write down three ideas that other members of your group presented about the advertisements.

1. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
APPENDIX B.5

Assignment for Extra Students who Participated in the Study

Short Essay about Diversity

In today's workplace, diversity is considered as a competitive advantage. Please write a short essay explaining why companies care about diversity and why diversity is considered as a competitive advantage.
APPENDIX B.6

Debriefing

We thank you for your participation in this study. Your help to collect data is very appreciated.

Now, we would like to tell you more about the purpose of this study. This study is about diversity and addresses two research questions: when and how does diversity increase group performance. More precisely, the study compares groups that are heterogeneous (e.g., mixed group composed of both genders, females and males) versus those groups that are homogeneous (e.g., composed of only females or only males). Moreover, the study examines group decision making under different circumstance: When people are focusing on their own personal opinions during the group discussion versus when they people are focusing on other group members’ opinion. Several group process variables and group outcome were assessed at the end of the experimentation such as group empathy, communication, trust and group involvement.

If you have any questions about this study, please do not hesitate to ask.