BEHAVIORAL ASSIMILATION AND NESTED SOCIAL CATEGORIES:
EXPLORING GENDER STEREOTYPE PRIMING AND STEREOTYPE THREAT

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
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By

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The present research examines the influence of level of social categorization on behavioral assimilation to gender stereotypes. Specifically, this research examines both superordinate gender categories (men, women) and prototypical gender subgroups (businessmen, homemakers) to determine whether the level of categorization differentially affects behavioral assimilation. This research also examines whether stereotype threat or category stereotype priming best explains the influence of gender group primes at the two levels. Study 1 primed participants with superordinate gender categories or prototypical gender subgroups to determine the effect of these primes upon performance on a gender-stereotyped task. Results showed that the performance of male participants was influenced by subgroup primes such that performance was lowered when the participants had been primed to think about “homemakers” as a social category, compared with other gender primes. No priming effects were detected for superordinate gender primes or for female participants. Study 2 examined the relationship between the relevant stereotype and the task by framing the same task either as one on which males or females are stereotypically expected to succeed. Again, male participants were influenced by the gender subgroup primes, with the direction of priming effects on performance depending on which gender stereotype was activated. As in Study 1, no assimilation effects were observed for female participants. Study 3 focused on female
performance, replicating the priming conditions from Study 1, while explicitly making primes more self-involving. For female participants, the only demonstration of priming effects occurred in this third study, when the essay primes were made explicitly self-involving by invoking an interaction context. Category stereotype priming, not stereotype threat, better explains the pattern of results observed across these three studies, although stereotype threat cannot be conclusively ruled out. Finally, implications of this research and questions for future research are discussed.
This work is dedicated to my parents, who were my first teachers, and all of the other teachers that taught me to love learning.
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The past twenty years have seen an explosion of research on automaticity. Research on automaticity has suggested that much of human behavior and thought is governed by processes that operate outside of conscious awareness (Bargh & Chartrand, 1999). It has been argued that the categorization and perception of targets, as well as the initiation of behavioral responses to targets, are governed by automatic processes (Bargh & Chartrand, 1999).

Behavioral Assimilation

William James (1890) argued that thinking about behavior increased the likelihood of performing said behavior, a phenomenon which he termed ideomotor action. The most recent formulation of this notion of ideomotor action is the perception-behavior link, which suggests that we are likely to engage in behavior that follows from mental construct accessibility (Dijksterhuis & Bargh, 2001). Behavioral assimilation involves the activation of mental constructs and one specific type of behavioral assimilation involves the activation of a category stereotype and subsequent assimilation of behavior toward that stereotype. Two different forms of behavioral assimilation to group stereotypes have been studied, though different mechanisms are responsible for each. The first form is category stereotype priming, which is a form of perceptual
priming. The second form is stereotype threat, which occurs when behavior, particularly performance, is influenced by knowledge of negative ingroup stereotypes in such a way that the stereotypes are fulfilled.

Category Stereotype Priming

Dijksterhuis and Bargh (2001) have argued that activation of category stereotypes can be sufficient to elicit a corresponding behavioral response. The reason for the connection between our mental representation of a category stereotype and the initiation of behavior consistent with that stereotype involves the automatic activation of the behavior in question; just thinking of a category stereotype or stereotypic behavior causes us to rehearse a behavioral intention which, in turn, makes us more likely to engage in the behavior (Bargh & Chartrand, 1999). Assimilation occurs when the subsequent behavior is consistent with the perceptions. In a well-known demonstration of this effect, Bargh, Chen and Burrows (1996) found that participants walked down a hallway more slowly after being primed with the stereotype of the elderly. This finding is particularly striking because the activation of the elderly stereotype did not include any explicit reference to being slow. Category stereotype priming findings have been found not only for stereotypes of the elderly, but also for activation of the stereotypes of other social categories, including supermodels, professors, soccer hooligans, secretaries, and politicians (Dijksterhuis & van Knippenberg, 1998; Dijksterhuis & van Knippenberg, 2000; Dijksterhuis et al., 1998)

Stereotype Threat

Stereotype threat occurs when behavior, particularly performance, is influenced by knowledge of negative ingroup stereotypes in such a way that the stereotypes are
fulfilled (Steele, 1997). Steele and Aronson (1995) conducted the first published experimental demonstration of this phenomenon, in which black and white college students were given items from the GRE. When the participants’ race was salient, white students outperformed black students. In contrast, when race was not made salient, black and white students performed equally well. Steele and Aronson (1995) argued that black participants were concerned about confirming negative stereotypes about their intellectual ability and, as a result, they underperformed when their race was made salient. These basic stereotype threat effects have been demonstrated for whites in math (when compared to Asians), white males in athletics (when task is framed as measuring natural athletic ability), black males in athletics (when task is framed as measuring athletic intelligence), and women in math (Aronson et al., 1999; Stone et al., 1999; Spencer et al., 1999).

Stereotype threat involves the underperformance on a task because of negative ingroup stereotypes. A companion phenomenon, “stereotype lift,” is the boost in performance that comes from the awareness that a relevant outgroup is negatively stereotyped on a particular task, and thus the ingroup is relatively advantaged (Walton & Cohen, 2003). In their meta-analysis of stereotype threat research, Walton and Cohen (2003) found that there was not only underperformance on the part of group members who were negatively self-stereotyped (e.g., blacks doing worse on a task related to intelligence when race was salient), but there was also consistent overperformance for the non-stereotyped group (e.g., whites doing better on a task related to intelligence when race was salient).
Comparisons between Category Stereotype Priming and Stereotype Threat

Both category stereotype priming and stereotype threat (and lift) involve the activation of a stereotype and the elicitation of subsequent behavior that is consistent with that stereotype. Thus, the question has been raised as to whether or not these are different phenomena. In a review of the behavioral assimilation literature, Wheeler and Petty (2001) have identified the conditions under which stereotype threat and category priming effects are likely to occur. Stereotype threat requires the presence of self-related stereotypes, particularly those that are applicable to the situation at hand, relevant to an important domain, and whose implications are consciously known (Wheeler & Petty, 2001). In contrast, Wheeler and Petty (2001) argue that category priming effects involve stereotypes whose target is different than the self. In this case, domain identification does not matter and there does not need to be awareness of the stereotype’s implication. Wheeler and Petty (2001) also argue that stereotype threat is a “hot,” motivational phenomenon in which fear of confirming stereotypes interferes with performance. Category priming effects, on the other hand, are “cold,” cognitive phenomena and no motivation or feelings are required to obtain these effects. Overall, it seems that stereotype threat findings involve activation of stereotypes of an ingroup in an intergroup (comparative) context, whereas category priming findings involve the assimilation to an outgroup stereotype with no apparent ingroup activation (Dijksterhuis & Bargh, 2001; Wheeler & Petty, 2001).

Marx and Stapel (2006) have argued that stereotype threat findings and category priming effects can be conceptually distinguished in additional ways. Consistent with Wheeler and Petty (2001), they contend that stereotype threat requires both knowing the
relevant stereotype and being a member of the stereotyped group, while category priming can occur for anyone with stereotype knowledge, regardless of group membership. Marx and Stapel (2006) argue that the relevance of stereotypes to a participant’s social identity will determine whether their behavior will be more in line with stereotype threat or category priming. They isolate concerns with performance (“threat based concerns”) as being critical to stereotype threat findings, but not category priming findings (Marx & Stapel, 2006).

*Gender as a special case for behavioral assimilation*

Gender is a particularly interesting case for the study of these issues because gender represents a mutually exclusive, dichotomous categorization, such that thinking of one gender may automatically activate thoughts of the other. Gender is unique in this way because most categorizations are neither dichotomous nor oppositional. For example, when considering one’s nationality, even a salient outgroup is not exclusive and might not be salient to all people. Gender is a special case because of both the pervasive awareness of gender categories and because gender is defined partially based on differences between genders. As a result, gender categorization may be more likely to spontaneously invoke intergroup comparison than other category memberships that are not dichotomous. If gender always activates intergroup comparison, we can ask the question, is gender category activation always associated with stereotype threat? This would lead us to expect that female participants would perform more poorly (and, male participants would perform better) on a gender-stereotyped task, regardless of which
gender is primed\(^1\). This is particularly interesting because no published stereotype threat research has ever found that activating the outgroup could lead to stereotype threat. In contrast, the category priming literature would predict that when gender is activated, behavior should vary as a function of which gender category is primed (e.g., female primes cause worse performance on a gender-stereotyped task), regardless of participant sex.

**Superordinate Categories and Subgroups**

Based on the work of Rosch (1978), Brewer, Dull and Lui (1981) argued that social categorizations are hierarchically structured, with subgroups nested within a superordinate category. Categorization usually happens at the level of these nested subgroups because they provide richer, more descriptive information about potential targets (Brewer et al., 1981; Eckes, 1994). In a review of the literature on stereotyping and stereotype change, Richards and Hewstone (2001) point out that subgrouping allows for more complex representations of social categories. Because subgroups are associated with more rich and concrete stereotypes than superordinate categories, there is a reason to believe that there might be stronger stereotype activation for subgroups than for superordinate categories.

**Gender and subgroups**

Gender is an obvious and primary dimension for the categorization of individuals and sets the stage for stereotyping based on gender group membership (Brewer, 1988; Miller, 1986). Despite its importance, gender is too large a group to provide much specific information about targets. The relationship between superordinate categories

\(^1\) For purposes of exposition, I am assuming a task for which males are stereotypically better than females. Of course, predictions would be reversed for a task that is female-stereotypic.
and subgroups is particularly interesting in the case of gender, at least partially because gender-related information is salient in most contexts (Fiske & Stevens, 1993). It has been argued that the basic level of categorization of female targets is as a member of a relevant subgroup (Glick & Fiske, 2001; Six & Eckes, 1991). Further, not all gender subgroups are equally associated with the stereotypes attached to the superordinate gender category, for example that women are warm and nurturing (Fiske, Cuddy, Glick, & Xu, 2002).

Previous research has indicated that there are many identifiable subgroups within the larger superordinate categories of women and men (Coats & Smith, 1999; Deaux & Lewis, 1984; Deaux, Winton, Crowley, & Lewis, 1985; Eckes, 1994). Coats and Smith (1999) found that when participants were asked to list meaningful subgroups of women, businesswomen and homemakers were the most frequently identified. Previous research has also suggested many identifiable subgroups of men that fall along dimensions of family and career that are similar to those of women (Coats and Smith, 1999). Coats and Smith (1999) argue that businessmen and family men are similar to the subgroups of businesswomen and homemakers. The degree to which subgroups are associated with the superordinate category determine which subgroups are prototypical and which are non-prototypical. The stereotype of homemakers overlaps almost completely with that of the traditional stereotype of “women.” The subgroup of businessmen offers a subgroup that is prototypical of males.

The question of whether or not gender categories activate intergroup comparison may be dependent upon the categorization of ingroup and outgroup targets and the level of categorization for these targets. Although superordinate gender categories may be
oppositional, this may not be true for subgroups. For example, “woman” may activate “man,” but “homemaker” may not activate “man.” Focus on subgroups (e.g., homemakers), even if they are prototypic, would probably not activate the oppositional superordinate category (i.e., men) to the same extent as the superordinate category (i.e., women) would. Thus, we may expect different patterns of behavioral assimilation to result from activation of gender subgroups than from activation of gender superordinate categories.

The Present Research

This research examines both the ways in which behavioral assimilation effects are affected by the level of category activation and whether superordinate gender categories (i.e., man and woman) or prototypical gender subgroups (i.e., businessmen and homemakers) are more likely to result in behavioral assimilation. This research also examines the mechanism of this behavioral assimilation, via stereotype threat or category stereotype priming, for superordinate gender categories and prototypical gender subgroups.

The present research was designed to address three questions. First, do subgroup categories cause stronger priming effects than the superordinate categories, perhaps related to the stronger stereotype activation associated with subgroups? Second, does activation of ingroup gender stereotypes lead to stereotype threat or category stereotype priming effects and does this differ depending on whether it is primed at the superordinate or subgroup level? Third, does activation of outgroup gender stereotypes lead to stereotype threat or category stereotype priming effects and does this differ depending on whether it is primed at the superordinate or subgroup level?
Three experimental studies that addressed these questions are reported in the following chapters. Study 1 examined these questions by priming participants with superordinate gender categories (man, woman) or prototypical subgroups (businessman, homemaker) of each gender to determine the effect of these primes on performance on a gender-stereotyped task. Study 2 examined the importance of the fit between the task and the relevant stereotype for performance by manipulating whether the task was framed as one on which males are stereotypically expected to succeed or females are stereotypically expected to succeed. Because the results of Study 1 and Study 2 revealed difficulties in finding priming effects for female participants, a third experiment was designed to examine female performance, following the superordinate or subgroup gender primes from Study 1, when priming was strengthened by explicitly making the essay priming more self-involving. The implications of the findings from these three studies for psychological theories of behavioral assimilation are discussed in the final chapter.
CHAPTER 2

STUDY 1: BEHAVIORAL ASSIMILATION TO NESTED SOCIAL CATEGORIES

Because subcategorization is a prevalent aspect of person perception, this research examines what happens when participants are primed to think about gender ingroups and outgroups, at the superordinate level or at the subgroup level. The present research will examine both the ways in which behavioral assimilation effects are affected by the level of category activation and whether superordinate gender categories (i.e., man and woman) or prototypical gender subgroups (i.e., businessmen and homemakers) are more likely to result in behavioral assimilation. The prototypical subgroup of each gender was selected for purposes of this research because the relevant stereotypes of these subgroups (homemakers and businessmen) are known to overlap to a great extent with the respective superordinate categories (women and men). By ensuring that the stereotypes of the superordinate group and subgroup of each gender were similar, any obtained differences in behavioral outcomes following priming could be attributed to the strength of stereotype activation rather than differences in the content of stereotypes at the two levels of categorization.

As discussed in Chapter 1, behavioral assimilation (in this case, movement toward stereotypic performance) can result from either of two processes that lead to assimilation through different mechanisms. Category stereotype priming effects are presumed to
follow from activation of the cognitive constructs associated with the stereotype and only require thinking of the relevant stereotype, regardless of whether the social category is an ingroup or outgroup. The second mechanism of behavioral assimilation is stereotype threat, which operates specifically when one’s ingroup is negatively stereotyped with respect to some dimension of performance and performance moves in line with the self-relevant stereotype. Stereotype threat requires that the relevant ingroup be salient and that an intergroup context is created. Gender priming is of particular interest because, at the superordinate level, gender categories (men and women) are dichotomous and may automatically activate one another. As a result, it is possible that the activation of either superordinate gender group may lead to stereotype threat for female participants who are completing a gender-stereotyped task, because the activation of either gender would create the necessary intergroup context for stereotype threat. Gender subgroups, on the other hand, are nested within gender and are not likely to be contrasted with subgroups of the opposite gender (that is, “homemaker” may automatically activate other female subgroups such as businesswomen, but is not likely to activate “businessman.”). Thus, subgroup labels may be more likely to engage category stereotype priming, in which the participants’ gender ingroup plays no role and only the relevant category stereotypes affect behavior. Because superordinate gender categories are likely dichotomous but similarly-stereotyped subgroups are not dichotomous, comparing effects of priming gender at the superordinate versus subgroup levels offers a test of these two different mechanisms for behavioral assimilation.

In the present study, behavioral assimilation was assessed using performance on a map-reading task. This task was chosen because males are expected to be more skilled at
spatial relations than females, so there is a gender stereotype associated with performance on this task. The between-subjects experimental design had three variables: participant sex (male, female), primed group (ingroup, outgroup), and primed group level (superordinate, subgroup). Participants were either primed to think of males, females, businessmen, or homemakers. Table 2.1 shows the 2 (group) X 2 (level) for female participants. Table 2.2 shows the 2 (group) X 2 (level) for male participants.

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<thead>
<tr>
<th>Level</th>
<th>Superordinate</th>
<th>Subgroup</th>
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<tr>
<td>Ingroup</td>
<td>Women</td>
<td>Homemakers</td>
</tr>
<tr>
<td>Outgroup</td>
<td>Men</td>
<td>Businessmen</td>
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Table 2.1 Priming conditions for female participants. Study 1

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<th>Level</th>
<th>Superordinate</th>
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<tbody>
<tr>
<td>Ingroup</td>
<td>Men</td>
<td>Businessmen</td>
</tr>
<tr>
<td>Outgroup</td>
<td>Women</td>
<td>Homemakers</td>
</tr>
</tbody>
</table>

Table 2.2 Priming conditions for male participants. Study 1
Study 1 was designed to test several predictions. I expected a main effect of participant sex, such that male participants perform more successfully across all conditions than female participants. However, I predicted that this main effect would be qualified by a three-way interaction of participant sex (male, female), group (ingroup, outgroup), and level (superordinate, subgroup). More specifically, when primes are at the level of the superordinate, there should only be an effect of participant sex. Because either superordinate gender category is expected to activate an automatic intergroup comparison, I predicted that male participants would exhibit stereotype lift and female participants would exhibit stereotype threat, regardless of whether the ingroup or outgroup is primed, as per the stereotype threat pattern of results. In contrast, when primes are at the level of the subgroup, I expected an interaction of participant sex (male, female) and group (ingroup, outgroup). For female participants, the ingroup prime (homemakers) should lead to lower performance than the outgroup prime. For males, the ingroup prime (businessmen) should lead to better performance than the outgroup prime, as per category priming effects.

Methods

Design

This experiment employed a 2 (participant sex: male and female) x [2 (group: ingroup, outgroup) x 2 (level: superordinate, subgroup) and a dangling control (no gender prime) condition] between-subjects design.
Participants were 85 female and 75 male undergraduate students at The Ohio State University taking an Introduction to Psychology course. These students participated in the experiment as a partial fulfillment of a course requirement. All participants were selected based on their identification with the prototypical subgroup of their gender to ensure that both same-gender groups (men and businessmen for male participants; women and homemakers for female participants) were ingroups for participants.

Procedure

All participants first completed a prescreening questionnaire, which was administered at the beginning of the term. This questionnaire was designed to determine the gender subgroup with which participants most strongly identified. Only those male participants who identified with businessmen and those female participants who identified with homemakers were eligible for participation.

In the prescreening, respondents were told to imagine themselves now or in the future in relation to a list of either 11 subgroups for female respondents or a list of 12 subgroups for male respondents. Respondents were asked three questions in which they selected one of the entire presented list of subgroups: first, to identify the subgroup with which they most closely identified, second, to identify the subgroup which was the most similar to themselves, and finally, to identify the subgroup they would be most upset if associated with. In addition, respondents were asked how much they identified with homemakers (for women) and businessmen (for men) on a scale of 1 (indicating low identification) to 7 (indicating high identification). To be selected for this experiment,
respondents had to do one of three things: indicate that they identified most with the prototypical subgroup, select the prototypical subgroup as the one most similar to themselves, or indicate a greater than neutral identification with the prototypical subgroup (indicated by a response of 5, 6, or 7 on the scaled question). Respondents who met one or more of these criteria were contacted by e-mail and invited to participate in the present experiment (“Impression Formation”).

When participants arrived at the experimental session, they were told that they were being asked to help with pilot testing two sets of materials, one for a specific psychology lab and one for the department. All of the experimental materials were presented using MediaLab v. 2005 (Jarvis, 2005). Participants were seated in front of a computer and told that, in the first task, they would be asked to imagine a type of person and report their impressions. They were then given the following instructions:

We would like you to imagine a _____. We would like you to list typical behaviors of this person (animal), the lifestyle of this person (animal), the appearance of this person (animal), and any other attributes you might think of.

Participants were assigned to think about one of five targets: a man (superordinate), a woman (superordinate), a businessman (prototypical male subgroup), a homemaker (prototypical female subgroup), or a cat (the control essay). After listing their thoughts for five minutes, participants moved on to the next task.

Participants then completed a (presumably unrelated) task that involved looking at a series of three maps and answering 23 questions related to those maps (see Appendix 1). Participants were told that they would be trying out a new “filler task” for the Psychology Department and that they would see several maps and use them to answer a
series of questions on the computer. The three maps were provided next to the computer and participants were told when to use the first, second, and third maps when answering questions. This map-reading task was chosen because males are stereotyped to have a stronger sense of direction and spatial relations ability than women. The primary dependent variable was the total number of the 23 questions that each participant answered correctly.

Before being debriefed, participants were asked if they could remember who the essay task was being conducted for and who the map task was being conducted for. Participants were then probed for suspicion and then extensively debriefed.

Results

Essay Coding Data

Initially, the essays written by participants in the four gender priming conditions were coded for relevant content. Each essay was rated by two independent coders on a set of characteristics, including overall positivity (rated on a 7-point scale), number of competence-related words in the essay, and the extent to which the essay focused on concrete behaviors versus abstract traits. The correlations between the ratings of the two coders ranged from $r (158) = .49$ (for positivity) to $r (158) = .74$ (for competence) to $r (158) = .33$ (for behavior vs. trait ratings), all significant, $p < .01$. Essay coding scores for analyses were created by computing the mean value of the two essay coders’ ratings.

On the basis of this coding, two male participants in the homemaker prime condition were removed from data analysis because they mistook homemakers for construction workers (who literally make homes).
Essays were analyzed using a 2 (participant sex: male, female) x 2 (essay target sex: male, female) x 2 (level: superordinate, subgroup) between-subjects ANOVA. Essays were first coded for their positivity. Each essay was rated on a scale from 1 (representing “very positive”) to 7 (representing “not at all positive”). Scores were then reverse-coded, such that higher numbers represent more positivity associated with the group in question. For the mean positivity rating, there was a significant main effect of the sex of the essay target, $F(1, 120) = 9.13, p < .01$. Participants wrote more positive essays about female targets ($M = 4.92$) than about male targets ($M = 4.31$).

There was a marginally significant two-way interaction between participant sex and sex of the target they were writing about, $F(1, 120) = 3.69, p = .06$. Both male and female participants rated female targets more positively than male targets, but the difference between male and female targets was greater for female participants ($M = 4.62, M = 5.62$, respectively) than for male participants ($M = 4.00$ and $M = 4.22$, respectively).

For positivity, there was also a marginally significant three-way interaction of participant sex, target sex, and level, $F(1, 120) = 2.72, p = .10$. For female targets, essays written by female participants showed approximately the same level of positivity for women and for homemakers ($M = 5.97$ and $M = 5.27$, respectively), whereas essays written by male participants showed much more positivity for women in general than for homemakers ($M = 4.88$ and $M = 3.57$, respectively). For male targets, essays written by male participants showed somewhat more positivity for men than businessmen ($M = 4.15$ and $M = 3.84$, respectively), while essays written by female participants showed much more positivity for men in general than for businessmen ($M = 5.14$ and $M = 4.11$,
respectively). Both of these findings suggest, in terms of positivity, that participants do not differentiate the superordinate group from the prototypical subgroup for their own gender, but they do differentiate the superordinate group from the prototypical subgroup for their gender outgroup.

Essays were also coded for the number of competence-related words used in the essay to describe the target (e.g., determined, hardworking, motivated). Each participant’s score represents the mean number of competence-related words identified in their essay by the two coders. The competence ascribed to essay targets is of particular interest because it is the relevant stereotype for the map-reading performance dependent variable. There was no significant main effect of participant sex, $F(1, 120) = 1.20, p = .28$. Because of this, male and female data were collapsed and data were analyzed using a 2 (essay target sex) x 2 (level).

For the competence codings, there was a main effect of target sex, $F(1, 124) = 18.34, p < .01$. Male targets ($M = 1.19$) were described using more competence-related words than female targets ($M = .47$). This main effect was qualified by a two-way interaction of target sex and level, $F(1, 124) = 9.63, p < .01$. When writing about male targets, more competence-related words were used to describe the subgroup businessmen ($M = 1.49$) than men in general ($M = .90$). When writing about female targets, more competence-related words were used to describe women in general ($M = .70$) than the subgroup homemakers ($M = .23$). This interaction shows that priming of the competence stereotype is stronger at the level of the subgroup; businessmen were

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$^2$ This finding, that female targets are associated with more overall positivity but less competence, is consistent with the Fiske et al. (2002) Stereotype Content Model. Positivity toward female targets can come from a different dimension than competence, such as warmth.
described using the most competence-related words and homemakers were described using the least competence-related words.

Essays were finally coded for the degree to which the essays described traits or behaviors. Essays were coded on a 1 (representing an exclusively behavior-based essay) to 7 (representing an exclusively trait-based essay) scale and the two coders’ ratings were averaged. There was no significant main effect of participant sex, $F(1, 120) = .05, p = .83$. Because of this, male and female data were collapsed and data were analyzed using a 2 (essay target sex) x 2 (level). There was a main effect of target sex, $F(1, 124) = 8.56, p < .01$. Female targets (M = 3.52) were described more behaviorally than male targets (M = 4.18). There was also a main effect of level, $F(1, 124) = 6.79, p = .01$. Subgroups (M = 3.55) were described more in terms of behaviors than superordinate groups (M = 4.15). This main effect was qualified by a marginally significant two-way interaction of target sex and level, $F(1, 124) = 2.27, p = .13$. Subgroups were described more often with behaviors than traits, and homemakers (M = 3.05) were particularly likely to be described this way relative to businessmen (M = 4.06).

These three essay codings offer insight into what type of content the different gender category primes engendered for our participants. As expected, subgroups produced clearer competence stereotypes and richer behavioral descriptions than did the superordinate categories.

*Map-reading Task Performance Data*

Map reading task performance results for all ten experimental conditions are presented in Figure 2.1.
Figure 2.1 Prime by Participant Sex. Study 1

The control condition (the absence of gender primes) was initially examined to test whether task performance was gender-related. As predicted, female participants (M = 19.76) did perform more poorly than male participants (M = 20.69) in the control condition, although the difference between male and female performance did not reach statistical significance, $t(28) = -1.21, p = .24$. The means for males and females in the control condition provide a baseline to interpret other findings.
Data from the gender priming conditions were then analyzed as a 2 (participant sex) x 2 (group) x 2 (level). There was a significant main effect of participant sex, $F(1, 120) = 5.83, p = .02$. Across all conditions, on average, male participants were more successful (M = 20.56) than female participants (M = 19.66). There was also a main effect of group, $F(1, 120) = 5.43, p = .02$. Across all conditions, on average, performance following ingroup primes (M = 20.54) was better than performance following outgroup primes (M = 19.68).

This main effect of group was qualified by an interaction of group and level, $F(1, 120) = 5.12, p = .03$. Table 2.3 displays the means for this interaction. Following a superordinate prime, performance is similar when primed with either the ingroup or outgroup. In contrast, following a subgroup prime, performance was better following ingroup primes than outgroup primes. The other two-way interactions were not significant.

<table>
<thead>
<tr>
<th>Group</th>
<th>Level</th>
<th>Superordinate</th>
<th>Subgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingroup</td>
<td>20.47</td>
<td>20.63</td>
<td></td>
</tr>
<tr>
<td>Outgroup</td>
<td>20.39</td>
<td>19.09</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.3  Group x Level Interaction Means. Study 1
Although the critical three-way interaction did not reach statistical significance, $F(1, 120) = 2.19, p = .14$, looking at the group by level interaction and Figure 2.1, it appears that the two-way interaction of group and level was driven by the results for male participants. Because of this, the data were broken down by participant sex and analyzed as a 2 (level) x 2 (group) for males and a 2 (level) x 2 (group) for females.

**Within-female 2 x 2.** For female participants, neither the main effects nor the two-way interaction of the 2 (level) x 2 (group) between-subjects ANOVA were significant. Results for female participants did not show any of the predicted patterns.

**Within-male 2 x 2.** For male participants, the 2 (level) x 2 (group) between-subjects ANOVA resulted in a significant two-way interaction, $F(1, 56) = 7.36, p = .01$. For male participants, the total number of questions answered correctly was lower following the homemaker prime ($M = 18.73$) than any of the other primes (man, $M = 21.00$; woman, $M = 21.00$; businessman, $M = 21.50$). This depression of performance following the homemaker prime was significantly different than any other prime condition; the independent samples t-tests showed significant differences between the homemaker prime and the man prime, $t(26) = 2.61, p = .02$, the woman prime, $t(29) = 2.924, p = .01$, and the businessman prime, $t(29) = 3.37, p < .01$.

According to my initial predictions, there should be no significant differences between ingroup and outgroup primes at the level of the superordinate, which is what the results for male participants show, $t(27) = .00, p = 1.00$. At the level of the subgroup, it was predicted that there would be a significant difference between ingroup and outgroup primes, which is what the results for male participants show, $t(29) = 3.37, p < .01$. It
appears that male participants are showing the predicted pattern of results and the obtained two-way interaction of group and level was driven by the male participants.

In an effort to further determine whether the activated competence stereotype accounts for the behavioral change of male participants, each male’s performance on the map-reading task was correlated with the mean competence rating of the essay they wrote. There was no significant correlation between participants’ performance and the mean competence rating of their essay, $r (73) = .17, p = .16$. The correlation was then run for only the homemaker and businessman prime conditions, because competence differences were strongest for these two groups, but the relationship was not significant, $r (31) = .26, p = .15$.

Discussion

In evaluating the essays written by our participants, Study 1 offered evidence that subgroups, relative to superordinate groups, are more strongly differentiated based on competence stereotypes and are associated with richer behavioral descriptions. Study 1 supported the initial prediction of a main effect of participant sex. Across all conditions, male participants answered more questions correctly than female participants. There was also a main effect of group, such that participants on average performed better following an ingroup prime than an outgroup prime, but this was qualified by a group x level interaction such that the ingroup effect occurred only at the subgroup level. Upon further inspection of the data, it was clear that the primes only had significant effects for male participants. For female participants, results did not support any predicted patterns. In contrast, for male participants, results did conform to the predicted pattern of results. For males, when primes occurred at the level of the subgroup, performance was hurt by the
outgroup prime, in a pattern consistent with category stereotype priming effects.

Superordinate primes, on the other hand, did not differ from the control condition and led to similar performance, regardless of whether the prime was of an ingroup or outgroup.

The decline in performance following a homemaker prime was strong enough for male participants that it made the level by group interaction significant across both male and female results.

Male participants showed a pattern that was consistent with behavioral assimilation, via category priming, toward the stereotypical performance of homemakers; males showed a reduction in the number of items answered correctly only when primed with the outgroup at the level of the subgroup (i.e., homemakers). This decline in performance was significant, relative to every other essay priming condition. These results suggest that behavioral assimilation was the strongest when gender categories were primed at the subgroup level, as had been predicted.

It is possible that we did not find any effects for the female participants because when they recognized that they would be completing a gender stereotyped task, they disengaged from the task and minimized its self-relevance or importance. In contrast, our male participants may have cared about the task precisely because it was gender stereotyped, which made it self-relevant. To address this concern, and attempt to reverse this gender effect, the relevant stereotype for performance was manipulated in Study 2.

Study 1 rested on the assumption that participants would spontaneously stereotype the map-reading task as one on which males would be better, based on the stereotype of the spatial reasoning ability of males. In Study 2, the salient stereotype was manipulated to be either a task on which males would be stereotypically expected to succeed (i.e., a task
of spatial reasoning) or a task on which females would be stereotypically expected to succeed (i.e., a task of verbal skills). When the frame suggests that males will be stereotypically likely to succeed, findings should replicate those of Study 1. In contrast, if the map-reading task is described as one on which women would be stereotypically expected to perform well, there should be less reason for female participants to disidentify and a greater likelihood of obtaining predicted behavior assimilation effects for both males and females.
CHAPTER 3

STUDY 2: BEHAVIORAL ASSIMILATION TO SUBGROUPS AS A FUNCTION OF
TASK FRAMING

Study 1 offered preliminary evidence that the stereotypes associated with
subgroups, as opposed to superordinate groups, are more likely to lead to behavioral
assimilation. In Study 1, male participants showed behavioral assimilation when thinking
of the outgroup at the level of the subgroup (homemakers) and no significant differences
in performance when primed with superordinate groups (i.e., women versus men). In
Study 1, female participants showed no significant differences in performance following
any prime, which may be a result of our female participants disengaging from the task
when they see it is one on which they are gender stereotyped to do poorly. This
explanation for female participants in Study 1 assumes participants all linked the map-
reading task to the stereotypes about spatial relations abilities for males and females.

Study 2 is designed to manipulate whether or not the salient skill measured in the
map-reading task is described as one on which males or females are stereotypically more
skilled. Because the most interesting effects from Study 1 occurred after subgroup
priming, only the two subgroups (i.e., businessmen and homemakers) were used as
primes in Study 2.
Study 2 allows a test of whether changing the relevant stereotypic dimension will change performance, indicating that the meaning of task performance has an effect on the direction of behavioral assimilation. For male participants, it is predicted that when the task is framed as one on which males are stereotypically expected to succeed, behavioral assimilation will follow a similar pattern as Study 1, namely that homemaker primes will depress performance relative to businessman primes. In contrast, it is predicted that when the task is framed as one on which females are stereotypically expected to succeed, male performance should be better following a homemaker prime than a businessman prime.

For female participants, when the task is framed as one on which males are stereotypically expected to succeed, it was predicted that there would be no significant differences in performance following either a homemaker or businessman prime because female participants would disengage from the task. In contrast, when the task is framed as one on which females should succeed, female performance should be better following a homemaker prime than a businessman prime.

It is also possible that male participants could disengage under the “females better” framing. However, based on general knowledge of male achievement motivation and competitiveness, I am assuming that they are less likely to disengage than females.
Methods

Design

This experiment employed a 2 (prime: businessman, homemaker) x 2 (frame: males better, females better) x 2 (participant sex: male and female) between-subjects design.

Participants

Participants were 68 female and 69 male undergraduate students at The Ohio State University taking an Introduction to Psychology course. These students participated in the experiment as a partial fulfillment of a course requirement. All participants were identified with the prototypical subgroup of their gender.

Procedure

All participants first completed a prescreening questionnaire, which was administered at the beginning of the term. This questionnaire was identical to the one administered in Study 1 and the criteria for participant selection were the same as used in Study 1.

When participants arrived at the experimental session, they were told that they were being asked to help us with pilot testing two sets of materials, one for a specific psychology lab and one for the department; this cover story was identical to that used in Study 1. All of the experimental materials were presented using MediaLab v. 2005 (Jarvis, 2005). Upon arriving, participants were seated in front of a computer and told that, in the first task, they would be asked to imagine a type of person and report their impressions. They were then given the following instructions:
We would like you to imagine a _____. We would like you to list typical behaviors of this person, the lifestyle of this person, the appearance of this person, and any other attributes you might think of.

Participants were assigned to think about one of two targets: a businessman (prototypical male subgroup) or a homemaker (prototypical female subgroup). After listing their thoughts for five minutes, participants moved on to the next task.

Participants then completed a task that involved looking at a series of three maps and answering 23 questions related to those maps. The three maps were provided next to the computer and participants were told when to use the first, second, and third maps when answering questions. Participants were told that they would be trying out a new “filler task” for the Psychology Department and that they would view several maps and use them to answer a series of questions on the computer.

Framing Manipulation. After the introduction of the map task, participants received an additional sentence of explanation, which served as the framing manipulation. The first frame was designed to activate the expectation that males, according to stereotypes about spatial relations ability, would perform more successfully. The first frame read: “This is a task related to spatial reasoning and memory. In this task, we are interested in map reading as a measure of your spatial relations abilities.”

The alternative frame was designed to create the expectation that women, according to stereotypes about verbal ability, would perform more successfully. The second frame read: “This is a task related to verbal memory and the ability to read a map and translate it into words.”
As in Study 1, the primary dependent variable was the total number of the 23 questions on the map task that each participant answered correctly. Before being debriefed, participants were asked if they could remember who the essay task was being conducted for and who the map task was being conducted for. Participants were then probed for suspicion and then extensively debriefed.

Results

The essays written by participants were coded. After this coding, participants’ performance on the map-reading task was analyzed. Finally, several secondary measures were added to the end of the study and these measures were analyzed.

Essay Coding Data

Each essay was rated by two independent coders on a set of characteristics, including overall positivity (rated on a 7-point scale), number of competence-related words, the extent to which the essay focused on concrete behaviors versus abstract traits, the degree to which the essay represents traditional male or female stereotypes, and the effort put in to the essay. The correlations between the ratings of the two coders were: $r(135) = .49$ (for positivity), $r(135) = .68$ (for competence), $r(135) = .45$ (for behavior vs. trait ratings), $r(135) = .82$ (for representation of traditional male stereotypes), $r(135) = .83$ (for representation of traditional female stereotypes), $r(135) = .65$ (for effort), all significant, $p < .01$. Essay coding scores for analyses were created by computing the mean value of the two essay coders’ ratings.

On the basis of this coding, two male participants from the homemaker prime condition were again removed from data analysis because they mistook homemakers for construction workers (who literally make homes).
Essays were first coded for their positivity. Each essay was rated on a scale from 1 (representing “very positive”) to 7 (representing “not at all positive”). Scores were reverse-coded, such that higher numbers represent more positivity associated with the group in question. For the mean positivity rating, there was a marginally significant main effect of prime, \( F(1, 127) = 3.39, p = .07 \). Essays describing homemakers (\( M = 5.22 \)) were coded as being more positive than essays about businessmen (\( M = 4.87 \)).

Essays were then coded for the number of competence-related words used in the essay to describe the essay target (e.g., determined, hardworking, motivated). Scores represent the averaged number of competence-related words in the essay. The competence ascribed to essay targets is of particular interest because it is the relevant stereotype for the map-reading performance dependant variable. There was a significant main effect of prime, \( F(1, 127) = 34.44, p < .01 \). Essays written about businessmen (\( M = 1.63 \)) included significantly more competence-related words than essays written about homemakers (\( M = .54 \)).

Essays were next coded for the degree to which the content described traits or behaviors. Essays were coded on a 1 (representing an exclusively behavior-based essay) to 7 (representing an exclusively trait-based essay) scale and were averaged across the two essay coders. There was a main effect of prime, \( F(1, 127) = 21.28, p < .01 \). Homemakers were described more in terms of behaviors than were businessmen (\( M = 3.03 \) and \( M = 3.95 \), respectively).

For Study 2, several additional questions were added to the essay coding. Essays were coded for the extent to which they represented traditional gender stereotypes, specifically in terms of considering men competent and career-oriented and considering
women warm, nurturing, and family-oriented. Essays about businessmen were rated on a male stereotype scale from 1 (representing “very traditional male stereotypes”) to 7 (representing “very non-traditional male stereotypes”), and essays about homemakers were rated on a female stereotype scale from 1 (representing “very traditional female stereotypes”) to 7 (representing “very non-traditional female stereotypes”). Scores were reverse-coded, such that higher numbers represent an increasing amount of traditional gender stereotypes. Businessman targets were seen as representing very traditional male stereotypes (M = 6.10) and homemakers were seen as representing very traditional female stereotypes (M = 5.90), which offers more evidence that these are the prototypical subgroups of men and women.

Essays were then coded for the amount of effort reflected in the essay and were rated on a scale of 1 (minimal effort) to 7 (a great deal of effort) and averaged across the two coders. There was a main effect of participant sex on effort, $F(1, 127) = 5.49, p = .02$. Female participants’ (M = 5.03) essays were judged to reflect more effort than the essays of male participants (M = 4.48). It is important to note that all means are above 4, which is the midpoint of the scale, suggesting that participants were not dismissing the task and did seem to put in effort. It is also important to note that there was no main effect of prime, $F(1, 127) = .19, p = .66$, and no interaction of prime and sex, $F(1, 127) = .035, p = .85$. These findings indicate that participants’ effort did not differ as a function of thinking of homemakers or businessmen.
Map-reading Task Performance Data

Data from the gender priming conditions were analyzed separately for males and females, using a 2 (prime: businessman, homemaker) x 2 (frame: males better, females better) between-subjects ANOVA.

Within-male 2 x 2. Figure 3.1 shows the relationship between prime and frame for male participants.

![Figure 3.1 Prime by Frame for Male participants. Study 2](chart.png)

When the 2 (prime) x 2 (frame) x 2 (participant sex) design was initially examined, there was no significant three-way interaction, F (1, 127) = .93, p = .34. However, based on Study 1, the results for male participants and female participants were analyzed separately.

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4 When the 2 (prime) x 2 (frame) x 2 (participant sex) design was initially examined, there was no significant three-way interaction, F (1, 127) = .93, p = .34. However, based on Study 1, the results for male participants and female participants were analyzed separately.
For male participants, the interaction of prime and frame was marginally significant, $F(1, 63) = 2.71, p = .11$. When the task was framed as one on which males should succeed, performance was better following the businessman prime ($M = 20.58$) than the homemaker prime ($M = 20.00$). When the task was framed as one on which females should succeed, performance was better following the homemaker prime ($M = 20.77$) than the businessman prime ($M = 19.33$).

I conducted two tests of simple effects to examine the impact of the primes and frames upon male participants. While there was no significant difference between the businessman and homemaker primes when the framing indicated males should succeed, $F(1, 63) = .47, p = .50$, the pattern of results replicates the findings in Study 1; namely, performance decreases when participants are primed with the group that is negatively stereotyped on the task (i.e., homemakers). When the framing indicated females should succeed on the task, there was a marginally significant difference in performance following businessman and homemaker primes, $F(1, 63) = 2.63, p = .11$. This finding is consistent with the pattern in the other framing condition; the group that is negatively stereotyped on the map-reading task, in this case businessmen, is associated with a drop in performance.

Within-female 2 x 2. Figure 3.2 shows the relationship between prime and frame for female participants. For female participants, the interaction of prime and frame was not significant, $F(1, 64) = .05, p = .82$. Mean performance was better for female participants following the females better framing ($M = 20.15$) than the males better framing ($M = 19.65$), but this main effect of frame was not statistically significant, $F(1, 64) = .60, p = .44$. Mean performance was better for female participants following the
homemaker prime (M = 19.97) than the businessman prime (M = 19.82), but this main effect of prime was not statistically significant, $F(1, 64) = .05, p = .82$.

![Bar chart showing mean number correct for the 'Men better stereotype' and 'Women better stereotype' frames.](image)

**Figure 3.2** Prime by Frame for Female participants. Study 2

**Secondary analyses**

To determine whether the activated competence stereotype accounted for behavioral change, participants’ performance on the map-reading task was correlated
with the mean competence rating of their essay. This correlation was only conducted for male participants because female participants seemed to be insensitive to the different frame and prime conditions. When the task was framed as one on which males should succeed, the correlation between the competence rating of the essay and participants’ performance was not significant, \( r (35) = .03, p = .87 \). However, when the task was framed as one on which females should succeed, there was a significant negative correlation between essay competence rating and performance, \( r (35) = -.43, p = .02 \). Essays that included more competence words (i.e., those about businessmen) were associated with worse performance on the map-reading task.

In Study 2, several additional measures were added after the map-reading task. Initially, the subjective perception of the ease or difficulty of writing the essay was assessed. Participants were asked three questions about the difficulty of writing the essays: “How difficult did you find this essay task to be?”, “How hard was it to generate a description of the essay target?”, and “How easy was it to come up with a mental image of the essay target?” Each of these three questions was rated on a scale from 1 (representing “extremely easy”) to 5 (representing “extremely difficult”). Scores were reverse-coded, such that higher numbers represent an increasing amount of perceived ease. These three questions were combined into one rating of the ease of the task and across all participants in all conditions the mean ease rating of the task was above the midpoint of the scale (\( M = 4.03 \)), indicating that participants found the task, the description of the target, and the generation of the mental image “somewhat easy” (the label accompanying a reverse-coded response of 4). There was a marginally significant main effect of prime, \( F (1, 126) = 3.27, p = .07 \). Across both frames, all participants
found it easier to write essays about businessmen (M = 4.16) than homemakers (M = 3.90).

Participants were then asked how important it was for them to do well on this task on a scale from 1 (representing “extremely important”) to 5 (representing “not at all important”). Scores were reverse-coded, such that higher numbers represent an increasing amount of perceived importance. Across all participants in all conditions, the mean rating of importance was above the midpoint of the scale (M = 3.41), indicating participants thought the task was at least somewhat important (the label accompanying a reverse-coded response of 3). There was a significant main effect of participant sex on ratings of importance, $F(1, 127) = 4.08$, $p = .05$. Across the framing and prime conditions, female participants (M = 3.60) rated the map-reading task as more important than male participants (M = 3.21). Because male participants showed larger differences in performance as a function of the prime and frame, importance ratings were broken down by gender.

For male participants, importance ratings showed a significant main effect of prime, $F(1, 63) = 5.28$, $p = .03$. Male participants thought it was more important to do well following a homemaker prime (M = 3.55) than a businessman prime (M = 2.85). For male participants, there was also a marginally significant main effect of frame, $F(1, 63) = 2.82$, $p = .10$. It was more important for male participants to do well when the task was framed as one on which males are stereotypically expected to succeed (M = 3.43) than when it was one on which females were stereotypically expected to succeed (M = 2.97). For female participants, there was no main effect of frame or prime and no two-way interaction; no matter the condition, female participants placed the same importance
on the task. It is important to note that, on average, female participants had an importance rating above the mean of the scale (M = 3.60). This means that either female participants did not disidentify with the task or that they are unwilling to admit their disengagement, regardless of the task framing.

Participants were then asked several questions assessing their perceptions of their performance on the map-reading task, relative to men and women overall. Participants were first asked how well they thought they did on the map-reading task, relative to women overall on a scale from 1 (representing “bottom 5% of all women”) to 10 (representing “top 5% of all women”). Participants were then asked how well they thought they did on the map-reading task, relative to men overall on a scale from 1 (representing “bottom 5% of all men”) to 10 (representing “top 5% of all men”). Across all conditions, female participants showed no differences in their perception of their own performance (M = 7.46, relative to other women, and M = 7.13, relative to men).

For male participants, there was a significant interaction of frame and prime when they assessed their performance relative to women overall, $F(1, 63) = 4.17, p = .05$. When the task framing suggested male success, participants thought they did better, relative to women overall, following a businessman prime (M = 8.32) than following a homemaker prime (M = 8.06). When the task framing suggested female success, participants thought they did better, relative to women overall, following a homemaker prime (M = 8.59) than a businessman prime (M = 6.87). Interestingly, these perceptions accurately mirrored the actual differences in performance of our male participants on the map-reading task.
For male participants, there was also a marginally significant interaction of frame and prime when they assessed their performance relative to men overall, $F(1, 63) = 3.80$, $p = .06$. When the task framing suggested male success, participants thought they did better, relative to men overall, following a businessman prime ($M = 8.32$) than following a homemaker prime ($M = 7.88$). When the task framing suggested female success, participants thought they did better, relative to men overall, following a homemaker prime ($M = 8.47$) than a businessman prime ($M = 7.33$). Once again, these perceptions accurately mirrored the actual performance differences of our male participants on the map reading task.

Finally, participants were asked how anxious they were about doing well on a scale of 1 (representing “extremely anxious”) to 5 (representing “not at all anxious”). Scores were reverse-coded, such that higher numbers represent an increasing amount of perceived anxiety. Across all participants, there was a main effect of prime, $F(1, 127) = 8.657$, $p < .01$. Participants reported more anxiety following a homemaker prime ($M = 2.43$) than a businessman prime ($M = 1.94$). There was also a marginally significant two-way interaction of frame and sex, $F(1, 127) = 3.03$, $p = .08$. For male participants, the males better framing ($M = 2.25$) was associated with more anxiety than the females better framing ($M = 2.15$). For female participants, the females better framing ($M = 2.41$) was associated with more anxiety than the males better framing ($M = 1.92$). Essentially, both males and females reported more anxiety when the task was described as one on which their gender is stereotypically expected to succeed.
Discussion

In Study 2, the framing of the task was manipulated to make different stereotypes relevant for performance. When the task was described as being related to spatial relations ability, males should be expected to perform better according to gender stereotypes. In contrast, when the task was described as being related to verbal memory, females should have the advantage according to gender stereotypes. Although none of the relevant comparisons was clearly statistically significant, the results of Study 2 suggest that, overall, males are more sensitive to priming and the expectations created by the task framing than females. For males in both Study 1 and Study 2, priming participants with a group that is negatively stereotyped elicited a consistent pattern of poorer performance.

In evaluating the essays written by our participants, Study 2 offered more evidence that the male and female subgroups are strongly differentiated based on competence stereotypes and are associated with rich behavioral descriptions. The strong competence effect found in the essay codings suggests that a primary differentiating feature of stereotypes associated with homemakers and businessmen has to do with their perceived competence in general. The framing manipulation in the experiment changed the type of competence that was relevant to the map reading task. The finding of a reversal of male performance as a function of the frame suggests that when the task is focused on a specific competence that homemakers might have, this can overcome the very strong stereotype that businessmen are generally more competent. The significant negative correlation between essay competence ratings and task performance for the “females better” framing indicates that the essays that were described with more competence words (i.e., businessmen) were associated with worse later performance than
those described with fewer competence words (i.e., homemakers). This negative
correlation offers strong evidence for this dissociation between specific, task-relevant,
competence and general perceptions of competence.

For female participants, there were, once again, no meaningful results. For some
reason, female participants seem very insensitive to the primes and the manipulation of
task framing. The essay coding of effort and the participant ratings of task importance in
Study 2 suggest that female performance is not exclusively the result of disengagement;
on average, female participants’ essays were coded as reflecting a great deal of effort and
all female participants rated the importance of this task above the midpoint of the scale.
The absence of priming effects for female participants, compared to effects for male
participants, suggests that necessary conditions of stereotype threat and behavioral
assimilation are not being met for female participants.

One reason these necessary conditions may not be met has to do with the task
instructions. Participants were told that the two tasks they would complete (the essay task and
the map-reading task) were being considered for use as “filler tasks” and were given the
following description of filler tasks:

Often times, researchers have two different experiments they want to run at the same time, but
they want to make sure that these two experiments are not influencing each other. Researchers
will often give out “filler tasks,” which are designed to erase the first experiment from your mind,
by getting participants to think of something neutral. We are testing the following measures for
the Department of Psychology to see if they will be effective as filler tasks.

This description was designed to ensure that participants did not see a clear link between
the two studies. However, describing the map-reading task as a filler task may have
downplayed the test’s ability to measure aptitude. Previous stereotype threat research has found that by removing the meaningfulness of the test as a measure of ability, relevant stereotypes will not influence performance (Steele & Aronson, 1995). Although female participants found the map-reading task important, they may have thought the task was not diagnostic of ability, which may explain the absence of priming effects for female participants in both Study 1 and Study 2.

A third study was designed to address the absence of priming effects for females in Study 1 and Study 2. Study 3 attempted to ensure that female participants would perceive the map-reading task a meaningful measure of their ability. Study 3 is designed to create the necessary conditions for stereotype threat, as well as category stereotype priming, by making the map-reading task both self-involving and a meaningful measure of ability for female participants.
CHAPTER 4

STUDY 3: BEHAVIORAL ASSIMILATION AND FEMALE PERFORMANCE

The results of Study 1 and Study 2 showed that male performance on a map reading task will assimilate to primes, particularly at the level of the subgroup. In Study 1 and Study 2, when males were primed with a group that was negatively stereotyped on a relevant dimension for the task, their performance suffered. In contrast, the data for female participants in the first two studies were not consistent with a pattern of results suggesting either stereotype threat or category stereotype priming. For this reason, I designed a third study to focus specifically on females and the conditions under which they might show behavioral priming effects. Study 3 is designed to create conditions in which primes become self-involving for female performance and the (gender-stereotyped) map-reading task is perceived as a meaningful indicator of ability.

Previous research in the behavioral assimilation literature suggests that the absence of priming effects could be due to a lack of self-involvement. Research suggests that self-involvement is critical for finding both stereotype threat and category stereotype priming (for a review, see Wheeler, DeMarree, & Petty, in press). In previous theory and research, two different forms of self-involvement have been implicated in behavioral assimilation findings. Self-involvement can either be created through the introduction of an interactive context or through perspective-taking.
Several researchers have suggested that an interactive context facilitates priming effects. Cesario, Plaks, and Higgins (2006) have argued that behavioral assimilation is a motivational process that helps individuals prepare for interaction. As a result, individuals’ attitudes toward potential interaction partners will determine the direction of their behavioral assimilation. More specifically, Cesario et al. (2006) found that participants who show implicitly measured positivity toward the elderly will walk more slowly following elderly primes than neutral primes. In contrast, participants who show implicitly measured negativity toward the elderly will walk more quickly following elderly primes than neutral primes. This research suggests that imagining a future interaction can cause pre-adapting to the behavior of others (via assimilation) and will cause a pattern of results consistent with category stereotype priming.

Although Cesario et al. (2006) showed assimilation to behavior as a response to imagined interaction, it is also possible to adapt to future interaction by complementing the behavior of an interaction partner. Tiedens and Fragale (2003) found that participants will assume a complementary postural stance to confederates, such that confederates who assume a dominant stance will elicit a submissive stance from participants and confederates who assume a submissive stance will elicit a dominant stance from participants. Tiedens and Fragale (2003) argued that this complementarity produces liking and comfort and may serve to promote and maintain hierarchical relationships. Research on complementarity is analogous to social tuning research, which argues that when people are motivated to affiliate with others, their views, including their self-views, will be adjusted to be in line with the expectations of others (Sinclair, Huntsinger, Skorinko, & Hardin, 2005). Social tuning often results in activating stereotypes that are
complementary to the stereotypes of the interaction partner (e.g., female participants seeing themselves more stereotypically when they want to affiliate with a male partner). Thus, imagining an interactive context with an outgroup member could lead to adoption of the complementary (ingroup) stereotype rather than assimilation to the outgroup stereotype.

Gender stereotypes are complementary, such that, relative to each other, men are stereotyped to have more competence and less warmth and women are stereotyped to have more warmth and less competence (see Fiske et al., 2002). The complementary nature of superordinate gender stereotypes and the oppositional nature of superordinate gender categories suggest that superordinate gender primes may be more likely to elicit complementarity than subgroup primes. When primed with superordinate gender categories, participants may think of the complementary stereotypes of both groups and be more likely to act in line with the stereotypes of their ingroup. As a result, superordinate gender primes may produce a pattern of results that resembles stereotype threat, but is actually a result of the complementarity of superordinate gender stereotypes.

A second way self-involvement has been implicated in behavioral assimilation is through perspective taking (Wheeler, DeMarree, & Petty, in press; Wheeler, Jarvis, & Petty, 2000, Galinsky, Ku, & Wang, 2005). Wheeler, Jarvis, and Petty (2000) have found that by asking participants to write about a “day in the life” of different essay targets, relevant stereotypes of these essay targets will influence participants' subsequent performance on stereotype-relevant tasks. This finding has been linked to an “active-self” account of prime-to-behavior effects, which holds that primes can temporarily influence working self-concept and affect behavior because stereotypes are seen as self-
relevant (Wheeler, DeMarree, & Petty, in press; Wheeler, DeMarree, & Petty, 2005). It has also been found that although perspective-taking will reduce stereotyping of targets, it will also lead to an increase in stereotypic behavior on the part of the self (Galinsky, Ku, & Wang, 2005).

Because two different forms of self-involvement are implicated in behavioral assimilation, Study 3 will increase self-involvement in two different ways -- by either creating an interactive context when considering the prime or asking participants to take on the perspective of the prime target.

When an interactive context is created, priming effects should demonstrate both a pattern consistent with stereotype threat and a pattern consistent with category stereotype priming, depending on the level of the primes. When primes are at the level of the superordinate gender categories, primes (i.e., man or women) should activate both superordinate categories and the complementary stereotypes of men and women. As a result, I would expect a pattern of results that is consistent with stereotype threat, although effects may be a result of considering complementary gender stereotypes and assimilating behavior to the ingroup. When primes are at the level of the subgroup, I expect a pattern of results consistent with category stereotype priming; outgroups should improve performance and ingroups should hurt performance. The differential predictions for subgroups reflect the fact that they are not oppositional, as superordinate stereotypes are, and the fact that it is more difficult to determine the complement of subgroup stereotypes (for example, with the group homemakers, either businessmen or businesswomen could be the group with complementary stereotypes).
When participants are asked to take the perspective of the prime, priming effects should demonstrate a pattern consistent with category stereotype priming. Perspective-taking should make whatever stereotypes are relevant for the group more relevant for the self. When participants engage in perspective-taking, superordinate outgroup primes should not cause spontaneous intergroup comparison because the task focuses attention on the specific category and category stereotypes will be part of the active self. As a result, the perspective-taking conditions should cause performance to move in the direction of the stereotypic performance of the prime, regardless of the level of categorization of the prime.

Manipulation of Task Importance

It was initially believed that female participants were disengaging from a task on which they were stereotyped to perform poorly. However, Study 2 showed that females self-report that they perceived the map-reading task to be relatively important. Irrespective of this self-reported importance, the task instruction identified the map-reading task as a “filler task” and this description may have undercut the meaningfulness of the task as a measure of ability. Wheeler and Petty (2001) have argued that a task must be meaningful to participants to create the necessary conditions for finding stereotype threat effects. Study 3 will explicitly increase task meaningfulness to create conditions that might lead to stereotype threat.

Predictions for Study 3

I predict that there will be a three-way interaction of type of self-involvement, level, and group for female participants. More specifically, when the type of self-involvement is imagined interaction, there will be a group by level interaction. When
primes are at the level of the superordinate, regardless of whether primes are of the ingroup or outgroup, female participants will perform poorly, as per the stereotype threat pattern of results. When primes are at the level of the subgroup, female participants will perform more poorly when primed with the ingroup at the level of the subgroup (i.e., homemakers) and more successfully when primed with the outgroup at the level of the subgroup (i.e., businessmen), as per the category stereotype priming pattern of results.

In contrast, when the type of self-involvement is perspective-taking, I only predict a main effect of group, such that ingroup primes (woman, homemaker) at either level will depress performance and outgroup primes (man, businessman) at either level will improve performance, as per the category stereotype priming pattern of results. Perspective-taking should make whatever stereotypes are relevant for the group more relevant for the self. It is also possible that subgroup stereotypes, because they are associated with more specific stereotype content that can be incorporated into the self, may produce stronger behavioral assimilation, but I would not necessarily expect this difference to be large enough to produce a level by group interaction.

Methods

Design

Study 3 involved a 2 (self-involvement: imagined interaction, perspective-taking) x 2 (level: superordinate, subgroup) x 2 (group: ingroup, outgroup) between-subjects design.

Participants

Participants were 141 female undergraduate students at The Ohio State University taking an Introduction to Psychology course. These students participated in the
experiment as a partial fulfillment of a course requirement. All participants were selected to be identified with the prototypical subgroup of their gender.

Procedure

All participants first completed a prescreening questionnaire, which was administered at the beginning of the term, and was identical to the one administered in Study 1 and Study 2. To be selected for this experiment, respondents on the prescreening had to do at least one of three things: indicate that they identified most with the prototypical subgroup, select the prototypical subgroup as the one most similar to themselves, or indicate a greater than neutral identification with the prototypical subgroup, homemaker (as indicated by a response of 5, 6, or 7 on the scaled question). For Study 3, the criteria for admission were relaxed and respondents who indicated that they had a neutral identification with the homemaker subgroup (indicated by a response of 4 on the scaled question) were also selected. The criteria were relaxed because it was difficult to find enough female participants who identified with the homemaker subgroup of women to conduct this study. These additional participants may not fully identify with the prototypical subgroup, but they do not feel negatively toward this group and do not disidentify with the subgroup that represents traditional gender stereotypes.

Participants were told that they were coming to the lab to help us with testing two sets of materials, one for a specific psychology lab and one for the department; this cover story was identical to that used in Study 1, although every reference to the task being a “filler task” was removed. All of the experimental materials were presented using MediaLab v. 2005 (Jarvis, 2005). Upon arriving, participants were seated in front of a
computer and told that, in the first task, they would be asked to imagine a type of person and report their impressions.

_Type of self-involvement._ Participants were assigned to think about one of four targets: a man (superordinate), a woman (superordinate), a businessman (prototypical male subgroup), or a homemaker (prototypical female subgroup).

In the imagined interaction condition, participants were given the following instructions:

We would like you to imagine a typical ______. We would like to know what you would think about meeting and interacting with a ________ and how this person would appear to you. We want you to list typical behaviors you would expect of this person, the lifestyle of this person, the appearance of this person, and any other attributes you might think of.

In the perspective-taking condition, participants were given the following set of instructions:

We would like you to imagine a typical _____. We would like you to think about what it would be like to be a ________ and what a day in their life would be like. We want you to list typical behaviors of this person, the lifestyle of this person, the appearance of this person, and any other attributes you might think of.

After listing their thoughts for five minutes, participants moved on to the next task.

_Task set._ Participants then completed a task that involved looking at a series of three maps and answering 23 questions related to those maps. Participants were told that they were completing this task for the Psychology Department. The three maps were provided next to the computer and participants were told when to use the first, second, and third maps when answering questions on the computer. After the introduction of the
map task, participants received several additional sentences of explanation, which served
to create the “males better” framing from Study 2. Participants were told, “This is a task
related to spatial reasoning and memory. In this task, we are interested in map reading as
a measure of your spatial relations abilities.” This frame was designed to activate the
expectation that males, according to stereotypes about spatial reasoning ability, will
perform more successfully. Finally, participants received several additional sentences of
explanation at the beginning of the map task, which were designed to increase task
importance. Participants were told, “This is a task that has been found to predict life
success in a number of important domains. One purpose of this study is to see how well
students at OSU perform on a task that is so predictive of life success. Your performance
will be determined by the number of questions you can answer correctly in 10 minutes.”

As in Study 1, the primary dependent variable was the total number of the 23
questions that each participant answered correctly. Before being debriefed, participants
were asked if they could remember who the essay task was being conducted for and who
the map task was being conducted for. Participants were then probed for suspicion and
then extensively debriefed.

Results

Essay Coding Data

Each essay was rated by two independent coders on a set of characteristics,
including overall positivity (rated on a 7-point scale), number of competence-related
words, the extent to which the essay focused on concrete behaviors versus abstract traits,
the degree to which the essay represents traditional male or female stereotypes, and the
effort put in to the essay. The correlations between the ratings of the two coders were: $r$

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(141) = .60 (for positivity), \( r (141) = .59 \) (for competence), \( r (141) = .56 \) (for behavior vs. trait ratings), \( r (60) = .43 \) (for representation of traditional male stereotypes in essays of male primes), \( r (69) = .54 \) (for representation of traditional female stereotypes in essays of female primes), \( r (141) = .72 \) (for effort), all significant, \( p < .01 \). Essay coding scores for analyses were created by computing the mean value of the two essay coders’ ratings.

Essays were first coded for their positivity. Each essay was rated on a scale from 1 (representing “very positive”) to 7 (representing “not at all positive”). Scores were reverse-coded, such that higher numbers represent more positivity associated with the group in question. For the mean positivity rating, there was a significant main effect of group, \( F (1, 133) = 4.64, p = .03 \). Regardless of level, essays describing the ingroup (\( M = 5.92 \)) were coded as being more positive than essays about the outgroup (\( M = 5.53 \)). For positivity, there was also a marginally significant main effect of type of self-involvement, \( F (1, 133) = 2.61, p = .11 \). Essays in the imagined interaction condition (\( M = 5.87 \)) were coded as being more positive than essays in the perspective-taking condition (\( M = 5.58 \)).

Essays were then coded for the number of competence-related words used in the essay to describe the essay target (e.g., determined, hardworking, motivated). Scores represent the averaged number of competence-related words in the essay. The competence ascribed to essay targets is of particular interest because it is the relevant stereotype for the map-reading performance dependent variable. There was a significant main effect of group, \( F (1, 133) = 7.38, p < .01 \). Essays written about the outgroup (\( M = 1.54 \)) included significantly more competence-related words than essays written about the ingroup (\( M = 1.05 \)). This main effect was qualified by a two-way interaction of group and level, \( F (1, 133) = 19.81, p < .01 \). For the ingroup, the superordinate group (women,
M = 1.39) was described using more competence-related words than the subgroup (homemakers, M = .71). For the outgroup, the superordinate group (men, M = 1.07) was described using less competence-related words than the subgroup (businessmen, M = 2.01). This interaction of group and level is indicative of extremetization of prototypical subgroups on the dimension of competence.

The group by level interaction was further qualified by a marginally significant three way interaction of group, level, and type of self-involvement, $F(1, 133) = 2.89, p = .09$. When participants were in the imagined interaction conditions, there was less differentiation between the superordinate and the subgroup, although women (M = 1.00) were described using less competence-related words than homemakers (M = .77) and men (M = 1.32) were described using less competence-related words than businessmen (M = 2.09). It appears that in the imagined interaction condition, the superordinate groups were prototyped and the superordinate group and prototypical subgroup of each gender were merged. In contrast, when participants were in the perspective-taking conditions, the superordinate outgroup was less prototyped along the dimension of competence. Women (M = 1.78) were described using more competence-related words than homemakers (M = .66) and men (M = .82) were described using less competence-related words than businessmen (M = 1.94), but men were described less in terms of competence than women at the level of the superordinate groups. It seems that the gender stereotype difference on the dimension of competence vs. incompetence was activated more for participants in the imagined interaction condition.

Essays were next coded for the degree to which they described traits or behaviors. Essays were coded on a 1 (representing an exclusively behavior-based essay) to 7
(representing an exclusively trait-based essay) scale and were averaged across the two essay coders. There was a main effect of group, \( F (1, 133) = 4.60, p = .03 \). The ingroup primes (M = 3.33) were described more in terms of behaviors than the outgroup primes (M = 3.76). This main effect was qualified by an two-way interaction of group and level, \( F (1, 133) = 7.02, p < .01 \). For the ingroup, the prototypical subgroup (homemakers, M = 3.03) was described more in terms of behaviors than the superordinate category (women, M = 3.64). For the outgroup, the superordinate category (men, M = 3.54) was described more in terms of behaviors than the prototypical subgroup (businessmen, M = 3.97).

This finding for outgroup primes is contrary to the results in Study 1, which found that both male and female prototypical subgroups were described more in terms of behaviors than superordinate groups.

Essays were then coded for the extent to which they represented traditional gender stereotypes, specifically in terms of considering men competent and career-oriented and considering women warm, nurturing, and family-oriented. Essays about outgroup targets were rated on a scale of male stereotyping from 1 (representing “very traditional male stereotypes”) to 7 (representing “very non-traditional male stereotypes”). Scores were reverse-coded, such that higher numbers represent an increasing amount of traditional gender stereotypes. For essays written about the outgroup, there was a main effect of level, \( F (1, 56) = 18.35, p < .01 \). Essays about the subgroup (businessmen, M = 6.21) were rated as reflecting traditional male stereotypes more than essays about the superordinate category (men, M = 5.25). Essays about ingroup targets were rated on a scale from 1 (representing “very traditional female stereotypes”) to 7 (representing “very non-traditional female stereotypes”) for female stereotypes. Scores were reverse-coded,
such that higher numbers represent an increasing amount of traditional gender stereotypes. For essays written about the ingroup, there was a main effect of level, $F(1, 65) = 65.21, p < .01$. Essays about the subgroup (homemakers, $M = 6.34$) were rated as reflecting traditional female stereotypes more than essays about the superordinate category (women, $M = 4.68$).

Essays were then coded for the amount of effort reflected in the essay and were rated on a scale of 1 (minimal effort) to 7 (a great deal of effort) and averaged across the two coders. For ratings of effort, there were no significant main effects of group, level, or type of self-involvement and there were no significant interactions. These findings indicated that participants’ effort did not differ as a function of writing essays about men, women, homemakers, or businessmen. The mean effort rating ($M = 4.78$) given to the essays was above 4, which was the midpoint of the scale, suggesting that participants did seem to put effort into writing their essays.

*Map-reading Task Performance Data*

Data from the gender priming conditions were analyzed using a 2 (group: ingroup, outgroup) x 2 (level: superordinate, subgroup) x 2 (type of self-involvement: imagined interaction, perspective-taking) between-subjects ANOVA. Map reading task performance results are presented in Figures 4.1 and 4.2.
Figure 4.1  Group by Focus for Imagined Interaction Conditions. Study 3
There were no significant main effects of group, $F(1, 133) = 1.64, p = .20$, level, $F(1, 133) = .01, p = .95$, or type of self-involvement, $F(1, 133) = .86, p = .36$. There was also no significant group by level by type of self-involvement three-way interaction, $F(1, 133) = 1.91, p = .17$.

There was a significant two-way interaction of group by type of self-involvement, $F(1, 133) = 4.04, p < .05$. In the imagined interaction condition, performance on the map-reading task was better following an outgroup prime ($M = 20.41$) than an ingroup prime ($M = 18.89$). When participants were in the perspective-taking condition, there
were no significant differences in performance following the man (M = 19.24), women (M = 20.44), businessman (M = 20.59), or homemaker (M = 20.05) primes.

Because of the specific predictions in Study 3, data were broken down by type of self-involvement and analyzed as a 2 (group) x 2 (level) for the imagined interaction condition and a separate 2 (level) x 2 (group) for the perspective-taking condition

*Imagined interaction 2x2.* In the imagined interaction condition, there was no significant group by level interaction, \( F(1, 66) = .41, p = .53 \). There was also no significant main effect of level, \( F(1, 66) = .43, p = .51 \). However, when participants were in the imagined interaction condition, there was a main effect of group, \( F(1, 66) = 5.76, p = .02 \); ingroup primes were associated with poorer performance than outgroup primes, regardless of level.

*Perspective-taking 2x2.* In the perspective-taking condition, there was no significant group by level interaction, \( F(1, 67) = 1.68, p = .20 \). There was also no significant main effect of level, \( F(1, 66) = .51, p = .48 \), and there was no main effect of group, \( F(1, 67) = .25, p = .62 \). In the perspective-taking conditions, the pattern of performance did not follow any of the Study 3 predictions.

*Secondary analyses*

To determine whether the activated competence stereotype accounted for performance effects, participants’ performance on the map-reading task was correlated with the averaged number of competence-related words in their essays. Across both self-involvement conditions, the correlation between the competence rating of the essay and participants’ performance was significant, \( r(141) = .17, p = .05 \). Essays that included
more competence-related words (i.e., those about the outgroup) were associated with better performance on the map-reading task.

The participants’ subjective perception of the ease or difficulty of writing the essay was assessed at the end of the map-reading task. Participants were asked three questions about the difficulty of writing the essays: “How difficult did you find this essay task to be?”, “How hard was it to generate a description of the essay target?”, and “How easy was it to come up with a mental image of the essay target?” Each of these three questions was rated on a scale from 1 (representing “extremely easy”) to 5 (representing “extremely difficult”). Scores were reverse-coded, such that higher numbers represent an increasing amount of perceived ease. These three questions were combined into one rating of task ease and, across all participants in all conditions, the mean ease rating of the task was above the midpoint of the scale (M = 3.72), indicating that participants found the task, the description of the target, and the generation of the mental image “somewhat easy” (the label accompanying a reverse-coded response of 4). There was a significant main effect of level, $F(1, 133) = 15.95, p < .01$. Across group and type of self-involvement conditions, participants found it easier to write essays about subgroups (M = 4.02) than superordinate groups (M = 3.42).

In Study 3, several additional measures were added after the map-reading task, assessing participants’ subjective experience of the task. Participants were asked how important it was for them to do well on the map-reading task on a scale from 1 (representing “extremely important”) to 5 (representing “not at all important”). Scores were reverse-coded, such that higher numbers represent an increasing amount of perceived importance. Across all participants in all conditions, the mean rating of
importance was above the midpoint of the scale (M = 3.36), indicating participants thought the task was at least somewhat important (the label accompanying a reverse-coded response of 3). There were no significant differences in ratings of importance in any of the conditions. Because instructions were added to increase task importance in Study 3, it is interesting to note that importance ratings for female participants were not higher in Study 3 than importance ratings for females in Study 2 (M = 3.60).

Participants were also asked how likely they thought it was that the skills measured in the map-reading task were something they would need in the future on a scale from 1 (representing “not at all likely”) to 10 (representing “highly likely”). Across all participants in all conditions, the mean rating of the future use of the skills required for the map-reading task was well above the midpoint of the scale (M = 7.83). For this skill usefulness rating, there was a marginally significant group by level interaction, $F (1, 133) = 2.89 \ p = .09$. For ingroup primes, participants rated the skills required on the task as more likely to be used in the future when they were primed with the prototypical subgroup (homemakers, M = 8.08) than when primed with the superordinate category (women, M = 7.68). For outgroup primes, participants rated the skills required on the task as more likely to be used in the future when they were primed with the superordinate category (men, M = 8.18) than when primed with the prototypical subgroup (businessmen, M = 7.38).

Participants were then asked how much they thought about how their performance compared to others on a scale from 1 (representing “all the time”) to 5 (representing “not at all”). Scores were reverse-coded, such that higher numbers represent an increasing amount of time spent thinking about how their performance compared to the performance
of others. There was a marginally significant main effect of type of self-involvement, $F(1, 133) = 3.56, p = .06$. Participants in the imagined interaction condition ($M = 3.03$) thought more about how their performance compared with others than participants in the perspective-taking condition ($M = 2.67$).

Participants were also asked about their perceptions of their performance on the map-reading task relative to women overall. Participants were asked how well they thought they did on the map-reading task, relative to women overall, on a scale from 1 (representing “bottom 5% of all women”) to 10 (representing “top 5% of all women”). There was a marginally significant interaction of group and type of self-involvement when they assessed their performance relative to women overall, $F(1, 133) = 3.51, p = .06$. Participants in the imagined interaction condition thought they did better, relative to women in general, following outgroup primes ($M = 7.68$) than following ingroup primes ($M = 6.89$). These perceptions of performance in the imagined interaction condition accurately mirrored the actual differences in performance on the map-reading task.

In contrast, participants in the perspective-taking condition thought they did better, relative to women in general, following ingroup primes ($M = 7.59$) than following outgroup primes ($M = 7.32$). In the perspective-taking condition, participants’ perceptions of their performance did not accurately mirror their performance on the map-reading task since perspective-taking conditions showed no actual differences in performance.

Participants were then asked how anxious they were about doing well on a scale of 1 (representing “extremely anxious”) to 5 (representing “not at all anxious”). Scores were reverse-coded, such that higher numbers represent an increasing amount of
perceived anxiety. There were no differences in anxiety as a function of group, $F(1, 133) = .00, p = .96$. There were also no differences in anxiety as a function of type of self-involvement, $F(1, 133) = .09, p = .76$. However, there was a significant level by self-involvement interaction, $F(1, 133) = 6.56, p = .12$. Participants in the imagined interaction condition experienced more anxiety when primed with subgroups ($M = 2.53$) than superordinate groups ($M = 2.19$). Participants in the perspective-taking condition experienced more anxiety when primed with superordinate groups ($M = 2.66$) than subgroups ($M = 2.17$).

Finally, participants were asked whether they believed that the map-reading task was one on which males should perform more successfully than females, females should perform more successfully than males, or males and females would perform the same. Despite framing the task as related to spatial reasoning ability, the majority of participants did not describe this as a task on which males should be more successful than females. Across all conditions, participants were most likely to say that the task was one on which males and females would perform the same (58.9%), then that it was one on which males would perform more successfully (27%). This means that some participants (14.2%) identified the task as one on which females should perform more successfully, despite the explicit task framing.

*Subgroup Identification as a Moderator*

In this study, for the first time, we selected participants who felt neutrally toward the subgroup homemakers and, therefore, there was a wider range of subgroup identification represented in the sample in this study. For exploratory purposes, I took a look at the influence of this variable on performance and priming effects. More
specifically, because the only priming effect obtained was a main effect of the sex of the prime (ingroup vs. outgroup), unqualified by level, I conducted an analysis to determine whether level of identification moderated this main effect.

A series of multiple regressions were run to determine whether level of identification moderated the main effect of the sex of the prime. For the regression, ingroup (female) primes were coded as a 1 and outgroup (male) primes were coded as a -1. For the level of identification, participants were coded as a 1, 2, 3, or 4; participants who felt neutrally toward homemakers were assigned a 1, participants who felt positive identification toward homemakers were assigned a 2, participants who felt positive identification toward homemakers and negative identification with non-prototypical women (businesswomen) were assigned a 3, and those participants who identified most with homemakers were assigned a 4.

The main effects of sex of the prime (group) and level of identification were entered on the first step of the regression and the interaction term between sex of the prime and level of identification was entered into the second step of the regression. There was no main effect of level of identification, but there was an overall main effect of the gender of the prime, \( B = -1.331, p < .05 \). Importantly however, this main effect was qualified by a significant level of identification by group interaction, \( B = .467, p < .05 \).

The interaction was broken down by comparing mean performance for ingroup vs. outgroup primes for participants at each level on the identification variable. The means are reported in Table 4.1. For participants coded as a 2, 3, or 4 level of

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5 In this analysis, once variability due to level of identification was taken into account, there was a main effect of gender of prime (group) across both types of self-involvement.
identification (i.e., those participants who met our criteria from previous studies), there were no significant effects of prime ($p$ values ranged from .6 to .97). However, for participants coded as a 1 (i.e., those who felt neutrally toward homemakers), the sex of the prime (group) main effect was significant, $F(1, 32) = 4.08, p = .05$. Performance following female (ingroup) primes was lower, compared to performance following male (outgroup) primes.

<table>
<thead>
<tr>
<th>Level of Identification</th>
<th>Group</th>
<th>Ingroup</th>
<th>Outgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>18.24</td>
<td>20.33</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>19.93</td>
<td>20.26</td>
</tr>
<tr>
<td>3</td>
<td></td>
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<td>20.38</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>20.30</td>
<td>19.69</td>
</tr>
</tbody>
</table>

Table 4.1 Group x Level of Identification Interaction Means for Performance on Map-Reading Task. Study 3

Note that this pattern is just like the one that was obtained for males, i.e. that performance was depressed following a prime with a low expectancy stereotype.
These results suggest that the effects in the present study were a result of including these low identified female participants. And, this suggests that the failure to find effects in the previous two studies is apparently a function of selecting participants with a prototypical homemaker identification. It seems that for participants who identify with homemakers, performance is moderately good, regardless of what is primed and suggests that these primes are not incorporated into the construal of the task and/or the self.

Discussion

In Study 3, attempts were made to ensure both that the primes were made more self-involving and that the map-reading task was perceived as a meaningful measure of ability. Results of Study 3 offered the first systematic priming effect on female performance. When participants were in the imagined interaction conditions, there was a main effect of group, such that ingroup primes produced worse performance and outgroup primes produced better performance. Subsequent analyses demonstrated that the type of self-involvement did not drive these findings. Rather, it was the inclusion of female participants who were low identifiers with the subgroup homemakers that drove the main effect of group. It appears that in Study 1 and Study 2, the inability to find priming effects for female participants was a function of having selected women who highly identified with homemakers.

The finding that the level of the primes did not moderate the main effect of group suggests that behavioral assimilation via category stereotype priming was created. In the case of superordinate primes and subgroup primes, outgroups always led to better performance, which is consistent with a basic behavioral assimilation to category
stereotypes involving no threat. Although stereotype threat cannot be conclusively ruled out, the fact that imagined interaction with the superordinate outgroup (males) led to the best performance (as opposed to the drop in performance predicted by stereotype threat, due to the intergroup context created) suggests that category stereotype priming is the most parsimonious explanation of these results.

In evaluating the essays written by participants, Study 3 offered more evidence that competence stereotypes are related to behavioral outcomes. There was a significant positive correlation between the competence-related words used in essays and performance on the map-reading task, again consistent with a category stereotype priming pattern of results. In addition, the group by level by type of self-involvement three-way interaction for ratings of competence suggested that the competent vs. incompetent stereotype is activated for participants in the imagined interaction condition, but this stereotype is not as strongly activated for participants in the perspective-taking condition, especially when considering male primes. It appears that, for female participants, differences in performance are a function of the extent to which competence is activated in relation to any given prime.

The secondary measures also offer some insight into whether results are due to stereotype threat or category stereotype priming. When participants were asked to self-report their anxiety, there were no differences in anxiety when considering ingroups, as opposed to outgroups. Participants also rated how much they thought about how their performance would compare with others. There were, again, no differences based on group; participants rated their comparative concern the same, regardless of whether they were primed with the ingroup or outgroup. Taken together, these measures suggest that
participants are not differentially anxious or concerned about comparisons with ingroup or outgroup members, which offers more support that category stereotype priming, and not stereotype threat, better explains the results.

In examining the results, the perspective-taking and imagined interaction conditions did not affect performance in predicted ways. It was initially predicted that perspective-taking would produce category stereotype priming. But, the act of perspective-taking may have caused our participants to dissociate the essay target from the self because the prompt asked people to imagine what it would be like to be this other person, as opposed to previous research which has just asked participants to write about a day in the life of someone else (see Wheeler, Jarvis, & Petty, 2000). Perhaps the essay instructions forced participants to focus on differences between themselves and the person they were writing about and not to consider similarities between the self and the person they were writing about.

It was initially predicted that imagined interaction would cause differing patterns of results, depending on whether participants received superordinate or subgroup primes. Study 3 found no evidence to support this differential prediction and the priming effect that did emerge is more consistent with category stereotype priming than a stereotype threat (or complementarity) pattern of results. The lack of an effect based on the level of the prime occurred despite the fact that the essays did generate complementary competence stereotypes for men and women. Study 3 offers no support for the prediction that superordinate gender categories are oppositional and will automatically activate an intergroup context.
CHAPTER 5
GENERAL DISCUSSION AND CONCLUSION

In three studies, I have examined behavioral assimilation following gender primes of either superordinate gender categories or prototypical gender subgroups. This research offered the first experimental demonstration of differential behavioral assimilation following superordinate and subgroup primes from the same social categories. This research also examined whether category stereotype priming or stereotype threat would best explain the behavioral assimilation resulting from these superordinate and subgroup primes. The present research was designed to address three primary questions, each of which will be discussed individually.

Subgroup vs. Superordinate Category Priming Effects

This research was designed to address the question of whether subgroups cause stronger priming effects than superordinate categories, perhaps related to the stronger stereotype activation associated with subgroups. For males, it appears that subgroups do cause stronger priming effects than superordinate gender categories. Study 1 showed evidence of behavioral assimilation for male participants following the outgroup prime at the level of the subgroup (homemaker), but not at the level of the superordinate category (women). For these male participants in Study 1, performance on a gender-stereotyped
task suffered, relative to the control condition, following the homemaker prime, while performance was not affected by any of the other primes.

In Study 1, there was evidence that the prototypical gender subgroups businessmen and homemakers were the most strongly stereotyped on the dimension of competence, which is the relevant stereotypic dimension for the map-reading task; businessmen were described as being more competent than men (in general) and women (in general) were described as being more competent than homemakers. This finding, that subgroups are more strongly stereotyped on a dimension of competence than superordinate groups, may explain the stronger priming effects found for subgroup primes than superordinate primes. However, this result must be interpreted with caution because there was no correlation between the competence ratings of the essay primes and performance on the map-reading task.

For female participants, no priming effects were found in Study 1. Female participants’ performance did not differ as a function of thinking of subgroups or superordinate groups. Nonetheless, female participants did stereotype prototypical gender subgroups more strongly on the dimension of competence. Just like male participants, they more strongly stereotyped subgroups than superordinate categories; businessmen were seen as more competent than men in general and women were described as being more competent than homemakers. Study 3 (using females only) offered no evidence that subgroups cause stronger priming effects than superordinate groups, contrary to effects for male participants in Study 1.

Despite the finding that the level of the prime did not affect performance for females in Study 3, there was evidence that subgroup primes were associated with
stronger stereotypes. Businessmen were seen as more competent than men and women were seen as more competent than homemakers. In addition, Study 3 found that essays about subgroups reflected more traditional gender stereotypes than essays about superordinate groups. Further, Study 3 found that competence ratings were significantly correlated with performance on the map-reading task; essays written about targets who were associated with competence (i.e., men and businessmen) did produce better performance on the map-reading task when participants imagined an interaction with this essay target.

Taken together, these findings offer mixed support for the notion that subgroups will produce stronger priming effects than superordinate gender categories. For male participants, subgroups were more likely to lead to behavioral assimilation than superordinate categories. In contrast, for female participants, the level of the prime had no effect on behavioral assimilation. Interestingly, for both male and female participants, there was evidence that subgroup primes were more strongly stereotyped than their corresponding superordinate primes. This finding is consistent with previous research, which has found that subgroups offer richer, more descriptive stereotype content than superordinate groups.

**Ingroup Primes: Stereotype Threat vs. Category Stereotype Priming**

This research was also designed to address the question of whether activation of ingroup gender stereotypes will lead to stereotype threat or category stereotype priming effects. For both male and female participants in Study 1, there were no priming effects for ingroup primes. When participants were primed with their ingroup, either at the level
of the superordinate or the subgroup, their performance was not statistically different from the control condition.

In Study 2, male participants did show decrement of performance following an ingroup (businessman) prime when the task was described as one on which females might be expected to perform better than males. This could potentially be evidence of a stereotype threat effect, but since the same effect was found for the outgroup prime (homemaker) in the other task framing condition, stereotyping priming provides the more parsimonious explanation for the full pattern of effects in Study 2. In Study 3, when self-involvement was created for female participants, ingroup primes were associated with worse performance than outgroup primes, regardless of the level of these primes. This main effect of group was the first demonstrated priming effect for female participants. Again, although it is impossible to conclusively determine whether stereotype threat or category stereotype priming is responsible for these differences between ingroups and outgroups, there are two reasons to believe that category stereotype priming better explains these results. First, outgroup primes at the level of the subgroup are unlikely to produce the necessary intergroup context for stereotype threat to occur. Second, participants reported thinking about how their performance would compare to the performance of other people to the same degree, regardless of whether they were primed with the ingroup or outgroup. Further, participants experienced the same amount of anxiety about their performance following ingroup and outgroup primes. If stereotype threat was responsible for the priming effects, I would have expected participants to report a greater concern with both performance, relative to other people, and anxiety following ingroup primes than following outgroup primes.
Finally, this research was designed to address the question of whether activation of outgroup gender stereotypes will lead to stereotype threat or category stereotype priming effects and whether this will differ depending on whether gender stereotypes are primed at the superordinate or subgroup level. For female participants in Study 1, there were no priming effects for outgroup primes; when participants were primed with their outgroup, either at the level of the superordinate or the subgroup, their performance was not statistically different from the control condition. For male participants in Study 1, there were priming effects for outgroup primes. For male participants, performance following superordinate outgroup primes did not significantly differ from the control condition. In contrast, performance following the outgroup prime at the level of the subgroup (homemaker) was significantly worse than performance in any other condition. This pattern for male participants is more consistent with a category stereotype priming pattern of results because priming effects were only found following an outgroup prime at the level of the subgroup; subgroup primes are less likely than superordinate primes to create the necessary intergroup context for stereotype threat. Additionally, this finding offers support for the idea that subgroup primes offer more specific stereotypes and stereotypic behaviors, which might make behavioral assimilation more likely.

Study 2 again found evidence that male performance would assimilate to primes in the direction that was consistent with relevant stereotypes. In Study 2, male participants differentially assimilated to subgroups as a function of the stereotype that was made relevant for their performance on the map-reading task. When the task was
described as measuring verbal skills (creating an expectation that females would perform more successfully), a homemaker prime improved performance, relative to a businessman prime. In contrast, when the task was described as measuring spatial relations abilities (creating an expectation that males would perform more successfully), a businessman prime improved performance, relative to a homemaker prime. Study 2 found parallel effects for ingroup and outgroup primes, as a function of the task framing. Although it is possible to interpret these effects as a result of stereotype threat and stereotype lift, because the decrement in performance is similar for ingroup and outgroup primes, category stereotype priming offers a more parsimonious explanation of this pattern of results. Additionally, male participants experienced more anxiety about their performance following the outgroup prime, not following the ingroup prime, which would have been predicted by stereotype threat research.

In Study 3, female participants did demonstrate priming effects for outgroup primes when self-involvement was created. In Study 3, outgroup primes were associated with better performance than ingroup primes, regardless of the level of these primes. However, these results did not follow the predicted interaction pattern; a two-way interaction of group and level was originally predicted, such that superordinate primes would produce similar patterns of performance, and subgroups would produce different patterns of performance, depending on whether they were subgroups of the ingroup or outgroup. This two-way interaction was only found for male participants in Study 1, which offers some support to the initial predictions that subgroups and superordinate groups will, under some circumstances, produce different patterns of behavioral assimilation.
Relevant Stereotype and Task Linkage

Study 2 offered evidence that the stereotype that is made relevant for performance will lead to differential behavioral assimilation to the same primes, on the same task. In Study 2, the task was described as being related to spatial relations abilities or verbal skill. In this manipulation, I never explicitly gave participants a gender stereotype about the task; I merely defined the task in a way that I assumed would activate knowledge about sex differences. In this research, the primes provided a context for interpreting the task without directly activating the specific performance stereotype; for example, no participants spontaneously described businessmen as being good at spatial relations or homemakers as being good at verbal skills.

When faced with the map-reading task, participants may have thought about their expected performance and the availability of previously-primed stereotypes may have activated different expectations about performance. Specifically, in Study 2, male and female ability stereotypes affected male participants’ approach to the task and were used to construe the task. For male participants, it is possible that the combination of the general primes and the task characteristics affected the construal of the task, which, subsequently, affected task performance. It is the linkage, or fit, between the prime and the task that seems to be crucial for priming to affect performance. Specifically, task construal may affect performance because it makes specific aspects of the active-self uniquely relevant for task performance; for example, a homemaker prime is a more relevant cue in the active-self than the same prime might be in the absence of a task that is gender-stereotyped. Interestingly, the task framing suggested that the same prime, for example businessman, could cause the task to be construed as one on which success
(when men are stereotypically expected to succeed) or failure (when women are stereotypically expected to succeed) was more likely, depending on the fit between the prime and stereotype that was made relevant for performance.

**Differences in Male and Female Performance**

Across all studies, one unexpected, but persistent, finding was that male and female participants responded differently to the primes of superordinate gender categories and prototypical gender subgroups, with respect to performance on the map-reading task. In the first two studies, male participants were strongly affected by the primes, whereas female participants were seemingly immune to the influence of these primes.

Male participants demonstrated larger priming effects following subgroup primes than superordinate primes. Performance for male participants offered support for the idea that the specificity of subgroup stereotypes can lead to stronger behavioral assimilation compared to less specific superordinate category stereotypes. Male participants seemed to become engaged in the task and exhibited a pattern of behavior consistent with the idea that the combination of primes and task characteristic led to differential construal of the same task, which affected performance. In contrast, something prevented female participants from going through this process wherein primes and task characteristics influence task construal, which, in turn, affects performance; either female participants do not use the prime to construe the task, or the prime is not seen as self-relevant. Interestingly, there does not seem to be a difference between male and female participants at the priming stage, because both groups activate similar stereotypes of superordinate gender categories and gender subgroups. As a result, the difference in
male and female performance may be largely a result of the association of the prime to
the task and/or the self.

One reason we may have failed to find evidence of stereotype threat for female
participants was that we specifically chose females who identified with the prototypical
subgroup of women, specifically homemakers. In stereotype threat research, it has been
found that identification with the domain on which people are evaluated is critical to
create the necessary anxiety and concern with the task that leads to a decline in
performance. By only selecting females who identify with a subgroup of women who
would not be stereotyped to do well on the map-reading task, the first two studies may
have removed some of the necessary motivation for female participants to fully engage in
the task. However, in Study 2, female participants do report that they see the task as
important, so this cannot fully explain the lack of findings in Study 1 and Study 2.
It is also possible that in Study 1 and Study 2, females did not perceive the task to be a
meaningful measure of their abilities. As a result, female participants may have
demonstrated a floor effect because of their non-involvement in the task. In contrast to
male participants, female participants did not seem to connect the prime to the task.

Interestingly, Study 3 showed that the consistent inability to find priming effects
for female participants was a function of having selected female participants who
identified with homemakers. Study 3 offered evidence that these female participants
were particularly unlikely to connect the primes to the self and/or the task. Rather, it was
those female participants who feel neutrally, but not negatively, toward homemakers,
who were much more likely to be influenced by priming.
For female participants in Study 3, the pre-adapting to the target’s behavior following self-involvement did not involve the complementarity that was predicted, so previous research on complementarity cannot explain the findings for female participants. In addition, the active-self account cannot fully account for these results, because the manipulation of perspective-taking did not affect behavioral assimilation. As such, it seems that the pattern of results for female participants is not fully consistent with the existing theories that were believed to predict behavioral assimilation following the inductions of self-involvement used in Study 3.

Revisiting Gender as a Special Case for Behavioral Assimilation

There was mixed support for the notion that there would be automatic activation of oppositional stereotypes following superordinate primes. On the one hand, Study 1 did show that, for male participants, superordinate gender category primes did not yield differential performance, which was a predicted pattern of results for superordinate primes if the activation of one gender automatically activated the other gender. Regardless of whether the superordinate prime was “man” or “woman,” performance for male participants was successful, despite the fact that competence stereotypes were activated more strongly following male superordinate primes than female superordinate primes. On the other hand, even though Study 1 found similar performance following both superordinate primes, this offers limited evidence for the automatic activation of oppositional stereotypes because performance in both conditions was not significantly different from the control condition.

Study 3 offered no evidence of the proposed oppositional nature of superordinate gender categories. If superordinate gender categories are oppositional, both
superordinate primes should have produced the same pattern of performance. For female participants in Study 3, ingroup primes at both levels and outgroup primes at both levels produced the same pattern of performance.

Questions for Future Research

One limitation of this research was that I only used one priming method, essay writing, and it is possible that the nature of the task focused participants’ attention on imagining and elaborating on the target, and suppressed any tendency to activate a comparative context. Although “male” may automatically activate “female” as an initial association, when asked to think carefully about a man, participants may avoid thinking of any other categories, particularly women. It is possible that other methods of priming superordinate gender groups might demonstrate these categories’ oppositional nature. Specifically, for example, subliminally priming participants with one gender category (i.e., man) on a sequential priming task might increase the accessibility of the stereotypes of the oppositional category (i.e., stereotypes of woman). Similarly, supraliminally priming participants via a scrambled sentence task might cause spreading activation, such that the activated stereotypes (i.e., stereotypes of men) spread to activate stereotypes of the oppositional gender category (i.e., women). I believe that it is possible that tasks that activate stereotypes without requiring elaboration about the category in question may be more likely to show evidence of the oppositional nature of gender categories.

One large question raised by the present research is what would be the effect of priming non-prototypical gender subgroups? On the map-reading task used in this research, participants’ default expectation was presumed to be that males (and businessmen) would perform more successfully and females (and homemakers) would
perform more poorly (as demonstrated by the replication of Study 1 findings in Study 2, when the relevant stereotypes were more explicitly connected to one gender and not the other). It would be interesting, then, to prime participants with a non-prototypical subgroup of women, such as businesswomen. Businesswomen stereotypes would not overlap with the superordinate gender category “women” and, as such, male participants who were primed with businesswomen might not be as likely to show a decline in performance. Interestingly, results from Study 2 suggest that a non-prototypical, businesswomen prime might not increase performance, relative to a woman prime. Study 2 distinguishes between specific and general competence and suggests that the match between the stereotype and the task is critical. Even though previous research has found that businesswomen are seen as more competent than homemakers, they are not necessarily thought of as being more skilled in their spatial relations ability than women in general. As such, it would be interesting to see how this non-stereotyped group would perform on this measure of spatial relations ability.

Implications of the Present Research

The present research offers some preliminary evidence that subgroups may be more likely than superordinate groups to affect behavioral assimilation. In the first two studies, the priming effects were most robust for male participants following subgroup primes. This finding is consistent with previous research, which has suggested that subgroups of men and women offer clearer, more specific, stereotypes and behavioral expectations than superordinate gender categories. This research supports the notion that gender subgroups are uniquely important for person perception and social cognition.
Overall, there is more evidence to support category stereotype priming than stereotype threat as a mechanism for the priming effects demonstrated in these three studies. In Study 2 and Study 3, anxiety was measured and there were no differences in anxiety following ingroup or outgroup primes. Stereotype threat research has demonstrated that it is concern about one’s own performance reflecting poorly on the group that accounts for the consistent decline in performance. Although stereotype threat cannot be conclusively ruled out, the inability to find anxiety following ingroup primes suggests that category stereotype priming is a more parsimonious explanation for results.

This research suggests that gender primes can be used as a lens through which gender-stereotyped tasks are interpreted, even when the specific task-relevant stereotypes are not directly primed. Interestingly, this research has found that males are more likely to be influenced by subgroup primes than superordinate primes, even when the stereotype content associated with both groups overlap to a large extent. Female participants who were neutrally identified with homemakers, in contrast to male participants, seemed to be more responsive to differences between ingroups and outgroups, regardless of the level of prime. Taken together, these findings suggest that participants may show behavioral assimilation as a result of being primed with prototypical gender subgroups, but this will likely differ for male and female participants. Future research examining behavioral assimilation resulting from gender stereotypes must consider the level of primes, as they are related to stereotype specificity, the self-involvement created by the task, and the level of identification with traditional gender subgroups, as all may be relevant antecedents to behavioral assimilation.
LIST OF REFERENCES


APPENDIX A

MAP-READING TASK
1. Which bridge is closest to the Art Museum?

2. Which is farther north, River Park or City Park?

3. How far (in miles) is it from the bus station to the hospital?

4. If you cross Denny Bridge going north, turn right at River St., turn left at Grove Ave., turn right at Oak St. and walk half a block, what building do you see on your right?

5. What park is located in A2?
6. When you look north, you see the river. When you look east, you see the High School. Where are you?
1. Do lines of latitude run east-west or north-south?

2. Name three states that extend below latitude 30 degrees N (in the contiguous US).

3. Name one US state that is mostly east of longitude 70 degrees W.

4. Name three US states (shown on this map) that extend west of longitude 120 degrees W.

5. Is the location 45 degrees N latitude, 82 degrees W longitude on land or under water?

6. Name the state that is located entirely between 40-45 degrees N latitude and between 90-100 degrees W longitude.
7. The location 26 degrees N, 105 degrees W is in what country?
8. Is the location 35 degrees N latitude, 75 degrees W longitude in the Atlantic or Pacific Ocean?
9. Is the location 30 degrees N, 87 degrees W on land or under water?
10. The location 43 degrees N, 75 degrees W is in what state?
11. Name the state whose southern border is latitude 35 degrees N.
1. Which is farther east, the elementary or middle school?

2. Which is farther south, Lake Park or City Park?

3. How far (in miles) is it from the bus station to the hospital?

4. Which school’s address is 250 Oak Street?

5. What city building is located at E3?

6. When you look northeast, you see River Park. When you look north, you see the Water Plant. When you look east, you see the Elementary School. Where are you?