INGROUP AND OURGROUP MEMBERS AS DETERMINANTS OF PERFORMANCE ON A BRAINSTORMING TASK

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

August 2009

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Dr. Paul B. Paulus for being an excellent mentor and a father figure to me during the course of my graduate school. I am very grateful for his constant encouragement, constructive criticism, and his faith in me to rise to the top. His positive impact on my life has propelled me to a promising future.

I am also thankful to Dr. Vincent Brown for his expertise as well as assistance throughout my dissertation. I would like to thank my committee members Dr. Levine, Dr. Kenworthy, and Dr. Mann for their insights that helped improve my dissertation. Thanks are due to Albin Abraham and Kathy Tran who helped code hundreds of ideas with an enthusiastic spirit. My lab members, Yunhee Choi and Nick Kohn have been very supportive and always available when I needed them.

I am extremely thankful to my beloved parents, sister, American family, and friends for being there through sunshine and rain.

July 14, 2009

ABSTRACT

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The University of Texas at Arlington, 2009

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Many studies have investigated the effects of diversity on performance. Past research demonstrates that the relationship between group diversity and task performance is mixed and inconsistent (Mannix & Neale, 2005; van Knippenberg & Schippers, 2007; Webber & Donahue, 2001). Although some studies have examined the effects of diversity on brainstorming groups (Cox, Lobel, & McLeod, 1991; Nakui, Paulus, & Van der Zee, 2009), little attention has been paid to the effects of diversity on brainstorming individuals. To examine the influence of diversity on individual ideation, forty-eight participants were exposed to ideas that were presumably generated by a person from their own ethnicity (ingroup member) or a person from a different ethnicity (outgroup member) or a computer. Participants generated more ideas and explored more categories when they believed they were exposed to the ideas of an outgroup member than an ingroup member or a computer. However, there was a same-race bias for perceptions of enjoyment (Van der Zee, Paulus, Vos, & Parthasarathy, 2009; Nakui, Paulus, & Van der Zee, 2009). The second study investigated why participants in diverse settings outperformed those in the ingroup condition. One hundred and sixty participants were assigned to a 2 (ingroup vs.

outgroup) X 2 (idea vs. rate of idea generation) between-subjects group design. Participants generated more ideas in the outgroup condition irrespective of the type of exposure. The findings suggest that social competition may have contributed to superior performance in the outgroup condition. Self reports on post-test questionnaire revealed that participants expected to be more productive in diverse groups than homogenous groups. There was no evidence for the influence of attitude toward diversity and elaboration of task-relevant information on performance. The results of these studies enhance our understanding of how ethnic diversity can influence performance of brainstorming individuals.

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INTRODUCTION

In recent years, there has been an increase in the pace of globalization and greater diversity in the United States. Multinational corporations throughout the United States increasingly involve work teams made up of people from diverse cultures and this trend will continue in the years to come (Triandis, Kurowski, & Gelfand 1994; Williams & O'Reilly, 1998). For states such as Hawaii, California, New Mexico, and Texas, minority groups are expected to account for more than 50 percent of the population over the next 25 years (Population Reference Bureau, 2002). According to the U.S. census, in the year 2000 one in four persons was a minority as compared to one in five a decade ago. The U.S. census in the year 2008 indicates that minorities constituted one-third of the U.S. population and are expected to become the majority in 2042. In 2050, the U.S. is expected to be 54 percent minority.

Diversity refers to individual differences on any attribute that causes us to see another person as different from self (Jackson, Stone, & Alaverez, 1992; Triandis et al., 1994; Williams & O'Reilly, 1998). There are many types of diversity that group members bring into their work groups. Demographic diversity or social categorization diversity refers to differences in group members in terms of characteristics such as age, gender or ethnicity. Group members may differ from each other on the basis of their personality and background. This is called personal diversity. When group members differ in skills and abilities they possess, it is known as ability and skill diversity (Jackson et al., 1992). Informational diversity refers to differences in knowledge bases that are more job-related, such as educational and functional background (Jehn, Northcraft, & Neale, 1999). Value diversity refers to differences in values, beliefs, and attitudes.

Many researchers have indicated that the most important difference underlying the various dimensions of diversity is that between social category diversity and informational/functional diversity (Jackson et al., 1992; Jehn et al., 1999; Milliken & Martins, 1996; Tsui, Egan, & O'Reilly, 1992). Both the social categorization perspective as well as the informational perspective have sparked an interest in researchers to understand the underlying relationship between these dimensions and their impact on performance.

According to the social categorization perspective, when work group members meet for the first time, they tend to categorize themselves and others on the basis of social categories, such as race, gender, or ethnicity, which leads to the perceptions of similarities and differences in the workgroup. People isolate themselves from those different from themselves and are attracted to similar others. The perceptions of differences among group members may lead to distrust of outgroup members, negative stereotypes, and intragroup rivalries (Brewer, 1979, 1995; Hogg & Abrams, 1988). Consistent with the similarity-attraction paradigm (Byrne, 1971), group members tend to favor ideas and opinions of similar others over dissimilar others which in turn leads to potential conflict in groups. It has been found that similarity to ingroup members increased ingroup cooperation, trust, social attraction (Brewer & Kramer, 1986; Kramer, 1991, 1993), higher member commitment (Riordan & Shore, 1997; Tsui et al., 1992), group cohesion, (O'Reilly, Caldwell, & Barnett, 1989) and fewer relational conflicts (Jehn et al., 1999; Pelled, Eisenhardt, & Xin, 1999). Racial or national diversity appears to interfere more with group processes than gender or personality diversity (Watson, Kumar, & Michaelson, 1993). The social category perspective focuses mainly on relational aspects.

The informational perspective on the contrary suggests that diverse groups should outperform homogenous groups. Many researchers have found that there is also value-in-diversity. Many studies indicate that diversity in terms of surface-level characteristics such as gender, ethnicity, and nationality can increase the number of perspectives and alternatives in group decision-making (Kirchmeyer & Cohen, 1992; Thomas & Ely, 1996; Watson et al., 1993).

Cox, Lobel, and McLeod (1991) found that a group composed of Asian, Black, White, and Hispanic members outperformed the all Caucasian group on the “Prisoner’s Dilemma” task. Diversity also enhances the group’s creativity and can lead to insightful discoveries in the group (Jackson, 1992; Jehn et al., 1999). When people from varying knowledge, gender, and ethnic backgrounds bring insights to the group, it increases flexibility and promotes high-quality innovations (Cady & Valentine, 1999; Milliken & Martins, 1996; Rogelberg & Rumery, 1996). Informational diversity mainly focuses on job-related aspects. Diversity seems to act as a double-edged sword (van Knippenberg, DeDreu, & Homan, 2004) increasing performance (Triandis et al., 1994), providing broader perspectives, more innovative ideas, and a greater pool of potential solutions on one hand while causing problematic intragroup relations on the other hand through increased conflicts and decreased group cohesion stemming from the lack of similarity. Some studies have found positive effects for demographic diversity (Cox et al., 1991), and other studies have found negative performance effects for job-related diversity (Simons, Pelled, & Smith, 1999). Although a sizeable literature exists in the area of diversity and its effect on performance, the relationship between group diversity and task performance has been mixed and inconsistent (Mannix & Neale, 2005; van Knippenberg & Schippers, 2007; Webber & Donahue, 2001).

According to van Knippenberg, De Dreu, & Homan (2004) researchers have examined both the social categorization perspective and information/decision-making perspective in isolation, and found that one of the reasons why we find inconsistent results in diversity research is because researchers have failed to study these perspectives together. They propose the Categorization-Elaboration Model (CEM) which suggests that the social categorization perspective and information perspective interacts. Their model carefully considers the underlying moderators and the mediational processes that are involved in the relationship between diversity and performance. They propose that “the primary process underlying the positive effects of diversity on performance is the *elaboration of task-relevant*

information" (p.1012). In other words, elaboration of task-relevant information is the process that mediates the relationship between diversity and performance.

The purpose of the first study was to examine how and when ethnic diversity influences performance on a brainstorming task. We investigated how performance is influenced by the source of information. In other words, we examined whether people generated more ideas when they believed the source was an ingroup member or an outgroup member or a computer. In this research, an ingroup member represented a person who belonged to one's own race and an outgroup member was one who belonged to a different race. For example, for a Black person, a Black person is an ingroup member and a White person is an outgroup member.

CHAPTER 2

STUDY 1

2.1 Introduction

Brainstorming is a popular technique used in many organizations for the generation of novel ideas (Furnham, 2000). In 1957, Osborn suggested brainstorming as a technique to enhance the creativity in groups. He attributed the effectiveness of the brainstorming technique to both social and cognitive processes. Unfortunately, Osborn's claim that brainstorming groups would be twice as productive as brainstorming individuals has been proved wrong both in organizational and laboratory settings (Diehl & Stroebe, 1987; Jablin, 1981; Mullen, Johnson, & Salas, 1991). More than 40 years of brainstorming research in the laboratories has shown that the same number of brainstorming individuals produces more ideas and more original ideas compared to brainstorming groups (Paulus, Larey, & Ortega, 1995; Taylor, Berry, & Block, 1958). Brainstorming research in the past has focused on both the social (Paulus, Dugosh, Dzindolet, Putman, & Coskun, 2002) and cognitive factors (Dugosh, Paulus, Roland, & Yang, 2000; Nijstad, Diehl, & Stroebe, 2003) that cause productivity gap between interactive and nominal groups. Both these cognitive and social elements have been incorporated into an integrated model called social/cognitive model of group brainstorming (Paulus et al., 2002). The social aspect of this model suggests that individuals might imitate or socially compare their performance with that of co-performers (Bandura, 1989; Blanton, Buunk, Gibbons, & Kuyper, 1999). The cognitive aspect of the model suggests that exposure to others' ideas has a stimulating effect leading to the generation of additional ideas (Brown, Tumeo, Larey, & Paulus, 1998). This model suggests that the stimulation effect depends on the extent to which individuals attend to each others' ideas and retain these ideas in their memory.

The study done by Dugosh & Paulus (2005) examined both the social and cognitive components of group brainstorming. Their findings indicate that when participants were led to believe that they were being exposed to ideas generated by people who scored similar to them on a creativity test associated with brainstorming performance as opposed to ideas randomly generated by a computer, they generated more ideas because they felt the need to be as productive as the "similar others." This effect was seen only when they were exposed to a high number of ideas from similar others. The results indicate that people are more likely to compare their performance to that of a similar other than a computer program. This experiment looked at the social component of brainstorming in terms of how performance was influenced based on social comparison toward either a computer or a person. However, they failed to examine how performance would be influenced by comparing oneself to a similar other versus a dissimilar other. In other words, they did not examine how much participants identified with different sources of information and how this in turn influenced their performance.

Study 1 evaluated the social component of the model by examining how performance is influenced when individuals were exposed to the ideas of a computer or "a same-sex ingroup member" (member from the same race) or "a same-sex outgroup member" (member from a different race). In other words, we wanted to find out if people generate more ideas if they believe the source is a computer or an ingroup member or an outgroup member.

A few studies have demonstrated that individuals' levels of motivation and performance are influenced by the social category diversity in the group. Lount & Phillips (2007) examined the influence of working with an ingroup member versus an outgroup member on individual levels of motivation. The results from their two studies indicate that when working on math problems, irrespective of type of task (conjunctive or coactive), individuals increase their effort and perform better when they are being outperformed by an outgroup member than an ingroup member. However, this effect was seen only when the potential for social comparison was

present. Although they created groups using the minimal group paradigm, their study clearly suggests that who you are working with influences how you perform.

In another study, Phillips, Northcraft, and Neale (2006) examined the relationship between social category diversity and performance of three-person groups on a hidden profile task. They found that surface-level homogenous groups (groups with three Caucasian members) spent less time on the task because they assumed that the information they possessed was less unique than it actually was. However, surface-level diverse groups (groups with two Caucasians and one Asian, African American or Hispanic members) spent more time discussing about the task and outperformed the surface-level homogenous groups because they perceived surface-level differences among themselves and assumed the information they possessed to be unique. This study suggests that surface-level diversity causes group members to assume that informational differences may exist, thereby allowing group members to raise and discuss unique information to a greater extent. In their study, they also found that when both surface-level homogenous and surface-level diverse groups learned about their deep-level similarities, only the surface-level homogenous groups experienced greater levels of attraction among group members. These findings are in line with the similarity attraction paradigm which states that when there is high degree of observable diversity, people tend to gravitate toward similar others and withdraw from dissimilar others (Byrne, 1971). In essence, the way in which people perceive group members not only affects their performance but also their attraction toward their group members. Other findings also suggest that when people perceive similarity among group members on the basis of salient surface-level characteristics such as race or ethnicity, they also assume that they share deep-level similarities in terms of attitudes and values with their group members (Phillips, 2003; Phillips & Loyd, 2004).

Another goal in Study 1 was to examine how the perception of ethnically diverse groups in terms of anticipated productive and affective outcomes affects actual performance on a brainstorming task in such groups. In the second part of the first study, participants were asked

to imagine that they would be working on a brainstorming task that involves decision making with either a person from their own ethnicity or a different ethnicity. Keeping that in mind, participants rated their perceptions of their team on various dimensions. Many studies have shown that imagining a context can have the same effect as experiencing the context. Garcia, Weaver, Moskowitz, and Darley (2002) examined the role of the bystander apathy effect by asking the participants' to imagine that they were in such a context. They found that simply imagining being a part of a large group led to less helping behavior. In other words, imagining being a part of a crowd activated feelings of being unaccountable and being lost in a crowd, both of which are associated to behavior in actual situations.

In a series of studies, Crisp, & Turner (2009) found that intergroup attitudes could be improved by simply imagining contact with outgroup members. In one study, they found that there was a decrease in intergroup bias when young participants imagined interacting with an elderly person as opposed to outdoor scenery. In a subsequent study, they found that young participants who imagined talking to an elderly person expressed lower levels of intergroup bias compared to those who just thought about elderly people. Finally, they found that participants, who imagined that they were interacting with homosexual men, evaluated them more positively and experienced less intergroup anxiety compared to those in control groups. These findings suggest that imagining intergroup contact is a viable alternative to studying intergroup behavior when actual contact between groups involving various ethnic and gender composition is impractical.

A few studies have looked at how perception of diverse groups influences the anticipated productive and affective outcomes in such groups. In a study by Parthasarathy & Paulus (2006), participants imagined that they were a part of several groups of varying ethnic and gender composition and rated them on how comfortable they would be working with the groups and how much they were attracted to the different groups. The results indicated that people prefer working with groups that represent their ethnicity (race-inclusion) and perceive

such groups to be more attractive than groups that do not represent their ethnicity (race-exclusion). They also examined the perception of diverse groups in work and social contexts. The results indicated that participants perceived high diverse groups to be more capable, more beneficial, and less enjoyable than low diverse groups. Participants enjoyed interacting with diverse groups in a work context. However, in a social context, participants preferred the presence of similar others. Interestingly, the outcome of this study is similar to the organizational diversity literature on actual outcomes of diversity where diversity is associated with the presence of multiple perspectives and creativity as well as increased interpersonal tension and conflict.

This study was replicated in the Netherlands by Van der Zee, Paulus, Vos, & Parthasarathy (2009). The results indicated that the positive effects of diversity are more pronounced for productive factors (beneficial and capable) than for affective (enjoy and identify) factors. They also found that attitudes toward diverse groups significantly predicted the self report scores on the anticipated productive and affective outcomes of interacting with various groups. They found that those who had a positive attitude toward diversity reported positive anticipated affective and productive outcomes. Although, both of these studies looked at how perception of group members influences anticipated outcomes, they failed to look at how perception of group members influences actual performance in groups. Study 1 explored how perception of various group members influences not only anticipated productive and affective outcomes but also actual brainstorming performance.

In sum, the purpose of the first study is to understand if participants' performance is influenced based on the ethnicity of the group member. In addition, we will investigate if people pay more attention to the ideas of the ingroup member or the outgroup member.

Participants were exposed to pre-selected ideas from earlier transcripts of the brainstorming topic. They were told that these ideas were either randomly generated by a computer or were generated by an "ingroup (same race) member" or an "outgroup (different

race) member." They were also able to see the names and the pictures of "these people." For example, a Caucasian female participant will be exposed to the picture of either another Caucasian female (ingroup) or a Black female (outgroup). After they generated ideas for 20 minutes, participants were asked to recall as many ideas as they can that were generated by their team members during the brainstorming session for seven minutes. In the second part of the experiment, participants were asked to imagine being in a brainstorming team with the "person" whose ideas they viewed. As a team, they both would be working on a task that involves generating ideas and decision making. Keeping that in mind, participants rated their team on various productive and affective dimensions.

The independent variable in Study 1 was the source of ideas, namely ideas generated by the computer, ingroup member, and outgroup member. The dependent variables were the total number of ideas, the total number of categories of ideas explored, the total number of categories that were similar to the pre-selected list, the total number of categories different from the pre-selected list, number of ideas recalled (attentional variable), and self reports of affective and productive outcomes.

Hypothesis 1a: Participants will generate more ideas and explore more categories when they are being exposed to ideas of ingroup members rather than outgroup members or the computer program.

The social aspect of the social/cognitive model of brainstorming (Paulus et al., 2002), suggests that individuals will generate more ideas when they are being exposed to the ideas of a highly relevant social standard (ingroup member) than when they are exposed to ideas of an outgroup member or computer generated ideas. Further, the social comparison theory (Festinger, 1954), states that people are more likely to compare themselves to similar others rather than dissimilar others and match their performance to that of similar others. Mackie (1986) found that when participants listened to audiotape arguments of "a real group" discussion, it produced attitude polarization only when subjects were exposed to information

about the group they identified with and perceived the group as ingroup. Based on the above evidence, it is predicted that participants will generate more ideas when they are being exposed to ideas of similar others.

Hypothesis 1b: Participants will generate more ideas when they are being exposed to ideas of outgroup members than ingroup members and the computer program.

According to the social identity theory (Tajfel & Turner, 1979), people want to see one's own group as better than the outgroup. When there is an opportunity for intergroup comparisons, it creates social competition where individuals are motivated to outperform the outgroup members. Many studies have indicated that people tend to work hard on group tasks when intergroup comparisons will be made (Mulvey & Ribbens, 1999; Lount & Phillips, 2007;Ouwerkerk, de Gilder, & de Vries, 2000; Ouwerkerk & Ellemers, 2002). Based on the concept of social competition, participants will generate more ideas when they are being exposed to the ideas of dissimilar others.

Hypothesis 2a: Participants will pay more attention to the ideas of the ingroup member than the ideas of an outgroup member or randomly generated ideas.

According to the similarity attraction paradigm, people tend to be attracted to similar others and favor the ideas of the ingroup members. It can be argued that the ideas generated by an ingroup member are more likely to attract attention than the ideas generated by an outgroup member and a computer program. Therefore, participants will be able to recall more ideas belonging to those of the ingroup members at the end of the session.

Hypothesis 2b: Participants will pay more attention to the ideas of the outgroup member than the ideas of an ingroup member or randomly generated ideas.

The studies by Phillips (2003; Phillips et al., 2006), suggest that social category diversity triggers expectation that diverse group members tend to have unique information. This expectation in turn causes individuals to carefully process the information they receive from a dissimilar group member. Based on these studies, we expect that participants will be more likely

to pay attention to the ideas of an outgroup member than an ingroup member. Therefore, participants will be able to recall more ideas of the outgroup member at the end of the session.

Hypothesis 3: Based on social identity theory and similarity attraction theory, we expect that participants will report that they enjoy working with an ingroup member and favor the ideas of the ingroup member to those of an outgroup member.

Hypothesis 4: Based on the similarity attraction paradigm and the social comparison theory, participants will explore more categories that are similar to those that were generated by the ingroup member than the outgroup member.

2.2 Method

2.2.1 Participants

Fifty-two undergraduate students at The University of Texas at Arlington (UTA) in psychology courses took part in this experiment. The participants were diverse in terms of age, gender, and ethnicity. The mean age of the participants was 22. There were 31 females and 17 male participants. Of these participants, 21 were Caucasian, 12 were African Americans, 6 were Hispanics, 5 were Asians, and 4 belonged to the “Others” category. Depending upon their course enrollment, students received either partial credit for their course requirement or extra credit. Sixteen participants were randomly assigned to one of the three conditions. They were exposed to ideas that were either randomly generated by a computer program or to ideas generated by a “member” of the same race (ingroup member) or to ideas generated by a “member” of a different race (outgroup member). Data from four participants were excluded. Of these two belonged to the mixed race category and two were suspicious of the cover story.

2.2.2 Materials

Participants completed the consent form, background questionnaire, and post-test questionnaire. Stimulus ideas were selected from previous transcripts of brainstorming sessions on the ‘‘University Problem.’’ Individuals were asked to list ways in which they can improve UTA. Participants were exposed to 40 common ideas selected from nine categories, namely

Addition/Construction/Renovation, Campus Activities, Campus Safety, Classes, Costs, Dorms, Organizations, People Interaction, and Teachers.

2.2.3 Equipment

C++ programming was used to create the interface window on the computer screen in which participants brainstormed. The additional ideas that participants were exposed to also appeared on the same window. The C++ program automatically generated 40 stimulus ideas in 20 minutes. An idea appeared every 30 seconds during the brainstorming session for all the three conditions. MS PowerPoint 2003 was used to display the picture of the "person" who previously generated those ideas. In the computer condition, MS PowerPoint was used to display a picture of a laptop.

2.2.4 Design and Procedure

Upon arrival, participants completed the consent form and background questionnaire (see Appendix A). Next, they were told that they will be working on a brainstorming experiment and were introduced to the Osborn brainstorming rules and the additional rules (Putman & Paulus, 2009). (See Appendix B). Then the experimenter read the UTA problem aloud to the participants.

Depending on the condition, participants were told that they would be exposed to ideas that were previously generated by other participants or to the ideas that the computer would generate randomly. Participants who were exposed to the ideas of either the "ingroup or outgroup member" were told that they would be able to see the name and the picture of the person who generated the ideas. Participants in the computer condition were told that they would be exposed to ideas that the computer will generate randomly from a pool of ideas.

In all conditions, participants were taken to separate cubicles to begin the brainstorming session. They were asked to type their ideas and hit the enter key at the end of each idea. They were reminded again that additional ideas would appear on the screen while they were generating their own ideas. Participants in all conditions were exposed to 40 ideas that

appeared at equal intervals during the 20 minute brainstorming session. At the end of the brainstorming session, participants were asked to recall the ideas that they were exposed to during the session for seven minutes.

After the recall task, the participants who were exposed to the ideas of another person were asked to imagine that they and the person that appeared on their screen would form a team. As a team they would work on a task that involves generating ideas and decision making. Keeping this in mind, they rated on a nine-point scale the following dimensions: (a) how capable do you think your team is of making good decisions?; (b) how much would you enjoy/prefer working with this person?; (c) how much do you identify with this person?; (d) how much would you benefit (grow, develop or better yourself) from working with this person?; and (e) on a scale of one to 10, rate the attractiveness of this person. All the pictures exposed to the participants were of the same attractiveness level as rated by 200 undergraduate students (Parthasarathy & Paulus, 2006). However, participants were also asked to rate the attractiveness of the person on screen. This was done in order to control for attractiveness scores in the analyses by using this measure as a covariate. This would help us ensure the ratings of affect and productivity are not influenced by the attractiveness of the person. They also answered additional questions on the post-test questionnaire. Participants recorded their responses on scantron sheets. Upon conclusion of the experiment, participants were asked if they believed that the picture and ideas they saw actually belonged to another person. If they answered “no,” their data was not included in the analysis.

2.3 Results

2.3.1 Coding

A transcript was made of the ideas generated by each participant during each session. Two trained raters coded all the transcripts. The coders did not have any knowledge of the experimental conditions or hypotheses. Inter-rater reliability calculated using intraclass correlations was .98. For all three conditions, experimenters coded each idea generated as

belonging to one of 26 possible categories of ideas (see Appendix H). Redundant ideas or non-serious ideas were not included in any analyses.

2.3.2 Number of Ideas and Categories

A between-subjects Analysis of Variance (ANOVA) was used to analyze the data. The independent variable in this study was the source of ideas: a) Computer b) Ingroup member c) Outgroup member. The dependent variables were a) The total number of non redundant ideas; b) Total number of categories explored; c) Total number of categories explored that were similar to preselected list d) Total number of categories explored outside the preselected list; and e) Total number of ideas recalled. Recalled ideas are assumed to reflect the degree to which participants paid attention to the stimulus ideas on the idea generation task.

ANOVA revealed a significant main effect for condition for the total number of ideas generated, F (2, 48) = 6.153, $p < .01$, $eta^2 = .22$. Pairwise tests (with a Bonferroni adjustment) revealed that there was a significant difference between outgroup condition (M = 48.88 SD = 11.22) and ingroup condition (M = 34.00 SD= 9.67). Participants in the outgroup condition generated significantly more ideas than those in the ingroup condition (See Figure 2.1). The total number of categories explored was also significant, F (2, 48) = 3.85, $p < .05$, $eta^2 = .15$. Participants explored more categories in the outgroup condition (M = 17.06 SD = 2.05) than the ingroup condition (M = 14.62 SD = 2.50). (See Figure 2.2).

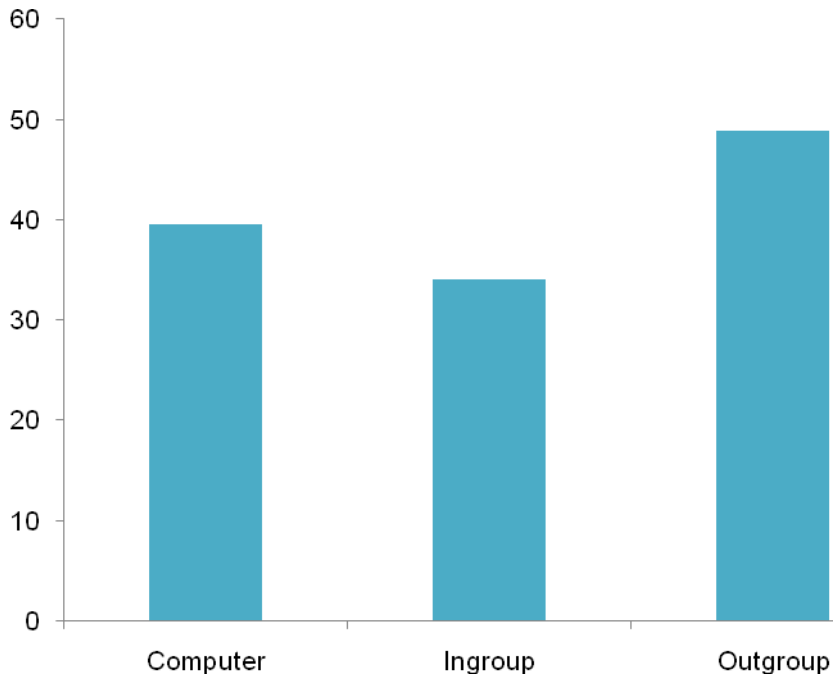

Figure 2.1 The mean total number of ideas generated as a function of different sources of ideas.

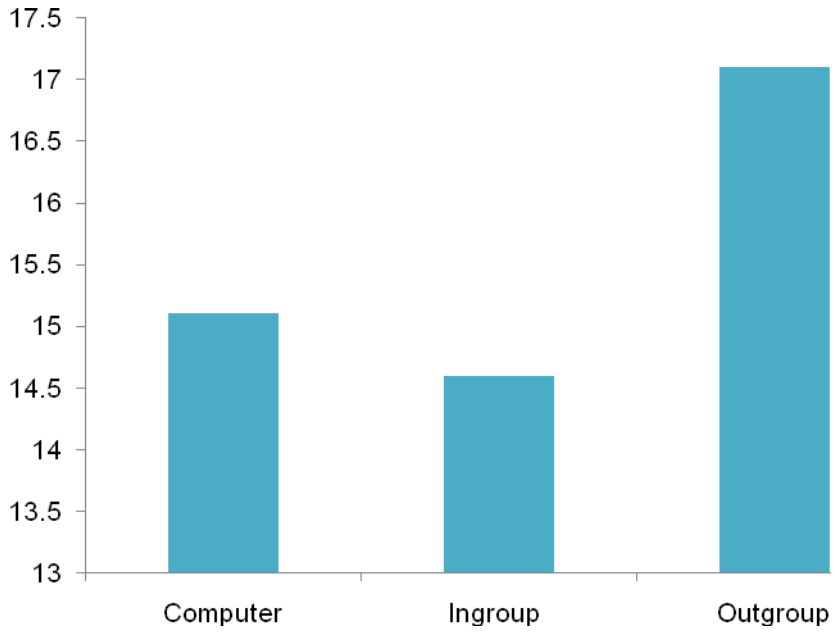

Figure 2.2 The mean total number of categories explored as a function of different sources of ideas

Contrary to the predictions, participants in the outgroup condition (M = 7.94 SD = .85) were more likely to explore categories that were similar to those generated by their group members, F (2, 48) = 8.55, p < .01, eta^2 = .28. Pairwise tests indicated that participants in the computer conditions (M = 6.44 SD = 1.09) mimicked lesser categories than those in the ingroup conditions (M = 6.81 SD = 1.22). (See Figure 2.3). There was no significant effect for the categories that were explored outside the preselected list, F (2, 48) = 1.24, p > .05. It is surprising to find that there were no significant differences in the number of ideas participants recalled across the three conditions, F (2, 48) = .09, p > .05.

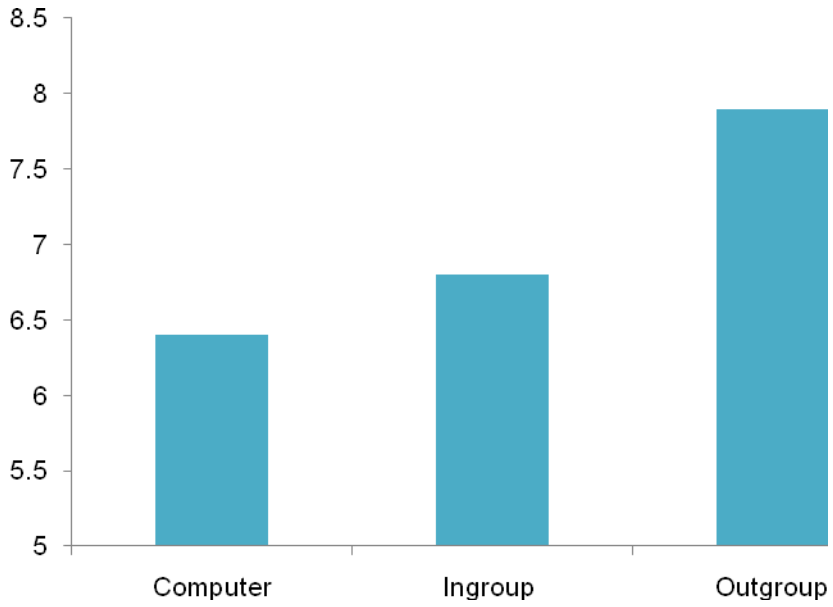

Figure 2.3 The mean total number of similar categories generated as a function of different sources of ideas

In the second part of the experiment, participants rated the picture of the "person" whose ideas they saw on various dimensions. In line with the predictions, participants reported that they would enjoy being in a team with a similar other (M = 6.56 SD = 1.63) rather than a dissimilar other (M = 5.06 SD = 2.32), F (1, 32) = 4.47, p < .05, eta^2 = .13. (See Figure 2.4).

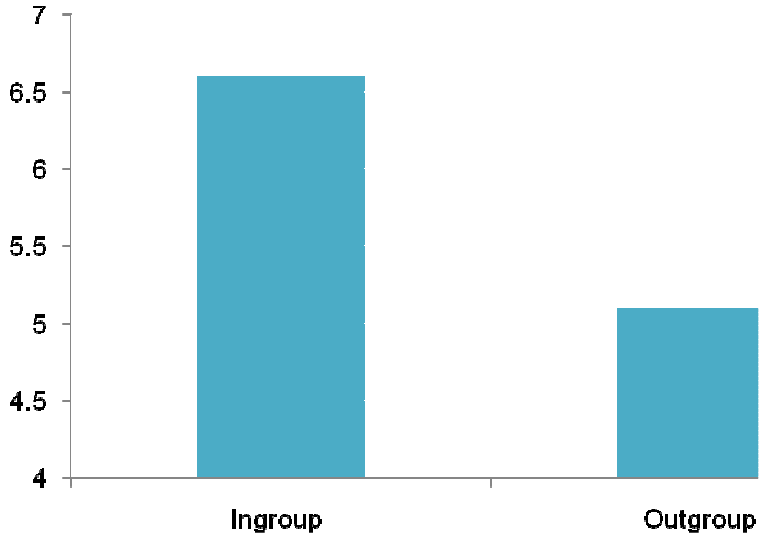

Figure 2.4 The mean ratings of enjoyment as a function of different types of group member

A between-subjects Analysis of Variance (ANOVA) was used to analyze various self report measures. ANOVA revealed a significant effect for quality of ideas generated, F (2, 48) = 4.34, $p < .05$, $eta^2 = .16$. Pairwise tests indicated that ingroup condition (M = 6.38 SD = 1.36) rated the ideas to be of a higher quality than the computer (M = 5.12 SD = 1.89). The same trend was found in the outgroup condition (M = 6.62 SD = 1.31) (See Figure 2.5). Interestingly, participants who were exposed to the ideas generated by people also reported that paying attention to their group member's ideas (ingroup, M = 6.25 SD = 2.11; outgroup, M = 5.19 SD = 2.51) hindered their performance more than those who were in the computer condition (M = 3.06 SD = 1.98), F (2, 48) = 8.61, $p < .01$, $eta^2 = .28$. (See Figure 2.6). These results indicate that the manipulations were effective. It appears that participants consider the ideas of people to be of higher quality and causing more hindrance than the ideas generated by the computer.

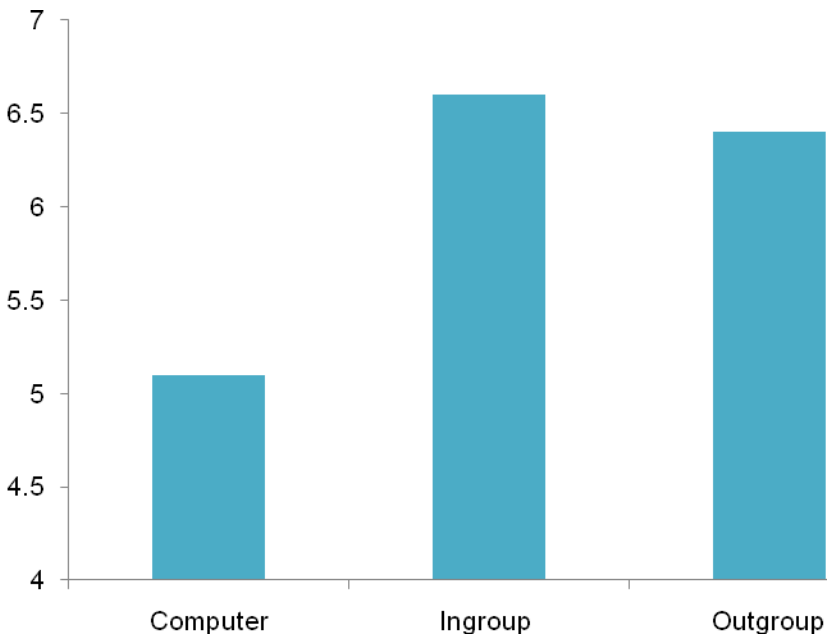

Figure 2.5 The mean ratings of quality of ideas as a function of different sources of ideas.

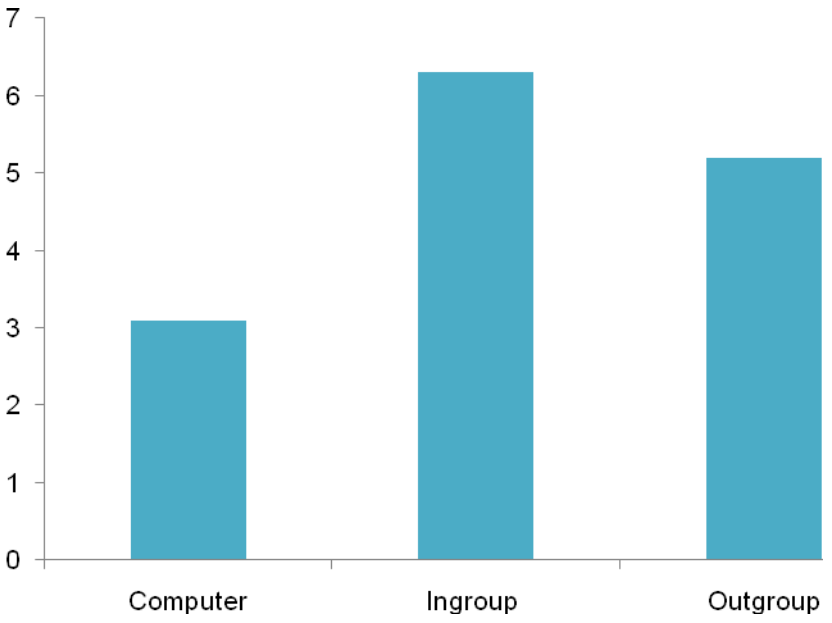

Figure 2.6 The mean ratings of hindrance of ideas as a function of different sources of ideas.

CHAPTER 3

DISCUSSION

Study 1 examined how the ethnicity of the group member influenced participants' performance on a brainstorming task. The findings of this experiment provide evidence that the ethnicity of one's partner has important implications for understanding how performance in an ideation task is affected.

The results of Study 1 are consistent with the social identity theory (Tajfel & Turner, 1979). Participants generated more ideas and explored more categories when they were exposed to the ideas of an outgroup member rather than an ingroup member or a computer program. Although, other studies have demonstrated that diverse workgroup members outperform homogenous members because diverse group members possess different types of knowledge, expertise, ability, or skills (e.g., Cox et al., 1991; Jehn et al., 1999; Watson et al., 1993), these findings demonstrate that the presence of ethnic diversity in a dyad (or a small group) is sufficient to produce superior performance. In essence, the findings suggest that it does not take many diverse group members to influence performance. Performance can also be increased by the presence of just one outgroup member.

Participants indicated that they were being hindered more by paying attention to the ideas of ingroup and outgroup members rather than the randomly generated ideas of the computer program. Further, the findings also suggest that participants rated the ideas generated by people as of higher quality than those generated by the computer. These findings make it evident that participants really believed that they were actually being exposed to the ideas of people or to ideas generated randomly by the computer.

In the second part of the experiment, the participants imagined that they would be working with the person on the screen on a brainstorming task that involves decision making.

Keeping that in mind, they rated their team on various dimensions. Based on previous investigations (Parthasarathy & Paulus, 2006; Van der Zee et al., 2008) and also based on prior studies on actual outcomes on diversity (van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998), it was predicted that participants would rate diverse teams more positively on anticipated productive outcomes and homogenous teams more positively on anticipated affective outcomes. Although, our data did not provide evidence for positive effects of diversity on anticipated productive outcomes, they supported the prediction that people enjoy being in a team with similar others than dissimilar others. This finding is in line with the similarity attraction paradigm and other prior findings. Avery & Quiñones (2002) found that the attractiveness of an organization increased when racial similarity between the applicant and the employees was depicted in the advertisement. The perception of similarity led to the perception of procedural fairness as well as interpersonal attraction even when no interaction occurred between the employees and the applicant (Young, Place, Rinehart, Jury, Baits, 1997). Avery (2003) found that when African Americans viewed advertisements of organizations, they were more attracted to organizations in which other African Americans were represented at both the entry level as well as the supervisory level than those in which they were represented only at the entry level or only White employees were represented.

The findings of Study 1 is a replication of prior studies that demonstrate that participants performed better when exposed to the ideas of a diverse group member than a homogenous group member (Cox et al., 1991; Jackson, 1992; Jehn et al., 1999). Further, participants in this study reported that they preferred/enjoyed working in a team with a similar other rather than a dissimilar other. This again is consistent with the findings of previous research (Parthasarathy & Paulus, 2006; Van der Zee et al., 2009).

Although the data clearly suggest that participants tend to generate more ideas when they believe the source is an outgroup member than an ingroup member or a computer, the

findings of Study 1 provide limited insight in understanding *why* participants generate more ideas when they believe the source is an outgroup member than an ingroup member or a computer. Therefore, a second study will conducted to understand when and why there is superior performance if participants believe they are working with an outgroup member.

CHAPTER 4

STUDY 2

4.1 Introduction

There are several plausible explanations for the findings of Study 1. According to the Categorization-Elaboration Model (van Knippenberg et al., 2004), elaboration of task-relevant information is the primary process that underlies the positive effects of diversity on performance. For example, van Ginkel & van Knippenberg (2003) found that on a decision-making task in informationally diverse groups, groups which emphasized elaboration (sharing and processing diverse information and viewpoints) made higher quality decisions than groups that emphasized elaboration to a lesser extent. Participants in the outgroup condition of Study 1 may have outperformed participants in the other conditions because they may have elaborated on the ideas that were provided by their team members.

Further support for the elaboration perspective comes from a study by Homan, van Knippenberg, Kleef, & De Dreu (2007) involving the desert survival task developed by Johnson and Johnson (1982). They found that informationally diverse groups (groups with unique information) outperformed the informationally homogenous groups (groups with common information) when they were persuaded of the value of diversity (held pro-diversity beliefs). However, the performance of the informationally homogenous groups was unaffected by the diversity beliefs they held. In other words, the diversity beliefs held by individuals moderated the effects of diversity. This effect was mediated by the elaboration of information. Informationally heterogeneous groups were more likely to elaborate on their information when they held pro-diversity beliefs by sharing, processing, and integrating the unique information they held. This study supported their proposition that information elaboration is the core process underlying the positive effects of diversity on group performance. Although researchers have examined how

information elaboration influences performance in informationally diverse groups using decision-making tasks, to our knowledge researchers have not yet examined the role of information elaboration on idea generation tasks in ethnically diverse groups. Our study is the first to examine if elaboration of information is influenced by the ethnicity of person when all participants receive similar information (ideas) in an ideation task.

An explanation based on social identity theory (Tajfel & Turner, 1979) as to why participants in the outgroup condition generated the most ideas suggests that participants might have felt highly competitive while generating ideas with an outgroup member and therefore may have been driven to outperform the outgroup member because people tend to evaluate one's own group against a referent outgroup. The classic study by Tajfel, Billig, Bundy, & Flament (1971) on high school boys using the minimal group paradigm of "overestimators" and "underestimators" clearly demonstrates that participants prefer ingroup members over outgroup members even though members in both groups were not long-term rivals or even acquainted with each other. According to social identity theory, people tend to derive pride and enhanced self esteem when they view their ingroup as more successful than the outgroup. Further, in intergroup settings, people seek to make favorable comparisons of their own group against an outgroup (Tajfel & Turner, 1986). Researchers have argued that social competition arising as a result of intergroup comparisons in a diverse group may increase a person's performance (Mulvey & Ribbens, 1999; Ouwerkerk, de Gilder, & de Vries, 2000; Ouwerkerk & Ellemers, 2002).

Lount & Phillips (2007) examined the influence of social category diversity (working with an outgroup or ingroup member) on performance on a math task. Findings from two experiments show that participants worked harder when they were being outperformed by an outgroup member than by an ingroup member, but only when they had an opportunity to engage in social comparison. Engaging in social comparison with a high performing outgroup partner increased competitional arousal, which in turn caused them to increase their effort and

perform better. This study clearly indicates that comparing one's performance with that of an outgroup member plays an important role in increasing effort while working with an outgroup member.

Several studies have demonstrated that participants' performance increase remarkably depending on whether or not they compare their performance to that of their group member. Harkins (1987) manipulated social comparison by informing half the participants that they and their partner should generate as many uses as possible for the same object and the other half that they and their partner should generate as many uses as possible for different objects. He found that when participants believed that their performance would be compared to a partner who generated as many uses as possible for the same object, they performed better than participants whose partners generated uses for a different object. Participants tend to perform better in the presence of social comparison.

A study by Paulus, Larey, Putman, Leggett, & Roland (1996) examined the role of social comparison information on brainstorming performance. In their study, groups of four brainstormed electronically for 20 minutes. They found that in the condition in which participants exchanged information about the number of ideas they typed every five minutes outperformed participants in all other conditions. This study demonstrates that comparing one's performance with a team member increases performance. Study 2 will help us gain a better understanding how social competition arising out of social comparison influence participants in the outgroup condition to generate more ideas than those in the ingroup condition.

Yet another reason why participants in the outgroup condition generated the most ideas could be because of their expectations or attitude toward diversity. Such expectations or attitudes may motivate higher levels of performance while working with members who are different. According to van Knippenberg & Haslam (2003), diversity beliefs refer to beliefs about the value of diversity to the functioning of work groups. People may respond more favorably to workgroup diversity if they believe diversity is valuable to the functioning of workgroups (van

Knippenberg, Haslam & Platow, 2004). van Knippenberg et al., (2004) found in a survey and a laboratory experiment that participants identified more with diverse workgroups when they believed that diversity is beneficial to performance. However, those who valued similarity identified less with diverse workgroups.

Some studies have found that people expect diverse groups to be more productive than homogenous groups. In a study by Parthasarathy & Paulus (2006), participants reported that they would be more benefited by working with diverse group members than homogenous group members. Further, participants reported that they find diverse groups to be more capable than homogenous groups. This study was replicated in Netherlands by Van der Zee et al., (2009). They also found that participants anticipated that they would be much more productive in a diverse group than a homogenous group.

The role of attitude toward diversity in brainstorming performance has been explored by Nakui, Paulus, & Van der Zee (2009). They administered an Attitude toward Diverse Workgroup Scale (ADWS) which measures participants' attitudes toward interacting or working in diverse groups. The scale consists of two factors, affective and productive factors. The affective component relates to social or affective components of diversity and includes items such as "In general, I prefer socializing with people like myself" and "I prefer working with people who are very similar to me." The productive component relates to beliefs of effectiveness of productivity in diverse groups and contains items such as, "The experiences of group members who come from different countries can be helpful in groups that are trying to generate novel ideas" and "Diverse groups can provide useful feedback on one's ideas" Nakui et al., (2009) found that attitude toward diversity affects participants' performance on the brainstorming task as well as psychological reactions. Participants' scores on the productive scale influenced their performance and their scores on the affective scale predicted their psychological reactions in diverse groups. Participants who had a high score on the productive scale generated better quality ideas than those with a low score. In other words, participants who believed diversity is

good for work groups generated higher quality ideas. Participants who had a high score on the affective scale reported positive psychological reactions both in diverse as well as homogenous groups. This study indicates that beliefs about diverse groups influence performance in diverse groups. Further, Van der Zee et al., (2009) had participants rate various group pictures on both productive and affective dimensions. They found that participants who had a more positive attitude toward diversity expected that they would perform better in a diverse group than a homogenous group.

The decision-making studies by Phillips (2003; Phillips et al., 2006) suggest that social category diversity triggers an expectation that diverse group members tend to have unique information. This expectation caused individuals to carefully process the information they received from a dissimilar group member which in turn caused participants to come up with the correct solution on the murder mystery task. Therefore, beliefs and expectations about diverse groups may influence how people perform in diverse groups.

The second experiment was designed to examine why people generate more ideas when they believe the source is an outgroup member than an ingroup member. This experiment employed a similar procedure as the first study. Participants were exposed to pre-selected ideas that were supposedly generated by either an ingroup or an outgroup member. In addition to the type of source (ingroup vs. outgroup), I varied whether participants were exposed to the actual ideas that were generated by others or to the rate at which these ideas were generated. This condition was included in the second experiment in order to gain a better understanding of the underlying process that is responsible for superior performance in the outgroup condition. This manipulation can help us tease apart two of the plausible explanations, elaboration of task-relevant information and social competition. If social competition is the underlying cause for increased performance, then participants in the outgroup condition will generate more ideas irrespective of whether they are exposed to the actual ideas or the rate of idea generation. However, if elaboration of task-relevant information is the underlying cause for increased

performance, then in the idea condition, participants in the outgroup condition will outperform those in the ingroup condition, but a similar effect will not occur in the rate condition. Further, in this experiment, the Attitude toward Diverse Workgroup Scale (ADWS) was also included in order to understand how attitudes toward diversity influence performance and affect in diverse groups.

At the end of the brainstorming session, participants were asked to imagine that they would be working as a team with the person on the screen on a brainstorming task that involves decision making. Keeping that in mind, they were asked to rate the person on various affective and productive dimensions. These dependent measures are assumed to reflect the beliefs and expectations participants have about interacting with homogenous versus diverse team members.

The independent variables in this study are the source of ideas (ingroup vs. outgroup) and type of exposure (ideas vs. rate of idea generation). The dependent variables are the total number of ideas generated, the total number of categories of ideas explored, the total number of elaborations of ideas, originality of ideas, and self reports of competitional arousal, affective, productive outcomes etc. Elaboration was measured based on how much participants built on the ideas that were generated by the other person before they saw another idea from that person. Elaboration may also be reflected in the quality of the ideas generated.

In sum, the purpose of Study 2 is to understand why participants generate more ideas when they are exposed to the ideas of an outgroup member than an ingroup member. All of the interpretations discussed predict production of more ideas and probably more categories of ideas explored in the outgroup condition than the ingroup condition. However, they also allow for some unique predictions.

If elaboration of task-relevant information is solely responsible for increased performance in the outgroup condition, based on the Categorization Elaboration Model (van Knippenberg, 2004) it is expected that participants who are exposed to the ideas of the other

person will elaborate more on the ideas of the outgroup member than the ingroup member. The elaboration of the ideas generated by the outgroup member will in turn result in greater total number of ideas generated as well as higher quality of ideas in the idea condition. However, there will be no difference in performance between the participants in the outgroup and ingroup conditions when they see the rate at which the ideas are generated. (Hypothesis 1).

However, if social competition is the underlying cause for increased performance in the outgroup condition, based on the social identity theory, it is expected that participants will generate the most ideas in the outgroup condition irrespective of the type of exposure (idea and rate of idea generation). That is, if performance is driven by feelings of competition, participants will generate more ideas and explore more categories in the outgroup condition when they are exposed to both the actual ideas as well as the rate of idea generation. (Hypothesis 2).

Further, if performance is influenced by a combination of elaboration of ideas and social competition, people will generate more ideas in the outgroup condition than the ingroup condition. However, this effect will be stronger in the idea condition. (Hypothesis 3).

Participants' beliefs about performance in the outgroup condition may influence their performance. In other words, if participants believe that they will perform better in a diverse group than a homogenous group, they will generate more ideas when the person on the screen is an outgroup member than an ingroup member. In the current experiment, expectations of productivity in diverse settings were measured after the brainstorming session to ensure that participants are not primed one way or the other before the brainstorming session. However, it is possible that participants' self reports of expected productivity in diverse groups are in fact a reflection of how they had performed on the brainstorming session as opposed to expected productive outcomes. If efficacy beliefs are the underlying cause for increased performance in the outgroup conditions, participants will generate more ideas in the outgroup condition only if they believe they will be more productive in that condition. (Hypothesis 4).

Finally, the attitudes toward diversity may influence performance. Specifically, participants with a high score on the Attitude towards Diverse Workgroup Scale (ADWS) will report favorable anticipated affective and productive outcomes regarding working in diverse groups (Van der Zee et al., 2009). Further, they will generate higher quality ideas and report favorable psychological reactions about their brainstorming experience when they are exposed to the ideas of an outgroup member (Nakui et al., 2009). (Hypothesis 5).

4.2 Method

4.2.1 Participants

Two hundred undergraduate students at The University of Texas at Arlington (UTA) in psychology courses took part in this experiment. Depending upon their course enrollment, students received either partial credit for their course requirement or extra credit. The participants were diverse in terms of age, ethnicity, and gender. There were 107 females and 53 males. Of these, 45 participants were Caucasian (26.6%), of which 29 were females and 16 were males. There were 43 African American participants (25. 4%), of which 30 were females and 13 were males. Twenty-five participants were Hispanic (14.8%), of which 18 were females and seven were males. Twenty-six participants were Asian (15.4%), of which 14 were female and 12 were male. Twenty-one of the participants belonged to the “Other” category (12.4%), of which 12 were female and nine were male. The age of the participants varied from 18 to 54. The mean age of the participants is 21. Information from 40 participants was excluded. Of these, 18 belonged to the mixed race category and 22 were suspicious of the cover story. Of these, seven belonged to the ingroup/rate condition, three belonged to the ingroup/idea condition, eight belonged to the outgroup/rate condition, and four belonged to the outgroup/idea condition.

4.2.2. Materials

The participants completed the Attitude towards Diverse Workgroup Scale (ADWS) during the pretest. The scale consists of twenty-one items. Sample items include statements such as “I find interacting with people from different backgrounds as stimulating” and “For complicated problems, diverse groups will be able to solve problems more easily.” The scale has an internal consistency (Cronbach’s α) of .84 and a test-retest reliability of .64. Cronbach’s α’s of the productive and affective scales were both .82. The intercorrelation between both scales was .31 (Nakui et al., 2009). In addition, they completed a background questionnaire and a post-test questionnaire (See Appendix A, F, & G). Stimulus ideas were selected from previous transcripts of brainstorming sessions on the ‘‘University Problem.’’ Individuals were asked to list ways in which they can improve UTA. Participants were exposed to 40 common ideas selected from five categories namely Campus Activities, Campus Safety, Classes, Costs, and Teachers.

4.2.3 Equipment

C++ Programming was used to create the interface window on the computer screen in which participants brainstormed. Participants typed their ideas in this window. The program automatically generated 40 stimulus ideas, one every 30 seconds. These ideas appeared in the same window in which the participants were typing their ideas. MS PowerPoint 2003 was used to display the picture of the “person” who previously generated those ideas.

4.2.4. Design and Procedure

All participants completed a pretest for their psychology classes that included the Attitude toward Diverse Workgroup Scale (ADWS). Forty participants were randomly assigned to each of the four experimental conditions. The conditions were part of a 2 X 2 between-subjects design with two levels of exposure (rate versus ideas) and two levels of source (ingroup versus outgroup).

Upon arrival, participants completed the consent form and background questionnaire. Next, they were told that they will be working on a brainstorming experiment and were

introduced to the Osborn brainstorming rules and the additional rules (Putman & Paulus, 2009). Then, the experimenter read the UTA problem aloud to the participants.

Participants were exposed to 40 ideas that appeared at equal intervals during the 20-minute brainstorming session as they generated their own ideas. They were exposed to the ideas that were presumably generated by either "a same-sex ingroup member" or "a same-sex outgroup member" who took part in the same experiment in the previous semester.

Participants in the idea condition were told the following cover story, "Even as you are brainstorming, you will see additional information appear on the computer screen. **You will be able to see the ideas that were generated by students who participated in this experiment previously and brainstormed on the same topic. You will see these ideas whenever these students generated an idea.** These students gave us permission to use their pictures and ideas in the future experiment. You will be able to see the name as well as the picture of the person who generated the ideas while brainstorming. The reason why you are exposed to the ideas and the picture of the person is because you will have an idea of what it is like to brainstorm in a team. While signing up for this experiment, it is not always possible to have people show up in even numbers in order to form teams of two. Therefore, in order to simulate the effect of brainstorming with another person, you will be exposed to the **ideas** as well as the picture of the person as you are brainstorming. Do you have any questions?"

Participants in the rate condition were told the following cover story, "Even as you are brainstorming, you will see additional information appear on the computer screen. **You will be able to see when ideas were generated by students who participated in this experiment previously and brainstormed on the same topic. You will see the phrase, "Had an idea" whenever these students generated an idea. However you will not be able to see the idea itself.** These students gave us permission to use their pictures and ideas in the future experiment. You will be able to see the name as well as the picture of the person who generated the ideas while brainstorming. The reason why you are exposed to the **rate of idea**

generation and the picture of the person is because you will have an idea of what it is like to brainstorm in a team. While signing up for this experiment, it is not always possible to have people show up in even numbers in order to form teams of two. Therefore, in order to simulate the effect of brainstorming with another person, you will be exposed to the **rate of idea generation** as well as the picture of the person as you are brainstorming. Do you have any questions?"

After the brainstorming task, the participants were asked to imagine that they and the person that appeared on their screen would form a team. Along with this person they would be working on a task that involves generating ideas and decision-making. Keeping this in mind, they rated the person on the screen on the following dimensions on a nine-point scale: (a) how capable do you think your team is of making good decisions?; (b) how much would you enjoy/prefer working with this person?; (c) how much do you identify with this person?; (d) how much would you benefit (grow, develop or better yourself) from working with this person?; and (e) on a scale of one to 10, rate the attractiveness of this person. All the pictures exposed to the participants were of the same attractiveness level as rated by 200 undergraduate students (Parthasarathy & Paulus, 2006). However, participants were also asked to rate the attractiveness of the person on screen. This was done in order to control for attractiveness scores in the analyses by using this measure as a covariate. This would help us ensure the ratings of affect and productivity are not influenced by the attractiveness of the person. Participants also answered additional questions on the post-test questionnaire. They recorded their responses on scantron sheets. At the end of the experiment participants were debriefed and thanked. During the debriefing session, if participants expressed suspicion concerning the pictures or ideas or the rate of idea generation, their data were not analyzed.

4.3 Results

4.3.1 Manipulation check

As a manipulation check for type of source (ingroup vs. outgroup) the participants were asked the question, “Did the person on the screen belong to your ethnic group or a different ethnic group?” All the participants in the ingroup condition reported correctly that the person on the screen belonged to their own ethnic group and all the participants in the outgroup condition reported that the person on the screen belonged to a different ethnic group. As a manipulation check for the type of exposure, the participants were asked, “While brainstorming you saw (a) The ideas of the other person (b) The rate/time at which the other person generated the ideas.” About 99% of the participants in both conditions responded that they belonged to the correct exposure condition.

4.3.2 Coding

A transcript was made for all the ideas generated by each participant for all conditions. Two trained raters coded all the transcripts. Inter-rater reliability for the number of ideas as measured by Cornbach’s alpha was .96. For all the conditions, experimenters coded each idea generated as belonging to one of 26 possible categories of ideas (see Appendix H). Inter-rater reliability for the number of categories explored as measured by Cornbach’s alpha was .97. Redundant ideas or non-serious ideas were not included in any analyses.

The originality of the participants’ ideas was rated on a scale of 1 to 5. More common ideas such as “Better parking” were given a score of 1 whereas unique ideas such as “Older professors should take the role as a mentor for younger professors” were given a score of 5. Two raters coded all the ideas for originality. Inter-rater reliability for originality as measured by Cronbach’s alpha was .92.

The number of elaborations of ideas in the Idea condition was coded by two trained raters. The inter-rater reliability for number of elaborations was .93 (Cronbach’s alpha). The elaborations were coded based on how much they elaborated on the idea that was generated

by the other person before they saw another idea generated by the person. For example, if they saw an idea “More campus activities involving all cultures” and they responded with “Hire more quality teachers”, it was not considered as an elaboration. However, if they responded with an idea, “Have more cultural fairs,” it was considered as an elaboration. Their responses were considered as elaborations if they built on the idea they saw irrespective of whether their ideas were generated from the same or different category as the idea they had seen. For example, the idea, “More campus activities involving all cultures” falls under the category called Activities. If the participant responds to this with an idea, “More information about multicultural activities,” it is considered as an elaboration despite this idea belonging to the category, Publicity.

4.3.3 Correlations of performance data

A correlation for dependent variables, ideas, categories explored, average originality of ideas, number of elaborations, and the proportion of elaboration was performed for all the conditions combined (see Table 4.1). Ideas generated are highly correlated with the number of categories explored (r = .77, p < .01) and the number of elaborations (r = .59, p < .01). In other words, the greater the number of ideas generated, the greater number of elaborated ideas and categories explored.

Table 4.1 Correlations between Originality, Ideas, Category, Elaborations, Proportion of Elaborations

	Originality	Ideas	Category	Elaborations	Proportion of Elaboration
Originality		.168*	.111	-.036	-.140
Ideas	.168*		.772**	.587**	-.137
Category	.111	.772**		.193	-.375**
Elaborations	-.036	.587**	.193		.660**
Proportion of elaboration	-.140	-.137	-.375**	.660**	

** Sig. p < .01 *Sig. p < .05 (N=160)

4.3.4 Correlations of self report data of affective and productive dimensions and performance (No. of Ideas)

After the brainstorming session, participants rated their perceptions about the person on the screen on various productive and affective dimensions. (See Appendix E & F). A correlation for these dependent variables attractiveness, benefit, capable, enjoy, identify, and total number of ideas generated was performed for all conditions. (See Table 4.2).

Table 4.2 Correlations of self report data of affective and productive dimensions and performance (No. of Ideas)

	Enjoy	Identify	Beneficial	Capability	Attractiveness	Ideas
Enjoy		.661**	.462**	.462**	.432**	-.042
Identify	.661**		.560**	.437**	.270**	.125
Beneficial	.462**	.560**		.607**	.192*	.030
Capability	.462**	.437**	.607**		.146	.099
Attractiveness	.432**	.270**	.192*	.146		-.043
Ideas	-.042	.125	030	.099	-.043	

** Sig. p < .01 *Sig. p < .05 (*N*=159)

The table indicates that there is considerable intercorrelation among the variables. There is a high positive correlation between the productive factors (beneficial and capability), (r = .61, p < .01) and the affective factors (identity and enjoy), (r = .66, p < .01). There is a moderately high correlation between the participants' ratings of attractiveness and how much they enjoy working with the person, (r = .43, p < .01). However, there is no correlation between anticipated affective and productive outcomes and performance.

4.3.5 Correlations of self report items on the post-test questionnaire for all conditions

A correlation was performed for self report items on the post-test questionnaire that measured participants' reactions to the brainstorming session such as ideas generated by self, motivation to generate ideas, enjoyment of the brainstorming session, competitiveness, and

how much they wanted to impress others with their ideas. (See Table 4.3). The table indicates that these variables are highly intercorrelated.

Table 4.3 Correlations of self reported items on the post-test questionnaire (No. of Ideas generated by Self, Motivation, Enjoy Session, Competition, and Impress)

	IdeasGenerated	Motivation	Enjoy Session	Competition	Impress
IdeasGenerated		.391**	.466**	.275**	.387**
Motivation	.391**		.753**	.351**	.531**
Enjoy Session	.466**	.753**		.403**	.537**
Competition	.275**	.351**	.403**		.651**
Impress	.387**	.531**	.537**	.651**	

** Sig. p < .01 *Sig. p < .05 (*N*=159)

The table indicates that there is a high positive correlation between reported feelings of motivation and the enjoyment of the brainstorming session, (r = .75, p < .01). There is a high positive correlation between the desire to impress others with their ideas and feelings of competition, (r = .65, p < .01). The table indicates that feelings of competition and enjoyment of the brainstorming session are also positively correlated, (r = .40, p < .01). However, the self report scores are not related to actual performance.

4.3.6 Correlations of self report items on the post-test questionnaire for Idea condition

In the Idea condition, participants were asked to rate the quality of ideas generated by the other person, quality of their own ideas, how much they were hindered by paying attention to the other person's ideas, how much they built on, elaborated, and attended to the other person's ideas. (See Table 4.4).

Table 4.4 Correlations for self reported items on the post-test questionnaire for Idea condition

	Other's Quality	Own Quality	Hinder	Build	Elaborate	Attend
Other's Quality	1	.335**	.171	.155	.161	.105
Own Quality	.335**	1	.010	-.045	-.044	-.145
Hinder	.171	.010	1	.330**	.188	.381**
Build	.155	-.045	.330**	1	.752**	.638**
Elaborate	.161	-.044	.188	.752**	1	.691**
Attend	.105	-.145	.381**	.638**	.691**	1

** Sig. p < .01 *Sig. p < .05 (*N*=79)

There is a high positive correlation between self reports of how much people build on the other person's ideas and how much they elaborate on their ideas, (r = .75, p < .01). The self reports suggest that, the more people attend to the other person's ideas, the more likely they are to elaborate on (r = .69, p < .01) and build on their ideas, (r = .64, p < .01).

4.3.7 Number of Ideas, Categories, and Originality

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) between-subjects factorial MANOVA was performed for ideas, category, and originality of ideas. With the use of Wilks' criterion, the combined dependent variables were significantly affected by type of exposure, F (3, 154) = 4.3.39, p < .01, eta^2 = .14 and type of source, F (3, 154) = 4.3.39, p < .01, eta^2 = .14. However, there was no significant interaction effect for type of exposure and type of source, F (3, 154) = 1.210, p > .05. (See Table 4.5).

Table 4.5 Multivariate tests of type of exposure and type of source for ideas, category, and originality

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Source	.90	5.73**	3	154	.10
Exposure	.86	4.3.39**	3	154	.14

Table 4.5 – *Continued*

Source * Exposure	.97	1.21	3	154	.02

Note: * $p < .05$, ** $p < .005$

A univariate analysis was performed for each of the dependent variables – idea, category, and average originality of ideas. Table 4.6 shows the results for the measures as a function of type of source and type of exposure respectively.

Table 4.6 Univariate tests for type of source and type of exposure for ideas, category, and originality

IV	DV	Univariate F	df	Partial η2
Source	Ideas	14.66**	1/156	.09
	Category	6.60**	1/156	.04
	Originality	.640	1/156	.00
Exposure	Ideas	23.09**	1/156	.13
	Category	19.23*	1/156	.11
	Originality	.010	1/156	.00
Source *Exp	Ideas	.428	1/156	.00
	Category	2.83	1/156	.02
	Originality	.064	1/156	.00

Note: ** $p < .001$, * $p < .02$

4.3.7.1 Ideas

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) between-subjects ANOVA was performed for total number of ideas generated. There was a significant main effect for type of source, F (1,156) = 14.657, $p < .01$, eta^2 = .09. Pairwise tests (with a Bonferroni adjustment) revealed that the outgroup condition (M = 36.36 SD = 15.37) generated significantly more ideas than the ingroup condition (M = 24.3.82 SD= 10.78). There was also a significant main effect for type of exposure, F (1,156) = 23.09, $p < .01$, eta^2 = .13. Pairwise tests (with a Bonferroni adjustment) revealed that idea condition (M = 37.33 SD= 12.80) generated

more ideas than the rate condition (M = 27.86 SD = 13.11). (See Figure 4.1). There was no interaction for type of source and type of exposure for total number of ideas generated, F (1,156) = .428, p > .05. Table 4.7 shows the mean and standard deviation for total number of ideas generated for the type of exposure (idea vs. rate) and the type of source (ingroup vs. outgroup).

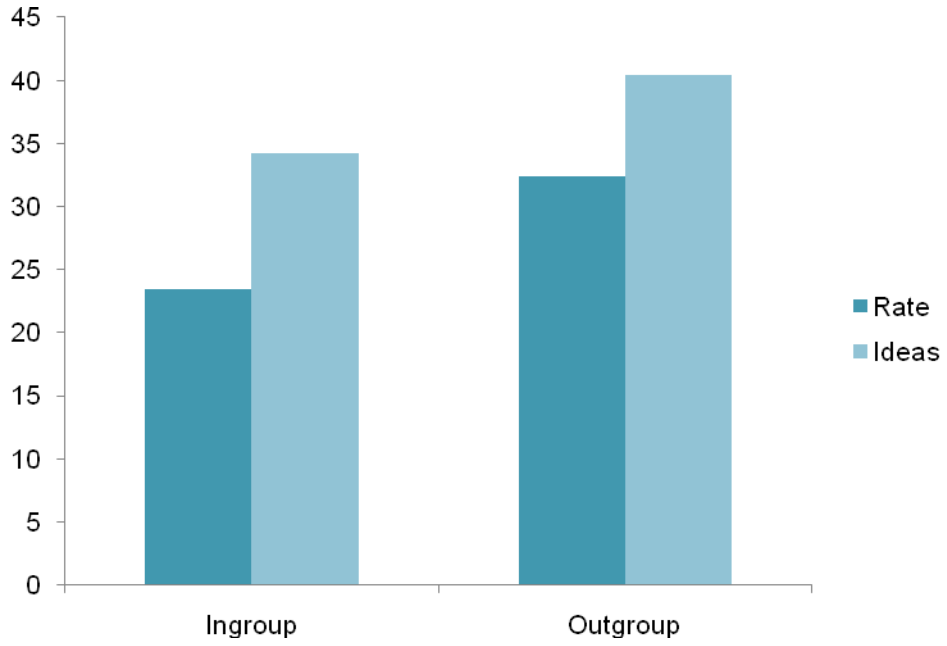

Figure 4.1 The mean total number of ideas generated as a function of type of source and type of exposure

Table 4.7 The mean and standard deviation for total number of ideas generated as a function of type of source and type of exposure

			Type of Source		
			Ingroup		Outgroup
	Idea	*M*	34.20	*M*	40.45
		SD	9.49	*SD*	14.89
Type of Exposure	Rate	*M*	23.45	*M*	32.27
		SD	9.26	*SD*	14.91

Table 4.7 – *Continued*

Total	*M*	24.3.82	*M*	36.36
	SD	10.78	*SD*	15.37

4.3.7.2 Category

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) between-subjects ANOVA was performed for total number of categories explored. There was a significant main effect for type of source, F (1,156) = 6.60, $p < .01$, $eta^2 = .04$. Pairwise tests (with a Bonferroni adjustment) revealed that outgroup condition (M = 15.46 SD = 3.37) explored more categories than the ingroup condition (M = 14.01 SD = 4.17). There was also a significant main effect for type of exposure, F (1, 156) = 23.09, $p < .01$, $eta^2 = .13$. Pairwise tests (with a Bonferroni adjustment) revealed that idea condition (M = 15.98 SD = 3.58) explored more categories than the rate condition (M = 13.50 SD = 3.73). (See Figure 4.2). However, there was no significant interaction of type of source and type of exposure for total number of categories explored, F (1, 156) = 2.83, $p > .05$, $eta^2 = .02$. Table 4.8 shows the mean and standard deviation for total number of categories explored for the type of exposure (idea vs. rate) and the type of source (ingroup vs. outgroup).

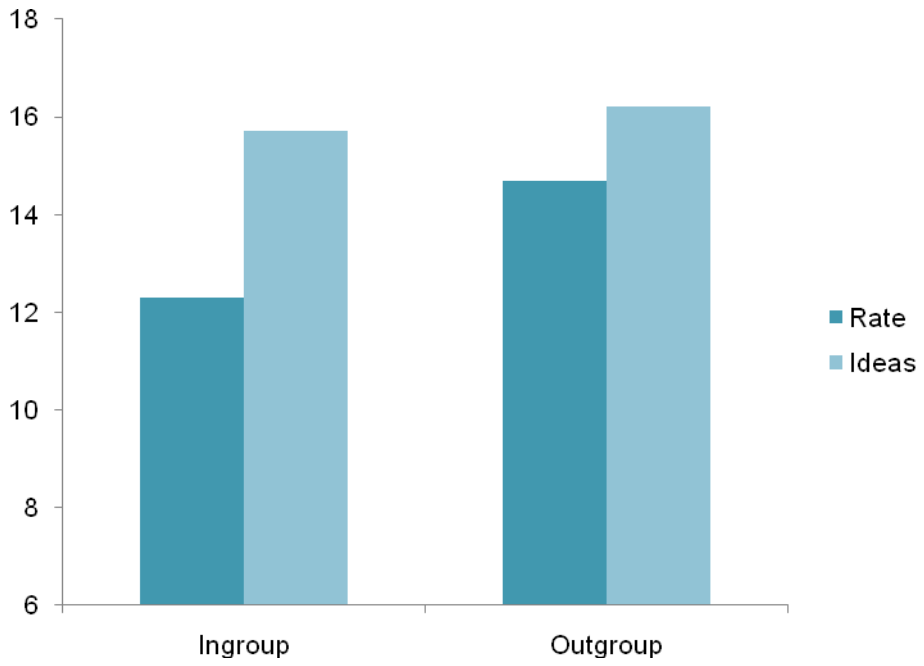

Figure 4.2 The mean total number of categories explored as a function of type of source and type of exposure

Table 4.8 The mean and standard deviation for total number of categories explored as a function of type of source and type of exposure

			Type of Source		
			Ingroup		Outgroup
Type of Exposure	Ideas	*M*	15.72	*M*	16.22
		SD	3.76	*SD*	3.42
	Rate	*M*	12.30	*M*	14.70
		SD	3.87	*SD*	3.12
	Total	*M*	14.01	*M*	15.46
		SD	4.17	*SD*	3.37

4.3.7.3 Originality

ANOVA did not reveal a significant main effect for type of source (F (1, 156) = .64, p > .05) and type of exposure (F (1, 156) = .01, p > .05) for the average originality of ideas. There was also no interaction effect for originality of ideas, F (1, 156) = .06, p > .05

4.3.8 Number of Elaborations and Proportion of Elaboration

A one-way ANOVA for type of source (ingroup vs. outgroup) was performed for the dependent variables, number of elaborated ideas and proportion of elaborated ideas in the idea condition. The number of elaborated ideas was assessed based on how much they elaborated on the idea the other person had generated before they saw another idea from the person. The proportion of elaborated ideas was assessed by dividing the number of elaborated ideas by the number of ideas they had generated (No. of elaborated ideas / No. of ideas generated). The proportion of elaborated ideas was analyzed in order to eliminate the chance of greater number of elaborated ideas resulting as a function of simply generating greater number of ideas.

The one-way ANOVA indicated a main effect for the type of source for the number of elaborated ideas, F (1, 78) = 4.08, p < .05, eta^2 = .05. Participants elaborated on the ideas more in the outgroup condition (M = 15.80 SD = 11.37) than the ingroup condition (M = 11.85 SD= 4.89). (See Figure 4.3). However, this effect disappears when the number of ideas generated is controlled, (number of ideas was used as a covariate), F (1, 78) = .781, p > .05. The greater number of elaborated ideas resulted from generating greater number of ideas rather than the type of source. A one-way ANOVA was also performed for the proportion of elaborated ideas. There was no effect for elaboration when the proportion of elaborated ideas was analyzed, F (1, 78) = .003, p > .05. The prediction that participants in the outgroup condition will elaborate more on the ideas of the other person and therefore generate more ideas was not supported (Hypothesis 1).

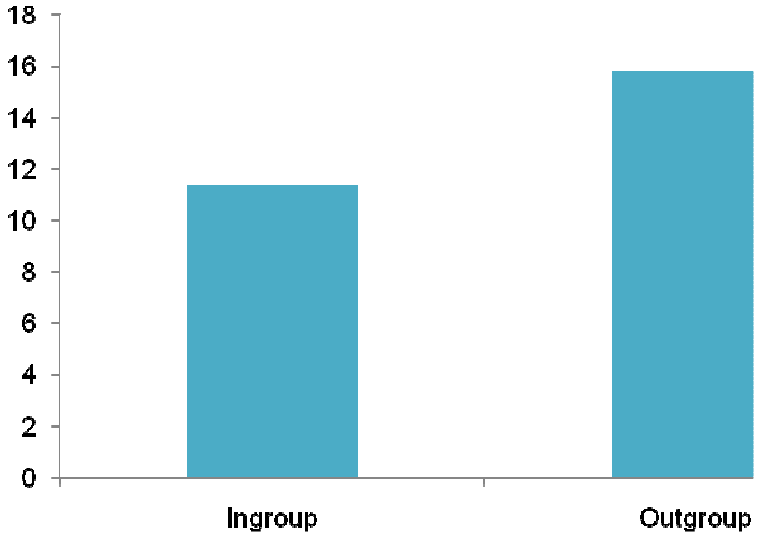

Figure 4.3 The mean total number of elaborations as a function of type of source

4.3.9 Attitude toward Diverse Workgroup Scale

The Attitudes towards Diverse Workgroups Scale (ADWS) (Nakui et al, 2009) was used to measure participants' attitude toward diversity and its impact on performance and psychological reactions. A 2 (source: ingroup vs. outgroup) X 3 (ADWS: low vs. medium vs. high) between-subjects factorial MANOVA was performed for ideas, category, and originality of ideas. Based on the population scores, ADWS scores were divided into high, medium, and low. The combined dependent variables were not affected by ADWS scores, F (6, 264) = .76, p > .05. There is a significant main effect for type of source, F (3, 132) = 3.53, p < .01, eta^2 = .12. MANOVA failed to reveal an interaction effect for these dependent variables, F (6, 264) = .74, p > .01. The data reveal that attitude towards diverse workgroups does not influence performance. (See Table 4.9).

Table 4.9 Multivariate tests for type of source and ADWS for ideas, categories, and originality

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Source	.92	3.53**	3	132	.07

Table 4.9 – *Continued*

ADWS	.87	.76	6	264	.02
Source * ADWS	.97	.74	6	264	.02

*Note: ** p < .005*

A 2 (source: ingroup vs. outgroup) X 3 (ADWS: low vs. medium vs. high) between-subjects factorial MANCOVA was performed for the various productive and affective measures such as benefit, capability, enjoy, and identify. The attractiveness of the person on the screen was controlled by using the attractiveness score as a covariate. MANCOVA revealed a significant interaction for type of source and ADWS scores for all the dependent variables combined, F (8, 244) = 2.35, $p < .05$, $eta^2 = .07$. MANCOVA also revealed a significant main effect for type of source, F (4, 122) = 3.67, $p < .01$, $eta^2 = .11$. However, there was no main effect for the ADWS score, F (8, 244) = 1.06, $p > .05$. (See Table 4.10). Next, a univariate analysis for each of the dependent variables – capability, benefit, enjoy, and identify for type of source and ADWS scores was performed. (See Table 4.11).

Table 4.10 Multivariate tests for type of source and ADWS for productive and affective measures

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Attractiveness	.83	6.48**	4	122	.18
Source	.89	3.67**	4	122	.11
ADWS	.93	1.06	8	244	.03
Source * ADWS	.86	2.35*	8	244	.07

*Note: * p < .05, ** p < .01*

Table 4.11 Univariate tests for type of source and ADWS for productive and affective measures

IV	DV	Univariate F	df	Partial η2
ADWS	Benefit	.21	2/125	.00
	Capability	1.66	2/125	.03
	Enjoy	5.61	2/125	.19
	Identify	.58	2/125	.01
Source	Benefit	1.88	1/125	.06
	Capability	4.52**	1/125	.04
	Enjoy	2.75	1/125	.37
	Identify	1.52	1/125	.01
Source *	Benefit	7.58**	2/125	.11
ADWS	Capability	1.33	2/125	.02
	Enjoy	.92	2/125	.76
	Identify	1.63	2/125	.03

Note: * $p < .05$, ** $p < .01$

A 2 (source: ingroup vs. outgroup) X 3 (ADWS: low vs. medium vs. high) between-subjects factorial ANCOVA was performed for perceived benefit of working with the person on the screen on a brainstorming task that involves decision making. ANCOVA revealed a significant interaction, F (1,138) = 7.575, $p < .01$, $eta^2 = .11$. (See Figure 4.4). Participants with a high ADWS score expected that they would be more benefited working with an outgroup member (M = 6.64 SD = 2.09) than an ingroup member (M = 4.51 SD = 2.31), F (1,138) = 7.575, $p < .01$, $eta^2 = .11$.

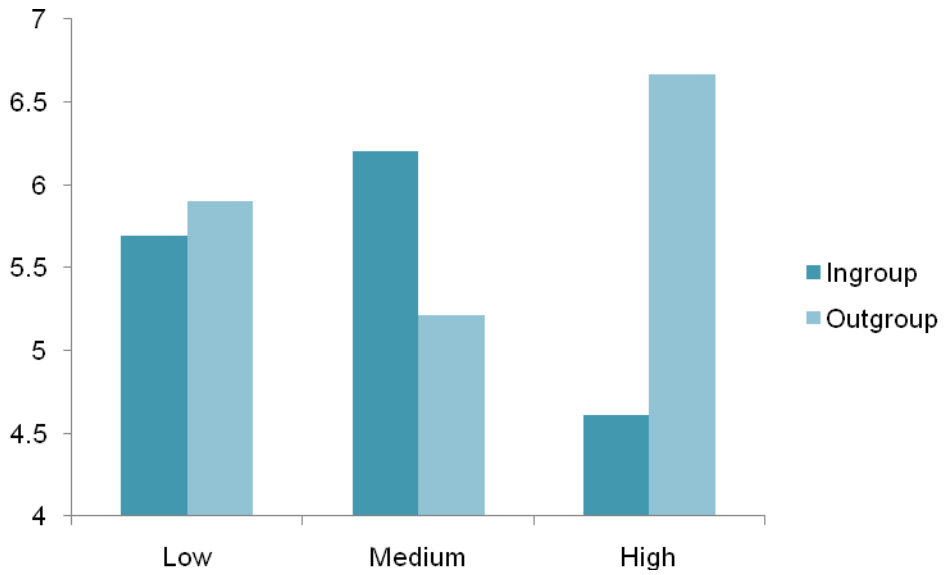

Figure 4.4 The mean ratings of perceived benefit as a function of type of source and total ADWS scores

ANCOVA also revealed a significant main effect for type of source for the dependent variable capability, F (1,125) = 4.52 p < .01, eta^2 = .04. Participants in the outgroup condition (M = 7.02 SD = 1.79) reported that they would be more capable as a team than those in the ingroup condition (M = 6.28 SD = 2.29). (See Figure 4.5).

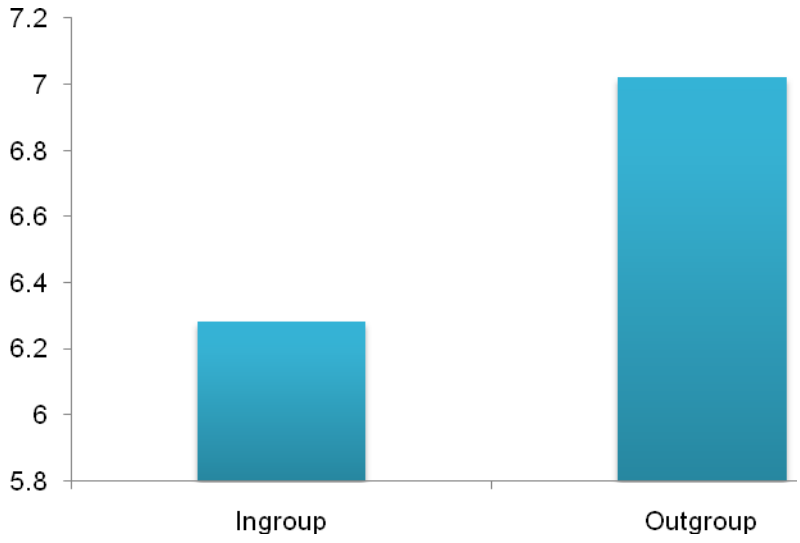

Figure 4.5 The mean ratings of perceived capability as a function of type of source

To understand the self report measures of participants' reactions to the brainstorming session, a 2 (source: ingroup vs.outgroup) X 3 (ADWS: high vs. medium. vs. low) MANOVA was performed on various measures on the post-test questionnaire such as ideas generated by self, motivation, enjoyment of session, competition, and impress.(See Table 4.12). There was a significant interaction effect for type of source and ADWS scores.

Table 4.12 Multivariate tests for type of source and ADWS for post-test questionnaire

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Source	.93	2.07[a]	5	129	.07
ADWS	.92	1.07	10	258	.40
Source * ADWS	.87	1.82*	10	258	.07

Note: * $p = .05$, $p^a = .07$

Next, a univariate analysis for these dependent measures was performed. A 2 (ingroup vs. outgroup) X 3 (high vs. medium vs. low) between-subjects ANOVA for enjoyment of session revealed a significant interaction effect. Participants with a high ADWS score reported that they enjoyed the brainstorming session more while they were exposed to the ideas of an outgroup member ($M = 6.73$ $SD = 1.98$) than an ingroup member ($M = 5.13$ $SD = 2.67$), F (2,133) = 2.91, $p < .05$, $eta^2 = .04$ (See Figure 4.6).

There was also a significant interaction for the item, competition, F (1,133) = 4.32, $p <$ .05, $eta^2 = .06$. (See Figure 4.7). Participants were asked, "How competitive did you feel while generating ideas?" Those with a high ADWS score reported that they feel more competitive while generating ideas with an outgroup member ($M = 6.00$ $SD = 2.51$) than an ingroup member ($M = 3.84$ $SD = 2.71$).

One might expect that participants with high ADWS scores would feel less competitive in the outgroup condition because they enjoy the outgroup condition and report positive

productive outcomes in the outgroup condition. In order to understand, the relationship between competition and enjoyment of session, a correlation for various self reported items on the post-test questionnaire such as motivation, enjoy session, competition, impress, and ideas generated was performed for all conditions. (See Table 3). The table reveals that there is a moderately high positive correlation between competition and enjoyment (r = .40, p < .01.)

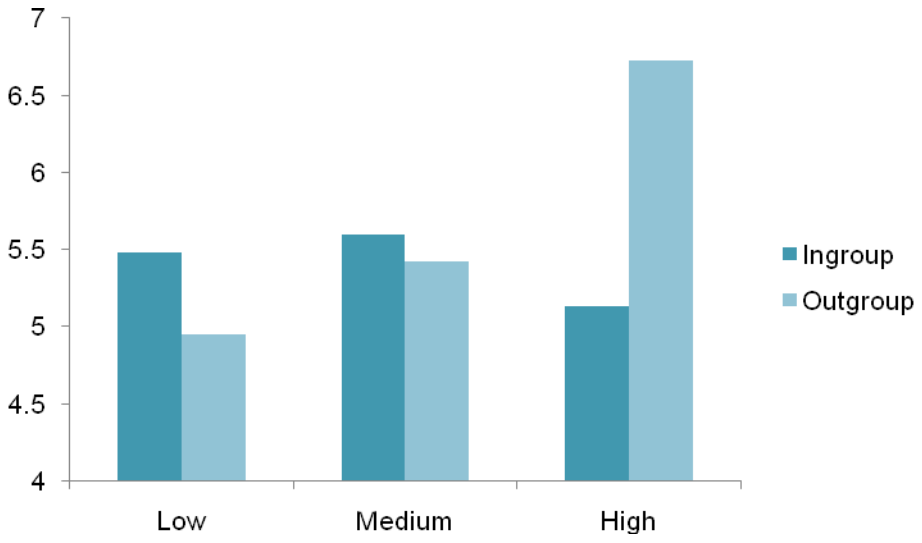

Figure 4.6 The mean ratings of reported enjoyment of the brainstorming session as a function of type of source and total ADWS scores

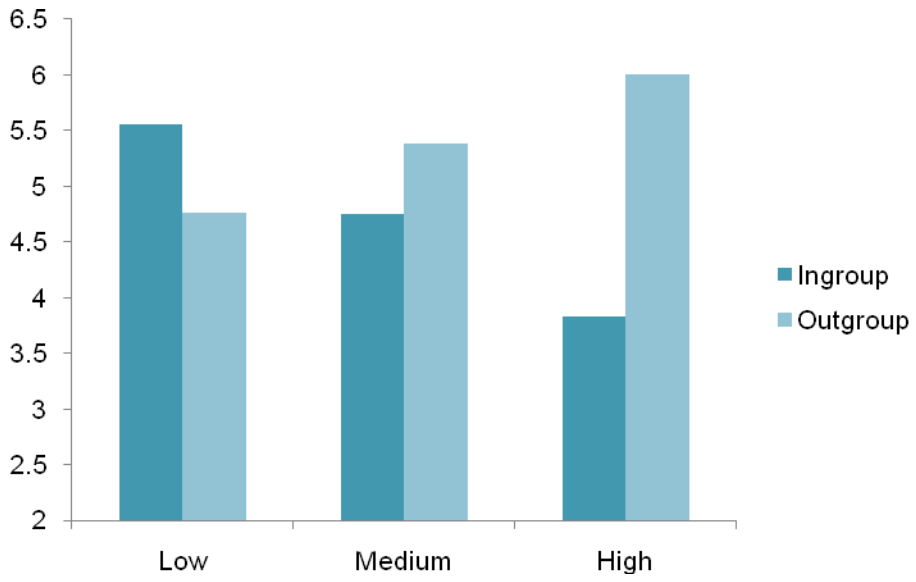

Figure 4.7 The mean ratings of reported level of competition as a function of type of source and total ADWS scores

As expected, the findings reveal that participants with high ADWS demonstrate positive psychological reactions toward outgroup members and expect to be more productive while working with outgroup members. The hypothesis 4 which states participants with a high score on the Attitude towards Diverse Workgroup Scale (ADWS) will report favorable anticipated productive and affective outcomes and generate higher quality ideas in the outgroup condition than ingroup condition was partially supported.

4.3.10 Self report measures as a result of type of exposure and type of source

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) between-subjects factorial MANCOVA was performed for enjoy, identify, beneficial, and capability after controlling for the attractiveness of the person. (See Table 4.13). MANCOVA revealed a significant main effect for type of source and for type of exposure. There is also a significant interaction for type of source and type of exposure. Next, a 2 X 2 ANCOVA was performed for each of the dependent variables.

Table 4.13 Multivariate tests for type of source and exposure for productive and affective dimensions

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Attractiveness	.79	9.15**	4	144	.20
Source	.94	2.51*	4	144	.07
Exposure	.85	6.41**	4	144	.15
Source * Exposure	.92	3.23*	4	144	.08

*Note: * $p < .05$, ** $p < .001$*

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) ANCOVA revealed a significant main effect for type of source for capability, F (1,147) = 4.36, $p < .05$, $eta^2 = .03$. Participants in the outgroup condition (M = 7.06 SD = 1.76) reported that they would be more capable as a team than those in the ingroup condition (M = 6.37 SD = 2.27). (See Figure 4.8). It was expected that if participants believed that they will perform better in a diverse group than a homogenous group, they would generate more ideas in the outgroup condition than ingroup condition. However, there was no correlation between performance and perceived capability (r = .09, $p > .05$).

When participants were asked how much they would benefit (grow, develop or better yourself) from working with a person, ANCOVA revealed an interaction effect for type of exposure and type of source F (1,148) = 3.54, $p < .05$, $eta^2 = .03$. (See Figure 4.9). Participants expected that they will be more benefited working with an outgroup member (M = 6.39 SD = 1.76) than an ingroup member (M =5.33 SD = 2.36). However, this effect can be seen only in the rate condition. Participants report that they will be more productive working in the outgroup condition when they do not see the ideas of the outgroup member. In the idea condition, there was no difference between ingroup (M =5.50 SD = 2.10) and outgroup (M =5.49 SD = 1.69).

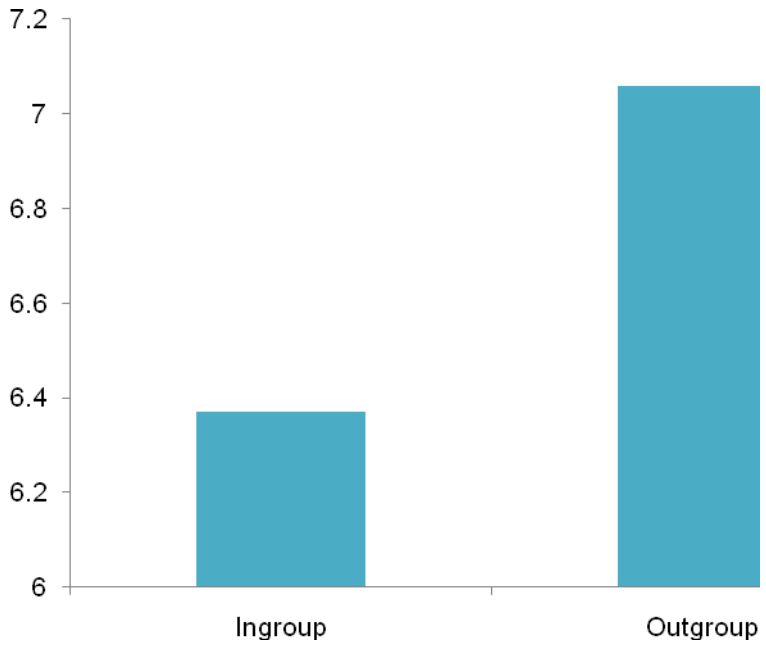

Figure 4.8 The mean ratings of perceived capability as a function of type of source

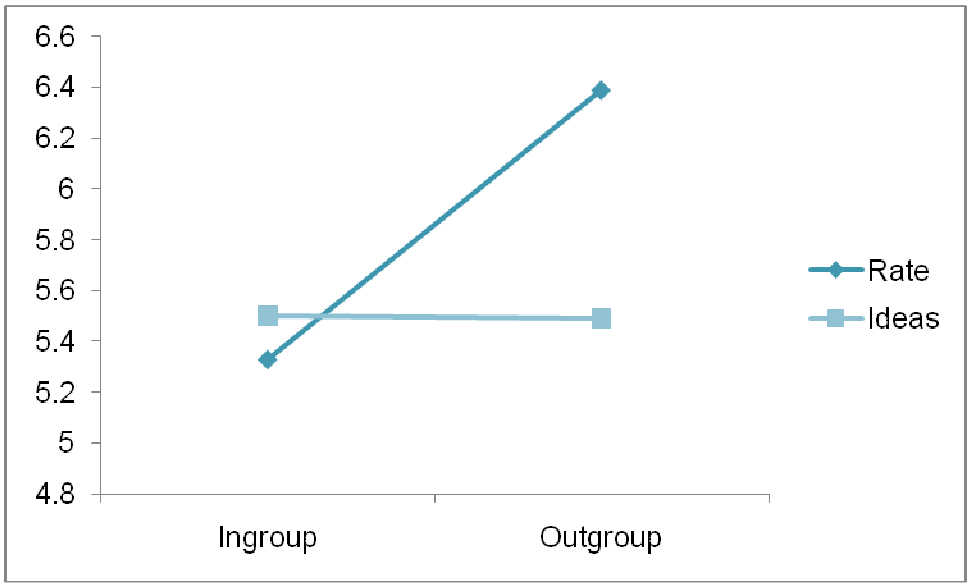

Figure 4.9 The mean ratings of perceived benefit as a function of type of source and type of exposure

The 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) ANCOVA also revealed a main effect for type of exposure, F (4,144) = 6.41, p < .01, eta^2 = .15 for identify. Pairwise tests (with a Bonferroni adjustment) revealed that there was a significant difference for identify between the idea condition (M = 5.50 SD = 2.10) and the rate condition (M = 4.53 SD = 2.36). (See Figure 4.10). Participants were asked, “How much did you identify with the person on the screen?” Participants in the idea condition reported that they identified more with the person on the screen than those participants who did not have an opportunity to see the other person’s ideas.

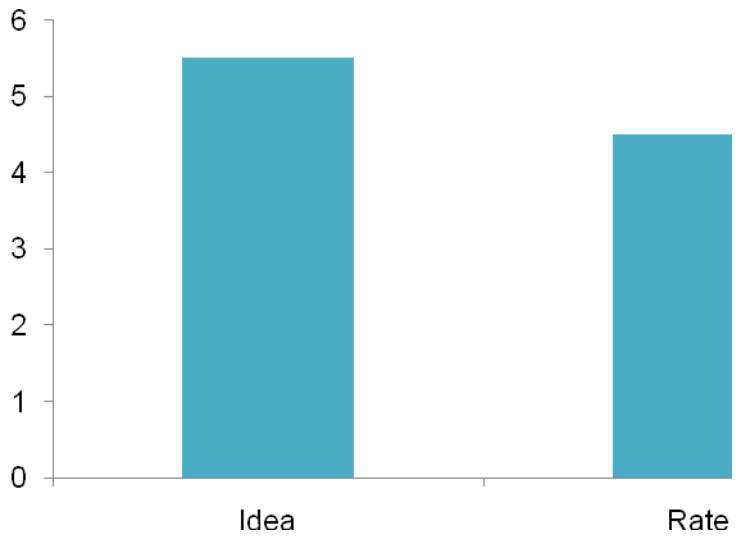

Figure 4.10 The mean ratings of perceived identity as a function of type of exposure

A 2 (exposure: ideas vs. rate) X 2 (source: ingroup vs. outgroup) ANOVA was conducted for various post-test questionnaire items such as total number of ideas generated by self, motivation, impress, etc. (See Appendix F & G). ANOVA indicated a significant main effect for type of source, F (1,159) = 5.277, p < .05, eta^2 = .03 only for self reports of performance. When participants were asked the question, “How would you rate the number of ideas you generated while brainstorming?” Participants responded that they generated more ideas in the outgroup condition (M = 6.52 SD = 1.55) than the ingroup condition (M = 5.94 SD = 1.69). This

self report of the number of ideas they generated of course reflects their actual performance. (See Figure 4.11).

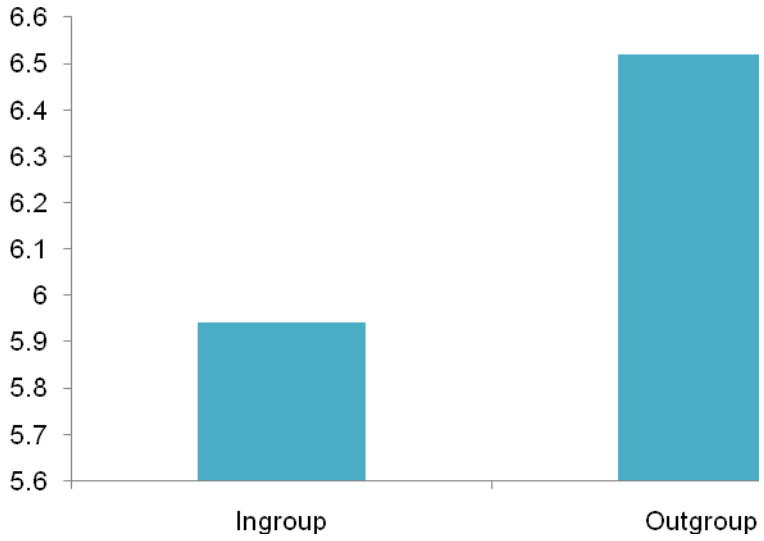

Figure 4.11 The mean self report ratings of idea generation as a function of type of source

4.3.11 Self report measures as a result of type of source and type of gender

A 2 (source: ingroup vs. outgroup) X 2 (gender: male vs. female) between-subjects MANOVA for the dependent variables competition, enjoyment of session, motivation, and impress. MANOVA revealed a significant interaction between type of source and type of gender. (See Table 4.14). Next, a univariate analysis of these dependent measures was performed.

Table 4.13 Multivariate tests for type of source and gender for post-test questionnaire

Effect	Wilks' Lambda	F	Hypothesis df	Error df	Partial η2
Source	.99	.29	4	152	.01
Gender	.97	1.22	4	152	.03
Source * Gender	.88	5.37**	4	152	.12

Note: ** $p < .001$

A (source: ingroup vs. outgroup) X 2 (gender: male vs. female) ANOVA revealed a significant interaction for enjoyment of session for type of source and gender of the participant,

F (1,152) = 7.214, p < .01, eta^2 = .05. When participants were asked the question “How much did you enjoy the brainstorming sessions?”, men reported that they enjoyed the session more while generating ideas with ingroup members (M = 6.14 SD = 2.12) than outgroup members (M = 5.00 SD = 2.68). However, women reported that they enjoyed the session while generating ideas with outgroup members (M = 6.16 SD = 2.01) than ingroup members (M = 5.16 SD = 2.27). (See Figure 4.12). In the current study, both men and women were exposed to same-gender pictures belonging to either similar or dissimilar ethnic groups.

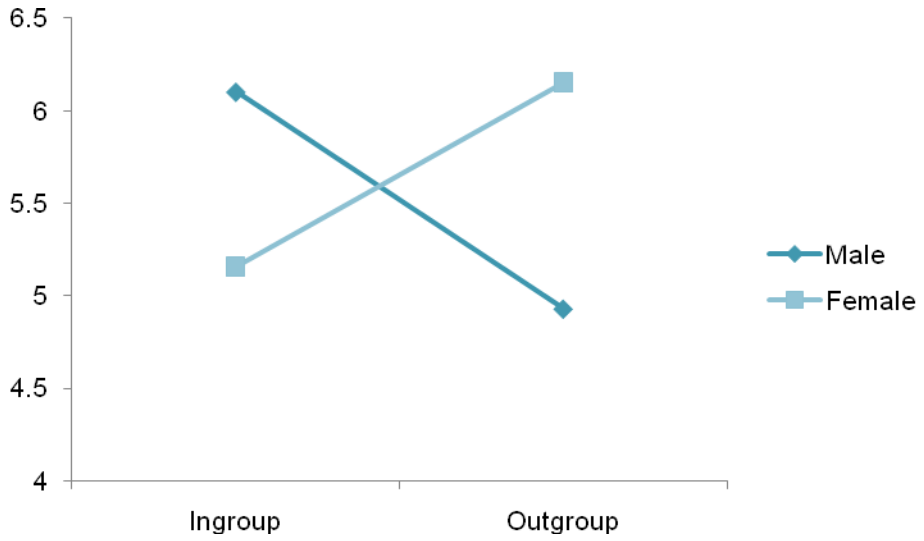

Figure 4.12 The mean self report ratings of enjoyment of session as a function of type of source and gender

ANOVA also found a significant interaction for impress for type of source and gender of the participant, F (1,152) = 19.51, p < .01, eta^2 = .12. When participants were asked the question “How motivated were you to impress others with your ideas?” men reported they wanted to impress ingroup members (M = 6.14 SD = 2.05) more than outgroup members (M = 4.00 SD = 2.71). However, women reported that they were more motivated to impress outgroup members (M = 5.44 SD = 2.20) with their ideation performance than ingroup members (M = 3.88 SD = 2.41). (See Figure 4.13). This pattern is not surprising because there is a high correlation between enjoyment of session and impress (r = .54, p < .01).

Further, ANOVA also revealed a significant interaction for competition for type of source and gender of the participant, F (1,152) = 7.429, p < .01, eta^2 = .05. When participants were asked “How competitive did you feel while generating ideas?”, men reported they felt more competitive while generating ideas with ingroup members (M = 5.89 SD = 2.42) than outgroup members (M = 4.83 SD = 2.79). However, women reported that they felt more competitive while generating ideas with outgroup members (M = 5.34 SD = 2.29) than ingroup members (M = 4.18 SD = 2.49). (See Figure 4.14). There is a high positive correlation between competition and impress (r =.65, p <.01) and competition and enjoyment (r =.40, p <.01).

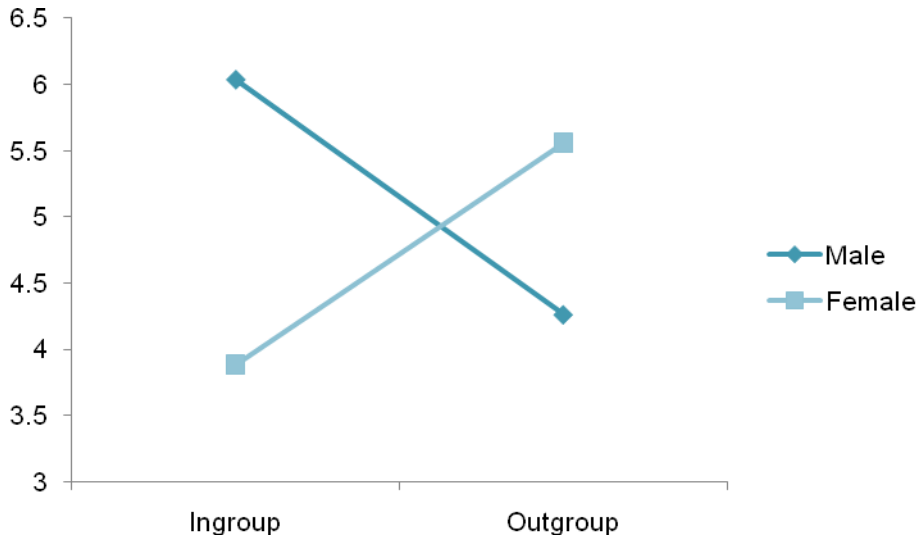

Figure 4.13 The mean self report ratings for impress as a function of type of source and gender

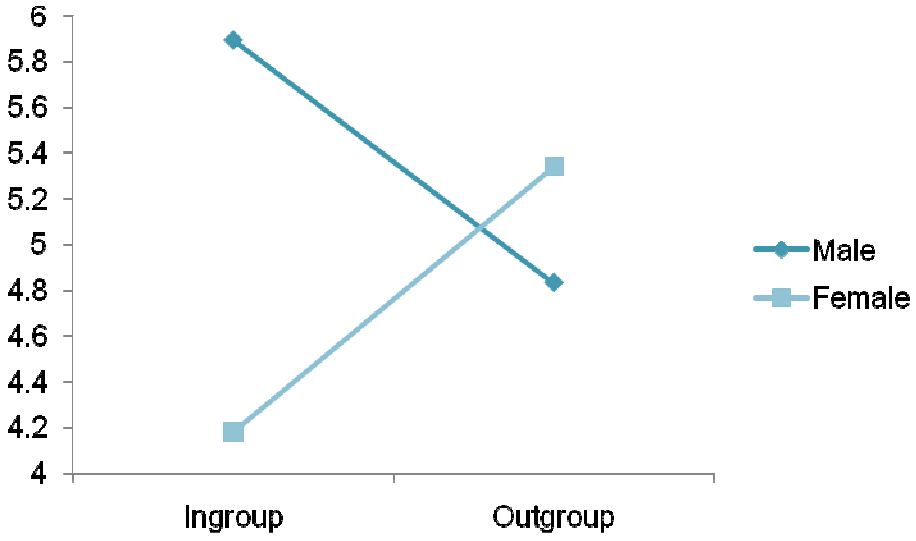

Figure 4.14 The mean self report ratings for competition as a function of type of source and gender

CHAPTER 5

DISCUSSION

The purpose of the second experiment was to determine why participants in an outgroup condition outperformed participants in an ingroup condition on a brainstorming task. The present study examined whether social competition, elaboration of task-relevant information, attitudes toward diverse groups, and expectations or beliefs about working in diverse groups contributed to this effect.

The superior performance of the outgroup condition relative to the ingroup condition found in Study 1 was replicated. This effect was similar in both the rate and idea conditions. This pattern of findings is consistent with the social competition interpretation of Lount & Phillips (2007). However, self reports of feelings of competitiveness after the ideation session did not influence performance. It is possible that participants were unaware of their feelings of competitiveness during task performance. Many studies have indicated that self reports of performance may not be a reflection of actual performance. For example, in brainstorming groups, participants believed they performed better in interactive groups than nominal groups. However, participants in nominal groups outperformed those in interactive groups (Paulus et al., 1993; Nijstad et al., 2006). Contrary to the current findings, Lount & Phillips (2007), found that self reports of competitional arousal mediated the relationship between group member and performance on a math task when participants were compared to a high performing outgroup member. In other words, participants felt more competitive and increased their effort when they were outperformed by an outgroup member than an ingroup member. One reason for inconsistency between these findings and Lount & Phillips' (2007) findings could be that in their study participants' performance was compared to that of a fictitious confederate who always performed better than them. However, in this study, participants' were exposed to others' ideas

but they did not receive feedback suggesting that others' performance was better than theirs. This may have made competition less salient. Further research could investigate the effect of social comparison with a high performing ingroup versus outgroup member on performance in an ideation task. It will be interesting to see if self reports of competitiveness mediate performance when participants are informed in the middle of the brainstorming session that a fictitious confederate belonging to either the ingroup or outgroup condition generated more ideas than them. The data did reveal gender differences in feelings of competitiveness. It is interesting that men felt more competitive while generating ideas with same-sex ingroup members while women felt more competitive while generating ideas with same-sex outgroup members. However, there were no gender differences in performance on the ideation task. In sum, although superior performance in the outgroup condition is consistent with a social competition perspective, the verbal report data do not provide additional support for this perspective.

If elaboration of task-relevant information was responsible for the positive effects on the number of ideas in the outgroup condition, this effect should have been stronger in the idea condition than the rate condition. Since this was not the case, this factor does not appear to be a causal one. Furthermore, it was predicted that participants in the idea condition would elaborate more on the ideas of the outgroup member than the ingroup member. The findings indicated that indeed there were more elaborated ideas in the outgroup condition than the ingroup condition. However, this effect was no longer significant when the number of ideas generated was controlled. The greater number of elaborated ideas appeared to be a by-product of generating greater number of ideas. In other words, elaboration of ideas was not influenced by the source of information (ingroup vs. ougroup member). The proportion of elaborated ideas was analyzed in order to eliminate the chance of greater number of elaborated ideas resulting from simply generating greater number of ideas. The proportion of elaboration was also not influenced by the source of information.

Previous research of elaboration on task-relevant information in diverse groups mainly focused on informational diversity (distributed information) in decision-making groups which were otherwise relatively homogenous in their composition (Stasser, 1999). However, organizations are usually composed of work groups that are diverse in terms of their membership. They differ from each other in terms of their educational background, ethnicity, gender, functional background, and so on (Milliken & Martins, 1996; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998). Very few studies have examined the role of information elaboration in ethnically diverse groups with fully shared information. This experiment examined the role of ethnic diversity on information elaboration when the task-relevant information was fully available to all participants in the idea condition. Kooij-de Bode et al., (2008) examined the influence of informational diversity versus homogeneity on decision-making in ethnically diverse versus homogenous groups. Some of these groups received instructions that emphasized information elaboration whereas the other groups did not receive this information. They found that in groups with informational diversity, ethnic diversity impeded decision making. This is not because ethnic diversity interfered with group's ability to reach an agreement but because ethnic diversity disrupted elaboration. Ethnically diverse groups with distributed information disrupted elaboration because they focused only on common information and ignored information that might threaten group consensus. The authors found that ethnically diverse groups benefited from instructions emphasizing elaboration when information diversity was involved. However, in information homogenous groups, neither ethnic diversity nor elaboration instructions affected the group performance. In other words, when all the task-relevant information was available to everyone, group performance was not strongly related to information elaboration. The current findings are in line with these results. When task-relevant information was made available to all the participants in the idea condition, performance on the ideation task was not influenced by elaboration.

It was expected that participants with a high score on the Attitude towards Diverse

Workgroup Scale (ADWS) would generate higher quality ideas and report favorable affective and productive outcomes when they are exposed to the ideas of an outgroup member than an ingroup member. However, ADWS scores did not influence performance on the ideation task. Participants with high ADWS scores expressed that they enjoyed the brainstorming session more when they were exposed to the ideas of a person from a different ethnicity as opposed to their own ethnicity. These results are consistent with previous findings that participants with high ADWS scores enjoy interacting with diverse group members more than those with low ADWS scores (Nakui et al., 2009). Additionally, these findings indicate that participants with high ADWS scores also felt more competitive while they were exposed to the ideas of an outgroup member than an ingroup member. This pattern is not surprising because there is a moderately high positive correlation between the items of enjoyment of session and competitiveness. After the brainstorming session, participants imagined they would work with the person on the screen as a team on an ideation task and rated their team on various dimensions. Participants with high ADWS scores reported that they would be benefited more by working with a person from a different ethnicity than someone from their own ethnicity. These findings are also in line with previous research that indicates that participants with a positive attitude toward diversity value diversity and anticipate positive productive outcomes in diverse settings (van der Zee et al., 2009).

The potential role of productive expectations about diversity as a possible factor in the outgroup effect was also evaluated. In general, participants did report that they would be more capable as a team if they collaborated with someone from a different ethnic background as opposed to a similar background. The participants' expectation about their team's performance is largely in accordance with some studies on decision making (Kirchmeyer & Cohen, 1992; Milliken et al., 2003; Watson et al., 1993; Thomas & Ely, 1996) and the concept of "value-in-diversity" which states that diversity enhances group's performance by bringing in different perspective and alternatives to the decision making process (Cox et al., 1991). These findings

are also in line with previous research that suggests that people evaluate diverse groups more positively on anticipated productive outcomes than homogenous groups (Parthasarathy & Paulus, 2006; van der Zee et al., 2009). However, there was no correlation between performance on the brainstorming task and perceptions of productivity. Overall, it appears that social competition may have contributed to superior performance in the outgroup condition.

The current research also reveals other interesting patterns about participants' performance. Participants generated more ideas and explored more categories when they were exposed to actual ideas as opposed to the rate of idea generation. This finding is consistent with the associative memory model (Brown et al., 1998). This model suggests that while brainstorming, exposure to others' ideas tends to have a stimulating effect. Attending to others' ideas would not only tap stored knowledge in fairly salient knowledge areas but also enable group members to access ideas from less accessible areas of knowledge. Further, it enables group members to creatively combine and build on the ideas presented by others. According to this model, exposure to a large number of ideas provides cognitive stimulation and results in an associational chain of ideas (Brown & Paulus, 2002). The current findings are in line with this model. The superior performance in the idea condition could be attributed to cognitive stimulation as a result of exposure to ideas. Previous studies have provided evidence for the influence of cognitive stimulation on performance (Brown et al., 1998; Dugosh et al., 2000; 2005; Nijstad et al., 2003). Dugosh et al., (2005) found that participants exposed to 40 common ideas generated more ideas than those who were exposed to 8 common ideas while brainstorming. However, findings of this experiment are inconsistent with the fixation theory (Smith, 2003) which states that "seeing or hearing the ideas of others in one's group would likewise constrain idea generation in group participants" (2003, p. 29).

The finding that participants generated more ideas and explored more categories in the outgroup condition than the ingroup condition suggests that social processes also influence brainstorming performance. Previous research has also provided evidence for the role of social

processes (Paulus & Dzindolet, 1993; Paulus, Larey, Putman, Leggett, & Roland, 1996; Dugosh et al., 2005) in brainstorming groups. These findings thus provide support for both social and cognitive components of the social/cognitive model of group brainstorming (Paulus et al., 2002).

There are a number of interesting patterns in participant's perception of affect and performance. Participants reported that they would be benefited more by working with an outgroup member in the rate condition than the idea condition. That is, participants expected to be more benefited by working with the person from a different ethnic background when they do not have an opportunity to see their ideas. This could be because participants may assume that the ideas of the outgroup person to be of higher quality when they are not exposed to them.

In contrast to the above finding, participants reported that they identified more with the person on the screen irrespective of their ethnic background in the idea condition than the rate condition. The participants in the idea condition were exposed to 40 common ideas from five common categories that were presumably generated by the other person. Since these ideas may have been similar to the ideas generated by the participants, they probably assumed the other person was similar to them in their way of thinking and therefore identified with them. This finding is in line with the similarity-attraction theory which states that people are more attracted to those who are similar to them as opposed to those who are dissimilar (Byrne, 1971). However, in the rate condition, they were not exposed to the ideas and were unable to relate to the other person in a similar fashion. Some studies have suggested that the attractiveness of an organization increased when racial similarity between the applicant and the employees was depicted in the advertisement (Young et al., 1997; Avery 2003). These studies suggest that people have a tendency to be more attracted and identify more with people who are similar to them than dissimilar others.

One limitation in this study is that college students were used as participants. Future studies could examine the influence of ethnicity on ideation tasks on a broader population. Further, in this study, beliefs about affect and productivity in diverse teams were measured after

the brainstorming session. Their performance in the session could have influenced their beliefs of anticipated productive and affective outcomes in diverse groups. In order to avoid this problem, in the future, measures about beliefs and expectations could be collected during the pretest. Nevertheless, the findings of this study are consistent with some of the previous studies that demonstrate that participants in ethnically diverse groups were more productive than those in ethnically homogenous groups (Phillips, 2003; Phillips et al., 2006).

There are a number of possible future directions for this research. In the second part of the current study, participants imagined that they would be working on an ideation task with another person. However, they did not imagine this interaction to be either positive or negative in nature (Crisp & Turner, 2009). In the future, it will be interesting to see if asking people to imagine positive productive and affective experiences with members from a different ethnic background would actually influence their performance as well as their psychological reactions when they work in diverse groups. It will be interesting to see if participants would be more productive and if they would feel more comfortable in face to face diverse groups if they first imagined positive interactions with such groups. Future research could also focus on how long the positive effects of imagination last on increased productivity and positive affect in diverse groups.

In this study, participants were exposed to either the ideas of ingroup members or outgroup members. It would be very interesting to see how participants respond if they are given a choice to ask for hints (ideas) as they brainstorm from either a person from their own ethnicity versus a different ethnicity and how it influences their performance. Based on social attraction theory and social comparison theory, we could expect that people would request more hints from an ingroup member than an outgroup member. Alternatively, we could expect participants with high ADWS scores and those who have positive beliefs and expectations about diverse groups to request more hints from an outgroup member than an ingroup member. Further, the number of ideas they generate could also vary depending on the number of hints

they request. Participants who ask for more hints may generate more ideas than those who ask for fewer hints. It will also be interesting to see if participants' request for hints is influenced by the gender of the ingroup and outgroup members. Further, in the current study participants were exposed to only common ideas. It will be interesting to see how participants' performance is influenced by unique versus common ideas that are generated by ingroup and outgroup members.

Although many studies have found that presence of diverse team members increases productivity and creativity, the current findings are the first to demonstrate that introducing ethnic diversity in the form of exposure to ideas of a "person from a different ethnic group" is sufficient to produce superior performance. These findings are remarkable in that just convincing people that ideas they saw were generated by a dissimilar other was sufficient to result in a dramatic increase in performance on the ideation task. Specifically, this study suggests that it does not take many diverse group members to influence performance. Performance can also be increased by the presence of just one outgroup member.

Finally, the current study is a valuable addition to the research on diversity and brainstorming. No studies in the past have examined the influence of ethnic diversity in brainstorming dyads. This study is promising in that it suggests that ethnically diverse dyads have the potential to be more productive in comparison to ethnically homogenous dyads. Future research could examine whether ethnically diverse dyads are more productive than nominals and ethnically diverse groups composed of three or more group members.

The findings of this study are relevant for multiple areas in literature such as brainstorming, diversity, prejudice, and stereotyping. Most notably, the current data adds to the wealth of research investigating the effects of diversity on performance and affect in brainstorming and decision-making groups.

APPENDIX A

BACKGROUND QUESTIONNAIRE

Background Questionnaire

1. Country of Birth: _____
2. Country of Citizenship: _____
3. Native Language: _____
4. What other languages do you speak? _____
5. How many years have you lived in the U.S? _____
6. Were you born in the U.S? _____
7. My ethnicity is:

(1) Asian or Asian American, including Chinese, Japanese, and others

(2) Black or African American

(3) Hispanic or Latino, including Mexican American, Central American, and others

(4) White, Caucasian, Anglo, European American; not Hispanic

(5) American Indian/Native American

(6) Mixed; Parents are from two different groups

My father's ethnicity is (use numbers above): _____

My mother's ethnicity is (use numbers above): _____

(7) Other (write in): _____

APPENDIX B

BRAINSTORMING RULES

Brainstorming Rules for Nominals

Brainstorming is a form of group interaction which is used to facilitate the flow of ideas. It is widely used in a large number of US corporations and is generally used when new, unique, original and creative ideas are desired. It is not used to solve everyday problems. The procedure is relatively straight forward and easy to comprehend. The following rules are for brainstorming in groups. We want you to apply these rule as best as you can while working on this task.

1) **Criticism is ruled out**. Adverse judgment of ideas must be withheld. Type everything you think of.
2) **Freewheeling is welcome**. The wilder the idea the better. It is easier to tame down than to think up. Don't be afraid to type anything that comes to mind. The further out the idea the better. This will stimulate more and better ideas.
3) **Quantity is wanted**. The greater the number of ideas the more likelihood of winners. Come up with as many as you can.
4) **Combination and improvement are sought**. You should try to suggest how ideas can be joined or changed into still better ideas. Don't be afraid to combine and improve on them.
5) **Stay focused on the task**. Concentrate on the problem at hand and avoid engaging in irrelevant thought processes and discussions.
    a. **Do not tell stories**. We are only interested in your ideas. Do not tell stories about your experiences.
    b. **Do not explain ideas**. Do not expand ideas on why you think something is good or bad. Simply state your idea and continue on with next ideas.

APPENDIX C

THE UNIVERSITY PROBLEM

THE UNIVERSITY PROBLEM

The problem you will be working on today is the university problem. Basically we would like you to generate ideas about ways to improve your university. Any suggestions you have about how to make your university better are appropriate. Feel free to express any ideas about improving your university that may occur to you. Just type your ideas one at a time, hitting the enter key when you finish each idea.

You will have 20 minutes to work on the problem. The time remaining will appear on the screen.

APPENDIX D

POST EXPERIMENT QUESTIONNAIRE – COMPUTER CONDITION (STUDY1)

Post Experiment Questionnaire:

Please answer the following questions concerning various aspects of your experience while brainstorming. The following scales are provided for you to indicate your responses. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

1) Specify how many ideas the computer generated:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

2) How would you rate the quality of the computer-generated ideas?

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

3) How would you rate the number of ideas you generated while brainstorming? I was able to generate:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

4) How would you rate the quality of ideas you generated while brainstorming? My ideas were of:

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

5) How motivated were you to generate ideas?

1	2	3	4	5	6	7	8	9
Not at all Motivated								very motivated

6) How much did you enjoy the brainstorming session?

1	2	3	4	5	6	7	8	9
Not at all								very much

7) How much was your idea generation process hindered by the computer-generated ideas?

1	2	3	4	5	6	7	8	9
Not at all								very much

8) How much did you build upon the computer-generated ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

9) How much did you attend to the computer-generated ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

APPENDIX E

POST EXPERIMENT QUESTIONNAIRE – INGROUP & OUTGROUP CONDITION (STUDY 1)

Post Experiment Questionnaire:

Please answer the following questions concerning various aspects of your experience while brainstorming. The following scales are provided for you to indicate your responses. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

1) Specify how many ideas the person on the screen generated:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

2) How would you rate the quality of ideas the person generated while brainstorming?

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

3) How would you rate the number of ideas you generated while brainstorming? I was able to generate:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

4) How would you rate the quality of ideas you generated while brainstorming? My ideas were of:

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

5) How motivated were you to generate ideas?

1	2	3	4	5	6	7	8	9
Not at all Motivated								very motivated

6) How much did you enjoy the brainstorming session?

1	2	3	4	5	6	7	8	9
Not at all								very much

7) How much was your idea generation process hindered by your attention to the other person's ideas?

1	2	3	4	5	6	7	8	9
Not at all								very much

8) How much did you build upon the other person's ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

9) How much did you attend to other person's ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

Imagine you and the person that appears on your screen are going to form a team. Along with this person you are going to work on a task that involves generating ideas and decision making. Keeping this in mind, you need to rate on a 9 point scale the following dimensions. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

10) How much would you enjoy/prefer working with this person?

1 2 3 4 5 6 7 8 9
Not at all very much

11) How much do you identify with this person?

1 2 3 4 5 6 7 8 9
Not at all very much

12) How much would you benefit (grow, develop or better yourself) from working with this person?

1 2 3 4 5 6 7 8 9
Not at all very
beneficial beneficial

13) How capable do you think your team is of making good decisions?

1 2 3 4 5 6 7 8 9
Not at all very
capable capable

14) On scale of 1 to 10 rate the attractiveness of this person:

1 2 3 4 5 6 7 8 9
Not at all very

APPENDIX F

POST EXPERIMENT QUESTIONNAIRE – IDEA CONDITION (STUDY 2)

Post Experiment Questionnaire:

Please answer the following questions concerning various aspects of your experience while brainstorming. The following scales are provided for you to indicate your responses. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

1) Specify how many ideas the person on the screen generated:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

2) How would you rate the quality of ideas the person generated while brainstorming?

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

3) How would you rate the number of ideas you generated while brainstorming? I was able to generate:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

4) How would you rate the quality of ideas you generated while brainstorming? My ideas were of:

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

5) How motivated were you to generate ideas?

1	2	3	4	5	6	7	8	9
Not at all Motivated								very motivated

6) How much did you enjoy the brainstorming session?

1	2	3	4	5	6	7	8	9
Not at all								very much

7) How much was your idea generation process hindered by your attention to the other person's ideas?

1	2	3	4	5	6	7	8	9
Not at all								very much

8) How much did you build upon the other person's ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

9) How much did you elaborate on the other person's ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

10) How much did you attend to the other person's ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

11) How competitive did you feel while generating ideas?

1 2 3 4 5 6 7 8 9
Not at all very much

12) How motivated were you to impress others with the ideas you generated?

1 2 3 4 5 6 7 8 9
Not at all very much

13) Does your partner belong to your ethnic group or a different ethnic group?

a. My ethnic group
b. Different ethnic group

14) While brainstorming you saw:

a. The ideas of the other person
b. The rate/time intervals at which the other person generated the ideas

Imagine you and the person that appears on your screen are going to form a team. Along with this person you are going to work on a task that involves generating ideas and decision making. Keeping this in mind, you need to rate on a 9 point scale the following dimensions. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

15) How much would you enjoy/prefer working with this person?

1 2 3 4 5 6 7 8 9
Not at all very much

16) How much do you identify with this person?

1 2 3 4 5 6 7 8 9
Not at all very much

17) How much would you benefit (grow, develop or better yourself) from working with this person?

1	2	3	4	5	6	7	8	9
Not at all beneficial								very beneficial

18) How capable do you think your team is of making good decisions?

1	2	3	4	5	6	7	8	9
Not at all capable								very capable

19) On scale of 1 to 10 rate the attractiveness of this person:

1	2	3	4	5	6	7	8	9
Not at all								very

APPENDIX G

POST EXPERIMENT QUESTIONNAIRE – RATE CONDITION (STUDY 2)

Post Experiment Questionnaire:
Please answer the following questions concerning various aspects of your experience while brainstorming. The following scales are provided for you to indicate your responses. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

1) Specify how many ideas the person on the screen generated:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

2) How would you rate the number of ideas you generated while brainstorming? I was able to generate:

1	2	3	4	5	6	7	8	9
Very few Ideas								very many ideas

3) How would you rate the quality of ideas you generated while brainstorming? My ideas were of:

1	2	3	4	5	6	7	8	9
Very low Quality								very high quality

4) How motivated were you to generate ideas?

1	2	3	4	5	6	7	8	9
Not at all Motivated								very motivated

5) How much did you enjoy the brainstorming session?

1	2	3	4	5	6	7	8	9
Not at all								very much

6) How competitive did you feel while generating ideas?

1	2	3	4	5	6	7	8	9
Not at all								very much

7) How motivated were you to impress others with the ideas you generated?

1	2	3	4	5	6	7	8	9
Not at all								very much

8) Does your partner belong to your ethnic group or a different ethnic group?

a. My ethnic group
b. Different ethnic group

9) You were exposed to the:

a. Ideas of the other person
b. The rate of their idea generation

Imagine you and the person that appears on your screen are going to form a team. Along with this person you are going to work on a task that involves generating ideas and decision making. Keeping this in mind, you need to rate on a 9 point scale the following dimensions. The more extreme you feel in one direction or another, the more you should mark a number in that direction.

10) How much would you enjoy/prefer working with this person?

1	2	3	4	5	6	7	8	9
Not at all								very much

11) How much do you identify with this person?

1	2	3	4	5	6	7	8	9
Not at all								very much

12) How much would you benefit (grow, develop or better yourself) from working with this person?

1	2	3	4	5	6	7	8	9
Not at all beneficial								very beneficial

13) How capable do you think your team is of making good decisions?

1	2	3	4	5	6	7	8	9
Not at all capable								very capable

14) On scale of 1 to 10 rate the attractiveness of this person:

1	2	3	4	5	6	7	8	9
Not at all								very

APPENDIX H

CATEGORY LIST

CATEGORY	CODE	DESCRIPTION
ACADEMICS	ACA	COURSE WAIVER, ACADEMIC REQUIREMENTS, COURSE MODIFICATION, COURSE REGISTRATION, ONLINE COURSES
ADDITION/CONSTRUCTION/RENOVATION	ADD	NEW ADDITION/CONSTRUCTION/RENOVATION OF ROOM, BUIDINGS, BATHROOMS, OUTLETS, ROADS, SIDEWALKS, BENCHES
ADVISORS	ADV	ADVICE/COUNSELLING, MENTAL HEALTH
CAMPUS ACTIVITIES	ACT	INVITING CELEBRITIES, GAMES, CULTURAL ACTIVITIES, SHOWS CONFERENCES, SEMINARS, INTRAMURALS, ORIENTATION, PEP RALLY
CAMPUS BEAUTY	BEA	ANYTHING TO ENHANCE THE INNER/OUTER BEAUTY OF CAMPUS, PAINTS, DECORATIVES, DESIGNS, ARCHITECT, PLANTS, STONES, FOUTAINS, ETC.
CAMPUS SAFETY	SAF	COPS, CAMPUS SECURITY, BLUE TELEPHONES, MORE SAFETY LIGHTS, ETC.
CLASSES	CLA	BOOKS, BOOKSTORE, CLASSROOM TEMPERATURE, CLASS SIZE, CLASSROOM RULES, ATTENDANCE, SCANTRONS
COSTS	COS	SCHOLARSHIP, TUITION, FINANCIAL AID, COMMUTER COSTS
DEPARTMENT	DEP	ADMISSIONS, BURSERS, MAV IDS, TRANFER, ADMINISTRATIVE, IDEA BOX
DORMS	DOR	ANYTHING RELATED TO DORMS, HOUSING
EMPLOYMENT	EMP	STUDENT'S EMPLOYMENT, WORK STUDY, JOB FAIRS, JOB PLACEMENT
FOOD	FOO	RELATED TO FOOD, RESTAURANT, VENDING MACHINE, BAR, DRINKS
HEALTH	HEA	UTA MEDIACAL STORE, STUDENT INSURANCE, CLEANLINESS, SANITATION, TRASH, RECYCLING, PEST CONTROL
LIBRARY	LIB	RELATED TO LIBRARY

ORGANIZATIONS	ORG	STUDENT ORGANIZATIONS, STUDENT GOVERNMENT, GREEK SYSTEM
PARKING	PAR	PARKING, PARKING TICKETS, STICKERS, GARAGES, PARKING ENFORCEMENT
PEOPLE INTERACTION	PEO	INTERACTION BETWEEN STUDENTS, SOCIAL ENVIRONMENT, SPIRIT, DIVERSITY, MORE/LESS PEOPLE
PUBLICITY/ADVERTISEMENTS	PUB	ADVERTISEMENTS AND PUBLICITY RELATED TO UTA, HS RECRUITMENT, COLORS, MASCOT, SLOGAN, ANY ADVERTISEMENTS, SHORTHORN
RECREATION	REC	CAMPUS REC, EXERCISE, JOGGING TRAILS, BOWLING, BILLIARDS, ETC
SPECIAL POPULATION	SPP	STUDENT MOMS, DAY CARE, HANDICAPS, ELDERLY PEOPLE, ETC
SPORTS	SPO	VARSITY OR PROFESSIONAL SPORTS, DANCE TEAM, CHEERLEADERS
TEACHER	TEA	TEACHER, TEACHING, LECTURES, STUDENT-TEACHER INTERACTION
TECHNOLOGY	TEC	COMPUTER, PRINTER, OVERHEAD, LAB EQUIPMENTS, PHONES, ANYTHING RELATED TO TECHNOLOGY
TRANSPORTATION	TRA	SHUTTLE, TRANPORTATION, MAPS, SIGNS, GOLFCARTS, ELEVATORS, ESCALATORS, WALKING DISTANCE, PARK&RIDE
TUTORS	TUT	TUTORS/EXAM PREP/STUDY GROUPS/SIS
UNIVERSITY	UNI	UNIVERSITY STRUCTURE, UT SYSTEM, ADD SCHOOLS/COLLEGES

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BIOGRAPHICAL INFORMATION

Niveditha Parthasarathy has always been interested in observing and reasoning the behavior of individuals alone and in groups. As her first step toward understanding the factors that shape human behavior and perception of others, she completed her bachelor's degree in psychology at the University of Madras, India. To keep up with technology, she also pursued a post-graduate diploma in software programming. Upon completion, she accepted a much coveted job offer from the National Institute of Information Technology (NIIT), Ltd., a reputed software consulting company in India. Working in an industrial setting gave her a chance to observe how psychological principles may be applied effectively to organizational problems and help enhance productivity, group morale and job satisfaction. This furthered her interest in interindividual processes within a group such as stigma and stereotypes based on perception of diversity. In an effort to better understand how people perceive diversity and how to enhance the efficiency of diverse workgroups, she began my Ph.D. program in experimental psychology at the University of Texas at Arlington (UTA). In the near future, she will be pursuing her post-doctoral degree at Hofstra University, New York.