

**Gender Differences in Response to Competition with Same-Gender Coworkers:
A Relational Perspective**

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Abstract

We take a relational perspective to explain how women and men may differently experience competition with their same-gender coworkers. According to gender socialization research, the female peer culture values harmony and the appearance of equality, while hierarchical ranking is integral to the male peer culture. As competition dispenses with equality and creates a ranking hierarchy, we propose that competition is at odds with the norms of female (but not male) peer relationships. On this basis, we predicted and found in one correlational study and three experiments that women regard competition with their same-gender coworkers as less desirable than men do, and their relationships with each other suffer in the presence of competition. We discuss the implications of these findings for women's career progression.

Keywords: gender differences, competition, cooperation, work relationships, gender socialization, relational norms

After the 2013 Wimbledon tennis tournament, at least two news commentaries suggested that female tennis players' off-court relationships with each other were less congenial and more caustic than male players' relationships (Couch, 2013; Robson, 2014). Relying on quotes from players, a coach, and a sports writer, the commentators noted that female stars were more likely to make snide public comments about each other, less likely to practice together, and less likely to get along or be friends.

These accounts are two instances of the fairly common view that competition between women is cutthroat and mean (Armour, 2005; Drexler, 2014; see Sheppard & Aquino, 2013 for more examples of negative portrayals of women's competition). The word "catfight," for example, is typically used to describe competition between women but not competition between men or between women and men (Milligan, 2013; Sills, 2007; Tanenbaum, 2011). More generally, women's work relationships with each other are often seen as problematic (Sheppard & Aquino, 2013). For example, some management scholars talk about the "queen bee syndrome," which refers to women in senior positions with solo- or minority-status dissociating themselves from women in subordinate positions, offering them no support and, sometimes even obstructing their advancement (Derks, Ellemers, van Laar, & de Groot, 2011; Derks, Van Laar, Ellemers, & de Groot, 2011; Duguid, 2011; Ellemers, Heuvel, Gilder, Maass, & Bonvini, 2004; Ely, 1994). Other research has suggested that women with a token status in high-prestige groups may feel a competitive threat toward other qualified women aiming to join the group and may attempt to block them (e.g., Duguid, 2011).

These negative portrayals of work relationships between women are puzzling in light of the "women-are-wonderful effect" (Eagly & Mladinic, 1989), according to which women are generally seen as more caring and kinder than men. Studies also suggest that women are less competitive and aggressive than men are (e.g., Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972; Niederle & Vesterlund, 2011), and that they like each other more than

men like each other (e.g., Rudman & Goodwin, 2004). If women are the *nicer*, less competitive gender, and they have more positive attitudes toward each other, why are their same-gender work relationships often characterized as competitive and troubled (e.g., Sheppard & Aquino, 2013)?

The present research investigates one potential source of negativity in female work relationships that could explain the discrepancy between the generally positive image of women and the portrayals of their same-gender work relationships as troubled. In particular, we test whether women's (but not men's) relationships are damaged by the presence of competition. According to gender socialization research, starting in early childhood and continuing throughout adolescence, the female peer culture values harmony and the appearance of equality, whereas the male culture is more competitive and stresses agentic goals (Maccoby, 1990; Rose & Rudolph, 2006; Schneider, Benenson, Fülöp, Berkics, & Sándor, 2011). On this basis, we propose that, compared with men, women see competition with their same-gender coworkers as less desirable and experience more negative emotions in response to it. As a result, their relationships with other women are expected to suffer from the presence of competition, whereas men's same-gender relationships are not.

Our current understanding of women's work relationships is poor due to the small number of empirical studies on this topic and the lack of a unifying conceptual framework (Sheppard & Aquino, 2013). The current work aims to fill this gap on female work relationships and add to the existing body of work in three ways. First, we focus on women's reactions to situations involving actual competitive interdependence, such that one party's gain is the other party's loss (*structural competition*). Our focus is thus not on women's distancing or deprecating behaviors toward other women based on a subjective sense of threat in the absence of actual competitive interdependence (e.g., Duguid, 2011; Garcia-Retamero &

López-Zafra, 2006; Parks-Stamm, Heilman, & Hearn, 2008). We, thereby, isolate a structural determinant of relational outcomes at work that differentially impacts the two genders.

Second, our focus is on same-gender *peer* relationships and not on relationships between women in senior positions and their junior coworkers (e.g., Derks, Ellemers, et al., 2011; Ellemers et al., 2004) or relationships between token women in high-status groups and other women who might want to join the group (e.g., Duguid, 2011). There are reasons to expect that relationships with same-gender peers are of high relevance to workers. First, workers are surrounded by more peers than bosses or mentors (Kram & Isabella, 1985). People are also more likely to have same-gender peers than would be expected by chance because work is sex-segregated horizontally and vertically (for a review, see Charles & Grusky, 2005). Consequently, workers are also more likely to be under structural competition with same-gender peers.

Third, given our focus on peer relationships, we examine relational outcomes with specific others and not generalized attitudes toward other women in the workplace (e.g., Derks, Ellemers, et al., 2011; Derks, Van Laar, et al., 2011) or career-related outcomes such as evaluations of and decisions to hire a woman (e.g., Duguid, 2011). It is important to understand these relational consequences of competition because competition at work often occurs in the context of continuing relationships, and the quality of work relationships is associated with a wide set of key outcomes such as work engagement (Kahn, 1990, 1992), job satisfaction (Kinicki, McKee-Ryan, Schriesheim, & Carson, 2002), and turnover (Uhl-Bien, Graen, & Scandura, 2000).

A Relational Perspective on Same-Gender Competition

Several streams of research have established gender differences in competitiveness. Men describe themselves as more competitive than women, and competitiveness is considered more typical, desirable, and healthy for men than it is for women (Bem, 1974; Broverman,

Broverman, Clarkson, Rosenkrantz, & Vogel, 1970; Broverman et al., 1972). Whereas competitiveness is prescribed as part of the masculine gender role, women are expected to act in less agentic and more communal ways (Glick & Fiske, 1999).

Behavioral studies of gender differences in competitiveness, most recently and extensively conducted by economists, point in the same direction as men's and women's self-descriptions and gender role expectations. Even after controlling for skill level, men are often more likely than women to enter competitions and choose competitive rewarding schemes over schemes based on absolute performance (Datta Gupta, Poulsen, & Villeval, 2013)—an effect that has not been satisfactorily explained yet (for a review, see Niederle & Vesterlund, 2011). Proposed explanations include gender differences in confidence levels (Niederle & Vesterlund, 2011) and socialization processes (Gneezy, Leonard, & List, 2009). Prescriptive gender roles may be another reason why women are reluctant to compete. The backlash effect (Rudman, 1998) suggests that when women show agentic behaviors, they may be seen as socially deficient, liked less, and be discriminated against in hiring (Rudman & Glick, 1999; Rudman & Glick, 2001).

These reviewed gender differences in self-descriptions, gender role requirements, and competitive behaviors suggest that on average women will be less willing than men to compete in the workplace. The reviewed literature also suggests that women will be more likely to face negative reactions if they act competitively. However, some questions of theoretical and practical relevance remain: First, we do not know the *relational* consequences of competition for the competitors, and whether these consequences differ across genders—a possibility suggested by the example of female and male tennis players in the opening paragraph of this paper. We thus face a gap in the previous literature which has not explicitly considered that competition at work often occurs in the context of continuing relational processes. Second, we do not know whether such relational consequences depend on the

gender of the competitors. In search of answers to these two questions, we turn to research on gender socialization.

Gender and Relational Norms with Same-Gender Peers

Girls and boys are socialized in segregated peer groups with different structures, activities, and relational orientations (for a review, see Rose & Rudolph, 2006). From early childhood on, boys tend to play in larger and more hierarchically differentiated groups, whereas girls spend more time in dyadic interactions (Benenson & Schinazi, 2004; Vigil, 2007). Activities within these differentially structured groups also differ. Whereas boys' activities are often competitive, girls' activities tend to be more collaborative and intimate (Leaper, 1991; Lever, 1978; Maccoby, 1998; Strough & Berg, 2000). A study of 10- to 11-year-old children found that 65% of boys' play activities were competitive compared with 37% of girls' activities (Lever, 1978). This was partly because boys played competitive sports more often than girls did—a finding that has been confirmed in other work (Eccles & Harold, 1991). However, even after eliminating sports, 54% of the boys' activities, as opposed to 30% of the girls' activities, were still competitively structured. In other words, even when sedentary, boys engaged in more competitive activities (such as electric car racing and chess) than girls did.

Whereas boys' activities are more competitive and stress agentic goals, such as performing well and achieving status, girls' activities tend to endorse communal goals, such as helping and supporting each other (Rose & Asher, 2004). Not only do girls compete less than boys do, but they are also more eager to maintain an appearance of equality, which is incompatible with competitive ranking (for a review, see Campbell, 2013, Chapter 4). This ranking aversion is manifest in girls' negative reactions to other girls who are perceived to compete or claim superiority. In her ethnographic study, Goodwin (1990) observed the following:

Girls differ from boys not only in terms of the criteria they employ for making comparisons, but also in their attitudes towards the activity of ranking itself. Boys seem to openly encourage statements about relative rank in pastimes (although they of course may argue about them). However, a girl who positively assesses herself or explicitly compares herself with others may be seen as showing character and attitudes that the other girls find offensive (p. 44).

Consistent with this observation, one study found that, among Grades 8 to 10 students, girls reported more negative feelings than boys reported in response to outperforming their same-gender friends in academics and romance (Benenson & Schinazi, 2004). Moreover, girls in this study reported feeling significantly more happy with obtaining equal, rather than better, outcomes with same-gender friends, whereas boys felt similarly happy with either result.

Would adult relationships follow similar patterns? Several streams of research document continuity from childhood to adulthood in patterns of social interaction, behaviors, attitudes, and personality (Caspi, 2000; Maccoby, 1998). In this case, as well, research has shown that adult women strive for collaboration and avoid conflict in same-gender relationships, whereas men's relationships are more likely to be marked by competition for status (Bakan, 1966; Burda, Vaux, & Schill, 1984; Kimmel, Pruitt, Magenau, Konar-Goldband, & Carnevale, 1980; Moskowitz, Suh, & Desaulniers, 1994). Furthermore, paralleling young girls' concerns with maintaining an egalitarian appearance, women in the workplace have been found to observe conversational rituals that downplay their superiority and serve to establish a sense of equality (Tannen, 1990).

These gender differences in peer-group structures (hierarchical vs. egalitarian), activities (competitive vs. collaborative), and relational orientation (agentic vs. communal) have implications for the acceptability of same-gender competition to women and men. By definition, competition creates ranking hierarchies and unambiguously dispenses with any

appearance of equality. Thus, to the extent that equality is considered an essential condition of relationships, competition will be regarded as less acceptable and desirable. In contrast, if competition is considered an ordinary condition of relationships, competitive activities will be regarded as neutral or positive and, thereby, more acceptable and desirable. We therefore suggest that same-gender competition may be seen as a violation of relational norms to women (but not to men) because its outcomes (e.g., the formation of ranking hierarchies) and elements (e.g., open status seeking) are incongruent with normative expectations for women's peer relationships, whereas they are rather typical in men's peer relationships. We thus hypothesize:

Hypothesis 1. Women find competition with their same-gender coworkers less normatively acceptable than men do.

Gender and Relational damage in Response to Competition with Same-Gender Coworkers

If competition is at odds with the basic tenets of female peer culture, it may be difficult for women to reconcile it with a friendly same-gender relationship, and the presence of competitive elements may be read as a negation of the relationship. Therefore, we predict that competition would damage women's (but not men's) relationships with same-gender coworkers. Moreover, if competition is seen as incompatible with norms governing women's same-gender relationships, it may be followed by interpersonal sanctions, similar to other counter-normative behaviors (Cialdini & Trost, 1998). Social sanctions may take the form of disapproval, shunning, and rejection of the individual who has violated expectations (Cialdini & Trost, 1998; Cooter, 2000; K. D. Williams, 1997). We thus predict that women will tend to dislike same-gender coworkers they compete with and hypothesize:

Hypothesis 2. Competition damages women's relationships with their same-gender coworkers more than it damages men's relationships with their same-gender coworkers.

The experience of negative emotions. Norm violations evoke negative emotions, and these emotions drive social norm enforcement (Fehr & Fischbacher, 2004). For example, Elster (1989) suggests that the prospective or actual violation of social norms leads to anger, anxiety, and embarrassment. An exploratory study by Wilson and O'Gorman (2003) showed that after imagining a social norm being broken, people expected both the transgressor and the target of the transgression to feel annoyed, threatened, distressed, and aggravated. If women see competition with same-gender coworkers as counter-normative, as we hypothesize, they would also be more likely to feel negative emotions in response. In particular, they would be more likely to experience negative emotions that are evoked in response to norm violations. We thus hypothesize:

Hypothesis 3A. Competition elicits more negative emotions in women competing with their same-gender coworker than in any other gender composition.

The mediating role of negative emotions. Research has established that emotions are one of the important antecedents of interpersonal attitudes in work settings (Elfenbein, 2007; Fineman, 1993; Frijda, 1988; Olson & Zanna, 1993). Given the close association between violation of social norms and negative emotions on the one hand, and between emotions and interpersonal attitudes, we predict that the negative emotions women experience in response to competition with another woman would mediate the hypothesized relational damage women experience. We thus hypothesize:

Hypothesis 3B. Negative emotions mediate the negative impact of same-gender competition on the relationship between women.

Overview of the Studies

We tested our hypotheses in four studies: one workplace survey (Study 1: all participants were employed), an online experiment (Study 2: 100% of participants had some work experience), and two lab experiments (Study 3: 92% of participants had some work experience; Study 4: 93% of participants had some work experience).

Studies 1 and 2 tested Hypothesis 1 which predicts that female participants would perceive competition with their same-gender coworkers as less desirable than male participants would perceive competition with their same-gender coworkers. Studies 1, 2, 3, and 4 tested Hypothesis 2 which predicts that competition between two women would more negatively impact their relationship than would competition between two men or between a woman and a man. Studies 2, 3, and 4 tested Hypotheses 3A and 3B, which predict that across all gender combinations, the highest level of negative emotions would be experienced by women competing with other women, and these negative emotions would mediate the negative effect of competition on women's relationships with other women.

Study 1

Methods

Participants. One-hundred and twenty-seven currently employed adults ($M_{\text{age}} = 33.17$, $SD_{\text{age}} = 11.28$; 45% female; 85% White, 10% Asian, 4% African, and 1% Native American; all U.S. citizens), recruited from the online labor market Amazon Mechanical Turk (MTurk; see Buhrmester, Kwang, & Gosling, 2011 for subject pool details), participated in the survey in exchange for \$1.00. We predetermined sample size by posting 130 slots on MTurk with the aim of obtaining at least 50 participants of each gender.

On average, participants had spent 5.21 ($SD = 6.18$) years in their current workplace; worked 39.02 ($SD = 8.50$) hours per week; spent 53% ($SD = 30\%$) of their working hours with other coworkers as opposed to working independently; and had on average 11.56 ($SD =$

14.54) same-gender coworkers and 8.59 ($SD = 12.84$) opposite-gender coworkers, with whom they frequently worked.

Procedure and measures. After providing job-related information described above, participants were asked to think about their coworkers and to indicate their agreement with 6 statements presented in random order: “Competing with other female coworkers is acceptable” (reversed); “Competing with other male coworkers is acceptable” (reversed); “It is right to compete with other female coworkers” (reversed); “It is right to compete with other male coworkers” (reversed); “It is not desirable to compete with other female coworkers”; and “It is not desirable to compete with other male coworkers” (1 = *strongly disagree*, 7 = *strongly agree*).

Based on prior research on normative perceptions (e.g., Wenzel, 2002), we developed these items to examine the extent to which people regard competition with their same- and opposite-gender coworkers as desirable. For female (male) participants, the three items regarding female (male) coworkers formed *normative perceptions of competition with their same-gender coworkers* ($\alpha_{\text{female participants}} = .89$; $\alpha_{\text{male participants}} = .84$); while the three items regarding male (female) coworkers formed *normative perceptions of competition with their opposite-gender coworkers* ($\alpha_{\text{female participants}} = .91$; $\alpha_{\text{male participants}} = .88$). For this measure, higher means indicate lower acceptability of competition.

One potential concern with this measure is that the items could be read as probing the general acceptability and desirability of competition by others rather than what participants themselves consider acceptable and desirable. However, we believe that most participants reported the latter for the following two reasons. First, participants may have assumed continuity in question type from the preceding questions that specifically targeted participants' own work situation. Second, the instruction for the question read: “Please indicate how much you agree with the following statements about *competition with your*

female [male] coworkers” (emphasis in original), directing participants to reflect on their own work relationships. Nevertheless, some participants may still have reported their perceptions of general norms. This issue will be addressed in Study 2.

Participants responded to three filler questions before answering the main questions about specific same- and opposite-gender coworkers.¹ We included these items to prevent participants from deducing that the study focus was gender and competition.

Participants were then asked to write down the names of one same-gender and one opposite-gender coworker with whom they frequently worked. We specifically asked participants to identify coworkers of similar tenure and position to themselves. For each of these two coworkers, participants answered the following questions on a 5-point scale (1 = *not at all*, 5 = *very much*): “How intense is the competition between you and this person in work tasks?” (*competition intensity*); and “How strong is the cooperation between you and this person in work tasks?” (*cooperation strength*). Then participants answered the question (1 = *not at all*, 7 = *very much*): “How much do you like this person?” (*coworker liking*).²

Finally, participants provided demographic information.

Results

The data and syntax files for all studies presented in this paper are available on the Open Science Framework project site: <https://osf.io/2qkht>.

Table 1 presents the descriptive statistics and zero-order correlations among variables. Participant race, age, or tenure did not moderate any of the relationships between the predictor

¹ The filler items were: “I expect that I will develop close work relationships with coworkers at the workplace” “I expect that my relationships with coworkers will be close”; and “I expect that workplace is a friendly environment” (1 = *strongly disagree*, 7 = *strongly agree*). A one-way ANOVA revealed no effect of participant gender on the composite measure of these items ($\alpha = .74$), $p = .388$.

² In this Study (and in Study 4), we also measured task enjoyment (“How much do you enjoy working with this person?”), because we expected that same-gender competition might also have a negative effect on task enjoyment. We now recognize that task enjoyment may have more critical determinants than the relationship with the task partner, such as values, task involvement, and work rewards (e.g., Elliot & Harackiewicz, 1994). We thus no longer consider task enjoyment in our theoretical or empirical analyses (data and analyses available upon request).

variables (participant gender, coworker gender, competition intensity, and cooperation strength) and the outcome variable (coworker liking) and will thus not be discussed further.

 Insert Table 1 about here

Before testing our main predictions, we examined whether female and male participants' interactions with their same- and opposite-gender coworkers differed in terms of competition intensity, cooperation strength, and coworker liking by conducting a 2 (participant gender: female vs. male; between-participants) \times 2 (coworker gender: same and opposite gender; within-participants) mixed analysis of variance (ANOVA) on each of those variables.

For competition intensity, the 2 \times 2 mixed ANOVA revealed significant main effects of participant gender, $F(1, 125)^3 = 4.24, p = .042, \eta_p^2 = .03$, and of coworker gender, $F(1, 125) = 5.15, p = .025, \eta_p^2 = .04$, as well as a significant interaction effect between participant gender and coworker gender, $F(1, 125) = 6.32, p = .013, \eta_p^2 = .05$. Simple effects analyses showed that male participants' competition intensity with their same-gender coworkers ($M = 1.99, SD = 1.08$) was higher than their competition intensity with their opposite-gender coworkers ($M = 1.64, SD = 0.92$), $F(1, 125) = 12.74, p = .001, \eta_p^2 = .09, M_{diff}$ 95% Confidence Interval (CI): [0.15, 0.54]. Male participants' competition intensity with their same-gender coworkers was also higher than female participants' competition intensity with their same-gender coworkers ($M = 1.51, SD = 0.81$), $F(1, 124) = 7.63, p = .007, \eta_p^2 = .06, M_{diff}$ 95% CI: [0.15, 0.53]. On the other hand, female participants' competition intensity with their same- versus opposite-gender coworkers was not significantly different, $F(1, 125) = 0.03, p = .869, \eta_p^2 < .01, M_{diff}$ 95% CI: [-0.22, 0.19].

³ In all studies, degrees of freedom on distinct analyses sometimes vary due to missing data on certain variables.

For cooperation strength and coworker liking, the 2×2 mixed ANOVA revealed neither main effects nor an interaction effect; $ps > .239$ (see Table 2 for means).

Normative perceptions of same-gender competition (Hypothesis 1). We first tested Hypothesis 1 which predicts that women would find competition with their same-gender coworkers less desirable than men would. A 2 (participant gender: female vs. male; between-participants) \times 2 (coworker gender: same and opposite gender; within-participants) mixed ANOVA on normative perceptions of competition revealed a significant main effect of participant gender, $F(1, 125) = 7.40, p = .007, \eta_p^2 = .06$, a non-significant main effect of coworker gender ($p = .691$), and a significant interaction effect between participant gender and coworker gender, $F(1, 125) = 12.49, p = .001, \eta_p^2 = .09$.

Simple effects analyses showed that female participants perceived competition with their same-gender coworkers as less desirable ($M = 3.73, SD = 1.40$) than male participants perceived competition with their same-gender coworkers ($M = 2.84, SD = 1.30$), $F(1, 125) = 13.70, p < .001, \eta_p^2 = .10, M_{diff}$ 95% CI: [0.42, 1.37]. However, there was no gender difference in how desirable female and male participants regarded competition with their opposite-gender coworkers ($M_{female} = 3.52, SD_{female} = 1.42; M_{male} = 3.11, SD_{male} = 1.42$), $F(1, 125) = 2.50, p = .116, \eta_p^2 = .02, M_{diff}$ 95% CI: [-0.01, 0.91]. Further simple effects analyses showed that female participants perceived competition with their same-gender coworkers as less desirable than competition with their opposite-gender coworkers, $F(1, 125) = 4.46, p = .037, \eta_p^2 = .03, M_{diff}$ 95% CI: [0.00, 0.43]. In contrast, male participants perceived competition with their opposite-gender coworkers as less acceptable than competition with their same-gender coworkers, $F(1, 125) = 8.61, p = .004, \eta_p^2 = .06, M_{diff}$ 95% CI: [-0.45, -0.10].

Altogether, these results support Hypothesis 1.

Same-gender competition and coworker liking (Hypothesis 2). Please see Table 2 for means of variables by condition.

Insert Table 2 about here

We next tested Hypothesis 2 which predicts that competition damages women's relationships with their same-gender coworkers more than men's relationships with their same-gender coworkers. Because observations for same- and opposite-gender coworker were nested within participants, we ran a multi-level regression analysis (Hox, 2010). In this analysis, coworker gender and competition intensity (with the recalled coworker) were treated as moderators because the association between participant gender and coworker liking was expected to depend on the levels of these two variables.

We regressed coworker liking on participant gender (1 = *female*, 0 = *male*), coworker gender (1 = *same gender*, 0 = *opposite gender*), competition intensity, and their interaction terms (i.e., Participant Gender \times Competition Intensity, Coworker Gender \times Competition Intensity, Participant Gender \times Coworker Gender, Participant Gender \times Coworker Gender \times Competition Intensity). We mean-centered competition intensity by participant in an effort to control for differences in participants' own competitiveness and the competitiveness of their work environments. The intercept and the coefficient for the 2-way interaction between coworker gender and competition intensity were allowed to vary by participant.

The results revealed a significant 3-way interaction between participant gender, target gender, and competition intensity ($b = -2.06$, $SE = 0.91$, $p = .027$). All other effects were non-significant (all $ps > .262$) (see Table 3A).

Insert Table 3A about here

Simple effects analyses showed that competition intensity was negatively related only to female participants' same-sex coworker liking ($b = -2.06$, $SE = 0.51$, $p < .001$). For any other participant gender and coworker gender configuration, competition intensity was not related to coworker liking (all $ps > .813$). Further analyses showed that for female participants, the slopes between competition intensity and coworker liking was significantly different for same-gender and opposite-gender coworkers ($p = .003$). In contrast, the slopes did not significantly differ for male participants' same- and opposite-gender coworkers ($p = .952$). See Table 3B, Figures 1A and 1B.

Insert Table 3B about here

Insert Figures 1A and 1B about here

These results support Hypothesis 2.⁴

Discussion

Study 1 gives preliminary support for our predictions. First, supporting Hypothesis 1, female participants perceived competition with female coworkers as less desirable and acceptable than male participants perceived competition with male coworkers. However, the low average scores (below the midpoint) on this variable suggest that in a work context, competing with same-gender peers is not so unacceptable, even for women.

Second, supporting Hypothesis 2, competition intensity was negatively associated with same-gender coworker liking only for female participants, but not for male participants. On the other hand, competition intensity was not associated with opposite-gender coworker

⁴ In response to reviews, we also tested cooperation strength as a possible moderator of effects. These analyses (included under Supplementary Materials) generally suggest that competition intensity is a stronger moderator of effects relative to cooperation strength.

liking for either male or female participants. Women's responses thus do not simply reflect an aversion to competition, but are specific to competition with same-gender peers.

It is noteworthy that, consistent with female peer relationship norms, female participants in our study reported a lower average level of competition intensity with their same-gender coworkers than male participants did. And yet, we found that competition intensity was more negatively associated with same-gender coworker liking for female participants than for male participants.

Study 2

Study 2 aimed to replicate the findings of Study 1 in an experimental setting where competition is manipulated uniformly across participants, and relational damage is measured more reliably with a 7-item measure. We presented participants with a vignette that depicted workplace competition with a same- or opposite-gender coworker. Again, we expected that female participants would regard competition with female coworkers less desirable than male participants would regard competition with male coworkers (Hypothesis 1). We also predicted that female participants would anticipate a higher level of relational damage in response to competition with a female coworker than male participants would anticipate in response to competition with a male coworker (Hypothesis 2). Finally, Study 2 tested whether female participants imagining to compete with a female coworker would anticipate experiencing more negative emotions than participants in any other cell (Hypothesis 3A), and whether these negative emotions would mediate the effect of same-gender competition on relational damage for women (Hypothesis 3B).

Methods

Participants and design. Three-hundred and fifty-two adults with work experience ($M_{\text{age}} = 33.93$, $SD_{\text{age}} = 10.33$; 46% female; 85% White, 7% Asian, 6% African, and the rest non-specified; all U.S. citizens), recruited from the same online labor market as in Study 1,

participated in this online experiment in exchange for \$0.80. The experiment had a 2 (participant gender: female vs. male) \times 2 (coworker gender: same gender vs. opposite gender) between-participants design. We predetermined the sample size by posting 350 available participant slots with the aim of obtaining at least 80 participants per cell.

Procedure and measures. Participants were told that they would take part in a workplace scenario study. They were then randomly assigned to read a scenario in which they were asked to imagine that they were competing with a same- or opposite-gender coworker in their workplace. The scenario was based on vignettes of interpersonal competition in the work domain used in prior research (e.g., Toma, Yzerbyt, & Corneille, 2009; Wageman, 1995) and read as follows:

Jenny [Josh] is your coworker who has a similar position to yours in the marketing department at ABC Company.

Jenny [Josh] has been competing with you at work. For example she [he] tries to finish her [his] daily tasks earlier than you do. You also feel quite competitive toward Jenny [Josh] because you know that at the end of this year, only one of you will be promoted.

Early this month, the department manager announced that he will offer a bonus trip to one employee who will come up with the best marketing proposal. Finding this opportunity attractive, you decided to make a proposal. A few days later, you learned that Jenny [Josh] also plans to compete with you for this bonus trip.

After imagining themselves to be in the assigned scenario, participants first indicated negative emotions they would feel in the imagined situation on a 7-point scale (1 = *not at all*, 7 = *very much*). To create our measure of negative emotions, we surveyed the literature on emotions evoked in response to norms violations. Wilson and O’Gorman (2003) have identified six categories of such emotions. A pretest (details available upon request) showed

that, of these categories, three were most relevant to our workplace competition situation: fear, anger, and general distress. We thus included in our measure all emotions belonging to these three categories: scared, nervous, threatened, worried, insecure, trapped, hesitant, annoyed, angry, aggravated, unhappy, disappointed, upset, uneasy, and uncomfortable. These 15 items formed a composite measure of *negative emotions* ($\alpha = .96$).

After reporting anticipated negative emotions, participants answered the seven items that were designed to measure anticipated *relational damage* ($\alpha = .92$) (1 = *strongly disagree*, 7 = *strongly agree*). We developed these items based on prior research on relational damage (McCullough et al., 1998; Sheppard & Aquino, 2013; Tauer & Harackiewicz, 2004), and the items were: “My work relationship with this person would always be strained”; “I would feel resentful toward this person”; “I would find it difficult to act warmly toward this person”; “I would try to avoid this person”; “I would be able to cooperate with this person in the future” (reversed); “I would like this person (reversed)”; and “I would enjoy working with this person (reversed)”.

Participants also answered two manipulation check questions that examined whether they correctly perceived their work relationship with the coworker described in the scenario (*competitive* vs. *cooperative*) and the gender of the imagined coworker.

A week after participants completed the study, they were invited to answer our questions on the acceptability of competition with their coworkers. Three-hundred and thirty-six of them (95%) participated in the second part of the study. In this part, participants were asked to report their level of *normative perceptions of competition with their same-gender* ($\alpha = .85$) and *opposite-gender coworkers* ($\alpha = .87$) by answering the same six items as in Study 1 with one modification to ensure that participants would report their own perceptions rather than perceptions of the generalized others. The phrasing was changed such that for all items “other female [male] coworkers” was replaced with “my female [male] coworkers.” For

example, participants indicated their agreement with the item “Competing with my female coworkers is acceptable”. As in Study 1, higher means indicate lower acceptability of competition.

Results

Participant race or age did not moderate any of the relationships between the predictor variables (participant gender and coworker gender) and other variables (negative emotions and relational damage) and thus will not be discussed further.

Manipulation checks. Ninety-nine percent of participants correctly reported their work relationship described in the scenario to be competitive, and 99% of participants correctly reported the gender of their coworker in the scenario. Thus our manipulations were effective, and we included all participants in the analyses.

Normative perceptions of same-gender competition (Hypothesis 1). A 2 (participant gender: female vs. male; between-participants) \times 2 (coworker gender: same and opposite gender; within-participants) mixed ANOVA on normative perceptions of competition revealed non-significant main effects of participant gender ($p = .153$) and of coworker gender ($p = .345$), but a significant interaction effect between participant gender and coworker gender, $F(1, 334) = 9.60, p = .002, \eta_p^2 = .03$.

Simple effects analyses showed that female participants perceived competition with their same-gender coworkers as less desirable ($M = 3.25, SD = 1.51$) than male participants perceived competition with their same-gender coworkers ($M = 2.92, SD = 1.24$), $F(1, 334) = 4.93, p = .027, \eta_p^2 = .015, M_{diff} 95\% CI: [0.04, 0.63]$. However, there was no gender difference in how desirable female and male participants regarded competition with their opposite-gender coworkers ($M_{female} = 3.08, SD_{female} = 1.51; M_{male} = 3.01, SD_{male} = 1.18$), $F(1, 334) = 0.26, p = .611, \eta_p^2 = .001, M_{diff} 95\% CI: [-0.21, 0.36]$. Further simple effects analyses showed that female participants perceived competition with their same-gender

coworkers as less desirable ($M = 3.25$, $SD = 1.51$) than competition with their opposite-gender coworkers ($M = 3.08$, $SD = 1.51$), $F(1, 334) = 7.71$, $p = .006$, $\eta_p^2 = .02$, M_{diff} 95% CI: [0.03, 0.31]. All results thus far were consistent with Study 1 findings. However, unlike in Study 1, male participants' perceptions of competition with their same- and opposite-gender coworkers were not significantly different, $F(1, 334) = 2.46$, $p = .117$, $\eta_p^2 = .01$, M_{diff} 95% CI: [-0.18, 0.00].

Altogether, these results support Hypothesis 1 by showing that women viewed same-gender competition as less desirable than opposite-gender competition and also less desirable than men viewed same- or opposite-gender competition.

Same-gender competition and relational damage (Hypothesis 2). A 2 (participant gender) \times 2 (coworker gender) ANOVA on relational damage revealed a significant main effect of participant gender, $F(1, 348) = 27.14$, $p < .001$, $\eta_p^2 = .07$, a significant main effect of coworker gender, $F(1, 348) = 26.98$, $p < .001$, $\eta_p^2 = .07$, and a significant interaction effect between participant gender and coworker gender, $F(1, 348) = 7.51$, $p = .006$, $\eta_p^2 = .02$ (see Figure 2 and Table 4).

Simple effects analyses showed that in response to competition with a same-gender coworker, female participants expected a significantly higher level of relational damage ($M = 5.17$, $SD = 1.09$) than male participants did ($M = 4.17$, $SD = 1.21$), $F(1, 348) = 31.48$, $p < .001$, $\eta_p^2 = .08$, M_{diff} 95% CI: [0.65, 1.35]. Female and male participants marginally differed in the relational damage they anticipated in response to competition with an opposite-gender coworker ($M_{female} = 4.17$, $SD_{female} = 1.30$; $M_{male} = 3.86$, $SD_{male} = 1.08$), $F(1, 348) = 3.06$, $p = .081$, $\eta_p^2 = .01$, M_{diff} 95% CI: [-0.04, 0.66].

We conducted further simple effects analyses to examine whether female participants may just not like competition, regardless of coworker gender. If that had been the case, female participants should anticipate similar levels of relational damage after competing with a same-

or opposite-gender coworker. Contradicting a simple competition-aversion account, female participants anticipated a significantly higher level of relational damage in response to competition with a same-gender coworker ($M = 5.17$, $SD = 1.09$) than with an opposite-gender coworker ($M = 4.17$, $SD = 1.30$), $F(1, 348) = 28.86$, $p < .001$, $\eta_p^2 = .08$, M_{diff} 95% CI: [0.62, 1.37]. For male participants, coworker gender had a marginally significant effect on relational damage in response to competition ($M_{same-gender\ coworker} = 4.17$, $SD_{same-gender\ coworker} = 1.21$; $M_{opposite-gender\ coworker} = 3.86$, $SD_{opposite-gender\ coworker} = 1.08$), $F(1, 348) = 3.31$, $p = .070$, $\eta_p^2 = .01$, M_{diff} 95% CI: [-0.02, 0.64].

Overall, the level of anticipated relational damage was higher for female participants competing with a female coworker than for participants in any other cell, $ps < .001$.

Altogether, these results support Hypothesis 2.

Insert Figure 2 about here

Experience of negative emotions (Hypothesis 3A). A 2×2 ANOVA on negative emotions revealed a main effect of participant gender, $F(1, 348) = 16.39$, $p < .001$, $\eta_p^2 = .05$, a marginally significant main effect of coworker gender, $F(1, 348) = 3.48$, $p = .063$, $\eta_p^2 = .01$, and a marginally significant interaction effect between participant gender and coworker gender, $F(1, 348) = 3.44$, $p = .065$, $\eta_p^2 = .01$.

Supporting Hypothesis 3A, female participants competing with a same-gender coworker anticipated significantly more negative emotions ($M = 4.26$, $SD = 1.22$) than participants in any other cell, $ps > .012$ (see Table 4 for means). Simple effects analyses showed that in response to competition with a same-gender coworker, female participants anticipated more negative emotions ($M = 4.26$, $SD = 1.22$) than male participants did ($M = 3.41$, $SD = 1.36$), $F(1, 348) = 17.35$, $p < .001$, $\eta_p^2 = .05$, M_{diff} 95% CI: [0.46, 1.24]. In contrast, female and male participants' negative emotions were not different in response to competition

with an opposite-gender coworker ($M_{\text{female}} = 3.72$, $SD_{\text{female}} = 1.43$; $M_{\text{male}} = 3.41$, $SD_{\text{male}} = 1.34$), $F(1, 348) = 2.42$, $p = .121$, $\eta_p^2 = .01$, M_{diff} 95% CI: [-0.10, 0.73].

Insert Table 4 about here

The mediating role of negative emotions (Hypothesis 3B). We tested the mediating role of negative emotions (Hypothesis 3B) using the PROCESS macro (Hayes, 2013, Model 7) in SPSS. We calculated bootstrapped (with 1,000 resamples) 95% CIs for the indirect effect (denoted as ab) of participant gender on relational damage via negative emotions, conditional upon coworker gender (same vs. opposite).

The bootstrapped 95% CI [0.01, 0.71] for the index of moderated mediation (index = 0.31, $SE = 0.17$) excluded 0, indicating that the two conditional indirect effects for same- and opposite-gender coworkers were significantly different from each other. For participants who imagined competing with an opposite-gender coworker, the indirect effect of participant gender via negative emotions was not significantly different from 0 ($ab = 0.18$, $SE = 0.12$), 95% CI: [-0.04, 0.44]. In contrast, for participants who imagined competing with a same-gender coworker, the indirect effect was significantly different from 0 ($ab = 0.49$, $SE = 0.13$), 95% CI: [0.27, 0.72].

Altogether, these results support Hypothesis 3B.

At the same time, a test of the reverse mediation in which relational damage leads to negative emotions also produced an index of moderated mediation that was significantly different from 0 (index = 0.48, $SE = 0.18$), 95% CI: [0.16, 0.84]. Our data thus do not rule out the reverse mediation, and it is possible that the causal effect runs the other way, or it runs in both directions. More details of these predicted and reverse moderated mediation analyses and

model comparisons for this study (and for Studies 3 and 4) are available under Supplementary Materials.⁵

Discussion

Study 2 conceptually replicated Study 1 findings. First, both studies showed that women perceived competition with their same-gender coworkers as less desirable than men did.

Second, in line with Study 1 findings, Study 2 showed that female participants anticipated more negative emotions and a higher level of relational damage than male participants did in response to competing with a same-gender coworker. Although a divergence between anticipated and actual reactions is possible (T. D. Wilson & Gilbert, 2005), anticipated emotions are consequential because they cause people to approach or avoid situations (Baumeister, Vohs, DeWall, & Zhang, 2007). The anticipation of negative emotions and relational damage may thus lead women to dread and avoid situations in which they would have to compete with female coworkers.

Lastly, while there was evidence to support that negative emotions mediated the different levels of relational damage women and men anticipated in response to competing with a same-gender coworker, the data did not rule out the reverse causal direction in which relational damage mediates the effect of competition on anticipated negative emotions.

Study 3

Study 3 was designed with two additional objectives. First, we aimed to replicate the findings of Studies 1 and 2 in the context of an actual rather than a recalled or imagined work

⁵ An earlier version of Study 2 was conducted on a smaller sample ($N = 161$) with a slightly different measure of negative emotions (including *sad*, *distressed*, *hostile*, *irritable*, *annoyed*, and *threatened*). That study also found full support for Hypotheses 1 and 2. In partial support of Hypothesis 3A, female participants imagining to compete with a female coworker reported the highest level of negative emotions among all four groups. However, the mean in this condition was only marginally higher ($p = .093$) than the next highest mean. Hypothesis 3B was not supported: Even though the pattern of indirect effects paralleled what we found in the current Study 2, the index of moderated mediation was not significantly different from 0.

situation, while holding experimental control. Second, we wanted to contrast the effects of competition with the effects of cooperation.

Methods

Participants and design. Two-hundred and fourteen adults ($M_{\text{age}} = 25.43$, $SD_{\text{age}} = 5.58$; 50% female; 38% White, 28% Asian, 17% African, 2% Hispanic, and the rest non-specified; 92% with work experience; all fluent in English), recruited from a university subject pool, participated in this laboratory experiment in exchange for £10.00. This experiment had a 2 (participant gender: female vs. male) \times 2 (coworker gender: same gender vs. opposite gender) \times 2 (interdependence type: competition vs. cooperation) between-participants design. We predetermined sample size by advertising 250 available slots with the aim of obtaining at least 30 participants per cell. Due to participant availability, we could only obtain 214 participants.

Interdependence type manipulation and measures. Participants arrived at the lab in groups of 2 to 4. Two randomly paired participants were led to a room and informed that the experiment consisted of a team warm-up activity and a typing task. We introduced the team warm-up activity, adapted from prior research (Weldon, Blair, & Huebsch, 2000), to establish some rapport between participants. Specifically the two participants were given 4 minutes to briefly introduce themselves to each other and come up with a name and color for their team.

Interdependence type was manipulated by varying whether the two participants would compete against or cooperate with each other in the first round of the typing task (3 probes).

Participants in the *competition* [*cooperation*] condition were told by the experimenter:

“You will compete [cooperate] with each other [as a team] in three sets of typing tasks. Each typing task will have a 45 second time limit. Performance is measured by the number of words you type and also their accuracy. For each task, if one of you

performs better than the other, only that person will get 1 point [if at least one of you performs above the threshold set up in the system, both of you will get 1 point].”

Participants were told that their point scores were going to be used for a prize draw at the end of the experiment. For each of the three typing tasks, participants were given 45 seconds to type a short essay presented on their computer screen (adapted from Kilduff, Galinsky, Gallo, & Reade, 2012)⁶. The experimenter pretended to check participants’ performance on a terminal and announced the predetermined points after each probe. In the competition condition, the first probe was declared a tie, and for the remaining two probes, each participant ostensibly outperformed the other once. In the cooperation condition, participants were told that they both failed to perform above the threshold in one probe, resulting in zero points for the team, and for the other two probes, they were told that their team performance was above the threshold.

After completing the three probes, participants were led to two separate rooms to complete an online survey with the following measures. Participants first indicated *negative* and *positive emotions* they felt after completing the first round of the task (1 = *not at all*, 7 = *very much*). The 6-item *negative emotions* measure was composed of *sad*, *threatened*, *distressed*, *hostile*, *irritable*, and *annoyed* ($\alpha = .87$). The 4-item *positive emotions* measure was composed of *good*, *energized*, *excited*, and *enthusiastic* ($\alpha = .88$).

Then participants indicated how competitive they felt toward their coworkers (*state-competitiveness*) and how cooperative they felt toward their coworkers (*state-cooperativeness*) (1 = *not at all*, 7 = *very much*). With these measures, we aimed to test whether women might experience stronger competitive feelings and weaker cooperative feelings toward each other when they are asked to compete, as one might expect from

⁶ Performance on the task was also assessed in this study and in Study 4. Because participants received false feedback confounded with condition in both studies, the results cannot be conclusive. We are thus not reporting the results of these analyses. Exploratory analyses revealed no significant effects on performance in either study (details available upon request).

problematized accounts of female work relationships depicting women competing aggressively against each other. Although this is not a measure of competitive behaviors, we reasoned that the degree to which participants felt competitive toward their coworkers might correspond to the degree of their competitive behaviors in similar situations.

Participants answered six items from the 7-item *relational damage* measure used in Study 2 (1 = *strongly disagree*, 7 = *strongly agree*). We only removed the item “I would try to avoid this person,” because avoiding the other participant was not an option in the controlled laboratory setting. In addition, participants answered the following question, adapted from Study 1 (1 = *not at all*, 7 = *very much*): “How much did you like this person?” The six items from Study 2 and the liking question from Study 1 constituted our 7-item measure of *relational damage* ($\alpha = .77$).

Participants also answered a manipulation check question that examined whether they correctly perceived their interdependence type with the paired participant⁷.

Results

Table 5 presents descriptive statistics and zero-order correlations among variables. Participant race or age did not moderate any of the relationships between the predictor variables (participant gender, interdependence type, and coworker gender) and outcome variables (negative and positive emotions, state- competitiveness and cooperativeness, and relational damage) and thus will not be discussed further.

Insert Table 5 about here

⁷ In this study and in Study 4, we collected additional data to test whether the effect of competition would persist after a transition to cooperative interdependence. After completing the survey, participants returned to the original room to perform a second round of the task under cooperative interdependence, and then completed a survey parallel to the one they completed after the first round. We are not reporting the results of this second round here, because the overall pattern of results from this study and of Study 4 was inconclusive. Methodological details and results of the analyses are available under Supplementary Materials.

Manipulation check. Ninety-four percent of participants correctly reported their interdependence type with the other participant. We included all participants in the analyses.

Same-gender competition and work relationships (Hypothesis 2). Please see Table 6 for means of variables by condition.

Insert Table 6 about here

A $2 \times 2 \times 2$ ANOVA on relational damage revealed a marginally significant main effect of interdependence type, $F(1, 206) = 3.27, p = .072, \eta_p^2 = .02$, a significant interaction effect between participant gender and coworker gender, $F(1, 206) = 9.25, p = .003, \eta_p^2 = .04$, and a significant interaction effect between coworker gender and interdependence type, $F(1, 206) = 4.03, p = .046, \eta_p^2 = .02$. The 3-way interaction effect did not reach significance, $F(1, 206) = 2.58, p = .110, \eta_p^2 = .01$.

In response to same-gender competition, female participants reported a significantly higher level of relational damage ($M = 2.91, SD = 0.83$) than male participants did ($M = 2.27, SD = 0.59$), $F(1, 206) = 13.08, p < .001, \eta_p^2 = .06, M_{diff}$ 95% CI: [0.25, 1.03]. In contrast, when competing with an opposite-gender coworker, female and male participants did not report significantly different levels of relational damage, $F(1, 206) = 1.15, p = .286, \eta_p^2 = .01, M_{diff}$ 95% CI: [-0.53, 0.14]. Female participants competing with a same-gender coworker also reported a higher level of relational damage than female participants competing with an opposite-gender coworker ($M = 2.25, SD = 0.57$), $F(1, 206) = 13.36, p < .001, \eta_p^2 = .06, M_{diff}$ 95% CI: [0.27, 1.06]. In contrast, male participants did not report significantly different levels of relational damage in response to same-gender versus opposite-gender competition, $F(1, 206) = 10.97, p = .326, \eta_p^2 = .01, M_{diff}$ 95% CI: [-0.51, 0.15].

Finally, female participants competing with a same-gender coworker reported a higher level of relational damage ($M = 2.91, SD = 0.83$) than female participants cooperating with a

same-gender coworker ($M = 2.33$, $SD = 0.79$), $F(1, 206) = 9.94$, $p = .002$, $\eta_p^2 = .05$, M_{diff} 95% CI: [0.13, 1.03]. There was no effect of interdependence on relational damage for female participants interacting with an opposite-gender coworker, $F(1, 206) = 0.17$, $p = .677$, $\eta_p^2 < .01$, M_{diff} 95% CI: [-0.41, 0.26].

Altogether, these results support Hypothesis 2 by showing that the highest level of relational damage was experienced by female participants competing with another female ($ps < .01$).

The experience of negative emotions (Hypothesis 3A). A $2 \times 2 \times 2$ ANOVA on negative emotions revealed a marginally significant main effect of interdependence type, $F(1, 200) = 3.71$, $p = .056$, $\eta_p^2 = .02$, a significant interaction effect between participant gender and coworker gender, $F(1, 200) = 5.78$, $p = .017$, $\eta_p^2 = .03$, and a significant interaction effect between interdependence type and coworker gender, $F(1, 200) = 6.46$, $p = .012$, $\eta_p^2 = .03$. The 3-way interaction did not reach significance, $F(1, 200) = 0.04$, $p = .837$, $\eta_p^2 < .001$.

Among participants in the competition conditions, female participants competing with a female coworker reported the highest mean of all cells ($M = 2.68$, $SD = 1.28$) (see Table 6 for means). This mean was significantly higher than the mean for female participants competing with an opposite-gender participant ($M = 1.78$, $SD = 1.02$), $F(1, 200) = 9.25$, $p = .003$, $\eta_p^2 = .04$, M_{diff} 95% CI: [0.26, 1.54] and the mean for male participants competing with an opposite-gender coworker ($M = 2.08$, $SD = 0.97$), $F(1, 200) = 4.02$, $p = .046$, $\eta_p^2 = .02$, M_{diff} 95% CI [0.01, 1.21]; it was not significantly different from the mean for male participants competing with a same-gender coworker ($M = 2.33$, $SD = 1.32$), $F(1, 200) = 1.43$, $p = .233$, $\eta_p^2 = .01$, M_{diff} 95% CI: [-0.36, 1.06].

Altogether these results provide only partial support for Hypothesis 3A.

The mediating role of negative emotions (Hypothesis 3B). We tested the mediating role of negative emotions (Hypothesis 3B) using the PROCESS macro (Hayes, 2013, Model

11) in SPSS. We calculated bootstrapped (with 1,000 resamples) 95% CIs for the indirect effect (denoted as ab) of interdependence type on relational damage via negative emotions, conditional upon participant gender, coworker gender (same vs. opposite), and their interaction term (see Figure 3).

The bootstrapped 95% CI for the conditional indirect effect of competition (as opposed to cooperation) did not include 0 for female participants interacting with a same-gender coworker ($ab = 0.13$, $SE = 0.07$), 95% CI: [0.01, 0.30], and it also did not include 0 for male participants interacting with a same-gender coworker ($ab = 0.16$, $SE = 0.06$), 95% CI: [0.04, 0.30]. The conditional indirect effects for opposite-gender coworkers were not significantly different from 0 for both female ($ab = -0.02$, $SE = 0.07$), 95% CI: [-0.16, 0.12], and male participants ($ab = -0.02$, $SE = 0.07$), 95% CI: [-0.19, 0.30].

Insert Figure 3 about here

We also tested the reverse mediation in which the effect of interdependence on negative emotions is mediated through relational damage and found support for this model. The confidence interval for conditional indirect effects of competition (as opposed to cooperation) did not include 0 only for female participants interacting with a same-gender coworker ($ab = 0.33$, $SE = 0.16$), 95% CI: [0.08, 0.68]. Other conditional indirect effects did not significantly differ from 0, all bootstrapped 95% CIs including 0. These results suggest that reverse mediation is plausible.

Altogether, these results do not support Hypothesis 3B.

State-competitiveness and state-cooperativeness (additional analyses). We conducted additional analyses to test whether women, compared with men, might feel more competitive and less cooperative in response to competition with their same-gender coworker. This would be expected if the problematized accounts of female-female relationships were true, and if

women felt more competitive when competing with other women (than men did when competing with other men), which could also lead them compete more aggressively with other females. As discussed below, the results did not support this possibility.

A $2 \times 2 \times 2$ ANOVA on state-competitiveness revealed only a significant main effect of interdependence type, $F(1, 206) = 6.64, p = .011, \eta_p^2 = .03$, and a marginally significant interaction effect between interdependence type and coworker gender, $F(1, 206) = 2.91, p = .089, \eta_p^2 = .01$ (all the other effects were non-significant, $ps > .211$). A $2 \times 2 \times 2$ ANOVA on state-cooperativeness revealed only a significant main effect of interdependence type, $F(1, 205) = 8.15, p = .005, \eta_p^2 = .04$ (all the other effects were non-significant, $ps > .130$).

These results simply showed that our manipulations were effective: People felt more competitive after competition and more cooperative after cooperation. Given the absence of significant interactions between participant and coworker gender, there was no support for the possibility that same-gender interactions cause more competitive and less cooperative feelings in women.

Discussion

Study 3 findings provided further support for Hypothesis 2, which states that women's relationships with other women suffer in response to competition. Female participants competing with another female reported a higher level of relational damage than female participants competing with a male or male participants competing with a male or female.

Study 3 findings provided partial support for Hypothesis 3A: Female participants competing with another female reported a higher level of negative emotions than participants in any other cell. However, this mean was not significantly different from the next highest cell mean. We also did not find support for our proposed mediational mechanism (Hypothesis 3B) in this study.

Although unhypothesized, the results on the measures of state-competitiveness and state-cooperativeness showed that when placed in an identical situation, women and men did not feel different levels of competitiveness toward their peers. Women's negative reactions to same-gender competition may thus not be necessarily accompanied by greater feelings of competitiveness. This result stands in contradiction to images of nasty female-female competition.

Study 4

Study 4 aimed to replicate Study 3 findings using a different task. Because Studies 1, 2, and 3 did not find gender differences in response to opposite-gender competition for the variables of interest, Study 4 focused on same-gender competition only.

Methods

Participants and design. One-hundred and four adults ($M_{\text{age}} = 26.36$, $SD_{\text{age}} = 10.07$; 54 % female; 54% White and 46 % Asian; 93% with work experience; all fluent in English) recruited from a university subject pool participated in this laboratory experiment in exchange for £10.00. The experiment used a 2 (participant gender: female vs. male) \times 2 (interdependence type: competition vs. cooperation) between-participants design. We predetermined the sample size by advertising 100 available slots with the aim of obtaining at least 25 participants per cell, given constraints in participant availability.

Interdependence type manipulation and measures. Participants arrived at the lab in groups of 2 to 4. In this study, we paired participants with participants of the same gender and same race (White or Asian). The same-gender same-race participant pairs were led to a room and informed by the experimenter that they would participate in a dot-estimation task that was designed to measure cognitive abilities and general intelligence (Gerard & Hoyt, 1974; L. A. Williams & DeSteno, 2008). As in Study 3, before starting the dot-estimation task,

participants were given 3-4 minutes to briefly introduce themselves to each other and come up with a name and color for their team.

Interdependence type was manipulated by varying whether the two participants would compete against or cooperate with each other. Participants in the *competition* [*cooperation*] condition were told:

“You will estimate the number of the dots five times, and your scores will depend on your individual performance relative to each other [your joint performance together]. Each time, the person whose estimation is closer to the actual number than the other person, and is within $\pm 10\%$ margin of the actual number will get one point while the other person will get none [if at least one you gives an estimation that is within $\pm 10\%$ margin of the actual number, both of you will get one point respectively].”

Participants were told that the point scores were going to be used for a prize draw at the end of the experiment. For each of the five dot-estimation probes, participants were given 10 seconds to estimate the number of dots (which varied between 65 and 301) presented on a piece of paper. The experimenter silently checked each participant's estimate and announced the predetermined scores after each probe, as in Study 3. In the competition condition, both participants ostensibly outperformed each other twice, and both failed once to fall within the $\pm 10\%$ margin, ending in a draw. In the cooperation condition, participants got three points but failed to get a point twice by falling outside the margin.

After completing the task, participants were led to two separate rooms to complete an online survey with the following measures. The 6-item *negative emotions* ($\alpha = .88$) and the 4-item *positive emotions* ($\alpha = .84$) measures were identical to those used in Study 3. Then participants indicated *relational damage* answering the same 7 items as in Study 3 ($\alpha = .82$).

Participants also answered a manipulation check question that asked whether their interdependence with the paired participant was competitive or cooperative⁸.

Results

Table 7 presents the descriptive statistics and zero-order correlations among variables. Participant race or age did not moderate any of the relationships between the predictor variables (participant gender and interdependence type) and outcome variables (negative and positive emotions, and relational damage) and thus will not be discussed further.

Insert Table 7 about here

Manipulation check. Ninety-eight percent of participants correctly answered the question about their interdependence type with the other participant. We included all participants in our analyses.

Same-gender competition and work relationships (Hypothesis 2). Please see Table 8 for means of variables by condition.

Insert Table 8 about here

A 2×2 ANOVA found no significant main effect for participant gender ($p = .320$), a marginally significant main effect for interdependence type, $F(1, 100) = 3.23, p = .075, \eta_p^2 = .03$, and a significant interaction effect between participant gender and interdependence type, $F(1, 100) = 13.52, p < .001, \eta_p^2 = .12$.

After competing with their same-gender coworker, female participants reported a marginally higher level of relational damage ($M = 2.54, SD = 0.64$) than male participants did ($M = 2.20, SD = 0.57$), $F(1, 100) = 3.47, p = .066, \eta_p^2 = .03, M_{diff} 95\% CI: [-0.01, 0.69]$.

⁸ As in Study 3, after completing the survey participants returned to the original room to perform a second round of the task under cooperative interdependence. Methodological details and results of the analyses for the second round are available under Supplementary Materials.

Female participants also reported a higher level of relational damage after competing ($M = 2.54$, $SD = 0.64$) than after cooperating with their same-gender coworker ($M = 1.83$, $SD = 0.48$), $F(1, 100) = 16.18$, $p < .001$, $\eta_p^2 = .14$, M_{diff} 95% CI: [0.41, 1.01]. In contrast, male participants did not report significantly different levels of relational damage in response to competition ($M = 2.20$, $SD = 0.57$) and cooperation ($M = 2.44$, $SD = 0.91$), $F(1, 100) = 1.64$, $p = .203$, $\eta_p^2 = .02$, M_{diff} 95% CI: [-0.68, 0.20]. These results provide support for Hypothesis 2 by showing that the highest level of relational damage was experienced by female participants competing with another female.

While female participants experienced the highest level of relational damage in response to competition with their same-gender coworker, it is noteworthy that they also reported a significantly lower level of relational damage in response to cooperation with their same-gender coworker compared with participants in any other cell, $ps < .047$. We turn to this point in the General Discussion.

Experience of negative emotions (Hypothesis 3A). Consistent with the results on relational damage, a 2×2 ANOVA on negative emotions revealed a significant interaction effect between participant gender and interdependence type, $F(1, 100) = 6.80$, $p = .011$, $\eta_p^2 = .06$ (see Table 8 for means). There was also a significant effect of interdependence type, $F(1, 100) = 10.71$, $p = .001$, $\eta_p^2 = .10$ (the effect of participant gender was non-significant: $p = .513$).

In support of Hypothesis 3A, after competing with their same-gender coworker, female participants reported a higher level of negative emotions ($M = 2.47$, $SD = 1.14$) than male participants did ($M = 1.85$, $SD = 1.06$), $F(1, 100) = 5.16$, $p = .025$, $\eta_p^2 = .05$, M_{diff} 95% CI: [0.01, 1.25]. In contrast, after cooperating with their same-gender coworker, there was no gender difference in negative emotions ($M_{female\ participant} = 1.36$, $SD_{female\ participant} = 0.71$; M_{male}

participant = 1.73, $SD_{\text{male participant}} = 0.88$), $F(1, 100) = 1.97$, $p = .164$, $\eta_p^2 = .02$, M_{diff} 95% CI: [-0.79, 0.07].

The mediating role of negative emotions (Hypothesis 3B). We tested the mediating role of negative emotions using the PROCESS macro (Hayes, 2013, Model 7) in SPSS. As in Studies 2 and 3, we calculated bootstrapped (with 1,000 resamples) 95% CIs for the indirect effect (denoted as *ab*) of interdependence type on relational damage via negative emotions, conditional on participant gender.

The bootstrapped 95% CI [0.03, 0.55] for the index of moderated mediation (index = 0.22, $SE = 0.14$) excluded 0, indicating that the two conditional indirect effects for female and male participants were significantly different from each other. For female participants, the indirect effect of interdependence type via negative emotions was significantly different from 0 ($ab = -0.25$, $SE = 0.10$), 95% CI: [-0.49, -0.09]. In contrast, for male participants, the indirect effect was not significantly different from 0 ($ab = -0.03$, $SE = 0.07$), 95% CI: [-0.15, 0.11].

Altogether, these results support Hypothesis 3B.

While these results support the mediating role of negative emotions in the experience of relational damage, we could again not rule out the reverse causal path or a bidirectional path: A test of the reverse mediation in which relational damage leads to negative emotions also produced an index of moderated mediation that was significantly different from 0 (index = 0.42, $SE = 0.20$), 95% CI: [0.09, 0.89].

Discussion

In Study 4, we again found that same-gender competition was associated with negative relational outcomes for women but not for men. In line with Hypothesis 3A, women in competition with other women also experienced more negative emotions than men competing with men. While there was evidence supporting the role of these negative emotions

mediating the effect of interdependence type on relational damage, there also was evidence for reverse mediation. This prevents us from claiming having found clear support for our proposed mediational mechanism.

In this study, we also found unhypothesized gender differences in response to cooperation. Women reported a lower level of relational damage for their same-gender coworkers after cooperating with them than male participants did for their same-gender coworkers. These results suggest the importance of studying the role of structural cooperation in female-female relationships in addition to structural competition.

General Discussion

Building on the insight that the female peer culture values harmony and the appearance of equality, we suggested and found that compared with men, women consider competition with their same-gender coworkers as less desirable and acceptable, and their relationships with other women suffer from the presence of competition, whereas men's same-gender relationships do not. We also found general support for our prediction that women competing with women experience more negative emotions than women competing with men and men competing with women or men. Whereas two of the three studies supported the proposed mediational mechanism, the results of all three studies were compatible with the reverse mechanism.

Theoretical Implications

Our research makes two important theoretical contributions. First, the findings extend our knowledge on gender differences in competitiveness by focusing on the relational consequences of competition. A relational perspective, we believe, is critical to understand competitive behavior at work, as competition in organizations often occurs within existing relationships, and relational factors are important determinants of work outcomes.

Second, our findings add to the general understanding of female-female work relationships. Previous research on problematic work relationships has often focused on women's reactions to other women in the absence of actual competitive interdependence (e.g., Duguid, 2011; Ely, 1994). By focusing on situations of actual competitive interdependence and not on competitive behaviors motivated by a subjective sense of threat, we add a distinct and complementary perspective to the knowledge base concerning competitive interactions among women.

We would like to be clear about what our findings do *not* show, and in particular, why and how they do not affirm old tropes such as catfights and mean girls. In direct contrast to these problematized images of female work relationships, and consistent with our account that women are not socialized to compete, Study 1 findings showed that women reported a lower level of competitiveness with their same-gender coworkers than men did. The average relationship between two female coworkers may be thus less competitive than the average relationship between two male coworkers—a point that directly contradicts the characterization of women's work relationships as catfights. Moreover, if women were unable to work together and had an inner urge to be competitive with one another, they would be expected to dislike each other even when they were asked to cooperate. Yet, the evidence suggests the contrary. Women reported higher relational damage only under competition, and not under cooperation. Women cooperating with another woman even reported the lowest level of relational damage of all in Study 4. Our findings thus place the cause of relational strain on the competitively structured environment and not on the inability of women to work together, as the mean girls or catfight tropes imply.

Our measures only captured relational damage and not *mean* or *nasty* behaviors. Because competition is incompatible with norms governing positive relationships among women, its presence may signal the lack of a relationship or the existence of an antagonistic

relationship. If a relationship is non-existent or antagonistic, women may be released from the female peer relationship norms prescribing niceness. Therefore, the relational damage we observed among women may be a precursor to nasty behaviors by some women under some circumstances. Whereas our study designs did not allow us to observe any nasty behaviors, our only proxy was a question in Study 3, which asked participants how competitive they felt toward their competitor. We found no gender differences or interaction effect with the competitor's gender in response to this question. To the extent that a sense of competitiveness toward a competitor is a proxy to nasty competitive behaviors, our results have failed to establish an empirical link between same-gender competition and such behaviors for women.

Practical Implications

A better understanding of gender differences in response to same-gender competition has practical relevance as well. The findings of the present research suggest that competitively structured environments will not be conducive to thriving peer relationships among women. This may be a source of disadvantage for women at work because positive work relationships are a source of generative and emotional energy (Dutton & Ragins, 2007) related to a large set of positive job-related outcomes at the individual and organizational levels. The prevalent competitive norms and practices in many workplaces (Britton, 2000) may put women and their organizations at a disadvantage.

Moreover, the gender differences in response to competition may be contributing to gender disparities in the workplace. Organizational hierarchies are shaped through daily patterns of competition and cooperation among workers. Successful navigation of this environment requires being comfortable with competition. To the extent that competition taxes women and their relationships with each other, women will be disadvantaged in their career progression. These differences could thus partly explain why organizational hierarchies are characterized by male predominance (Bertrand & Hallock, 2000; Bielby & Baron, 1986;

Ely & Meyerson, 2000). Recognition of this factor would help steer efforts for gender equality in the workplace to more productive avenues.

Much research and commentary bemoaning the lack of women in senior positions in organizational hierarchies point to structural barriers, such as women's lack of access to influence networks (e.g., Ibarra, 1997), sociological factors, such as work-family conflict arising from women's roles as the primary caregivers in their families (e.g., Allen, Herst, Bruck, & Sutton, 2000), and psychological factors (e.g., Rudman, 1998), such as explicit and implicit stereotypes (cf. Barsh & Yee, 2011). By showing the negative relational effects of competition on women when competing with fellow women, our research suggests that organizational structures that stipulate competition as a condition for advancement may be partially responsible for the dearth of women in senior positions. Concurrently, the preliminary findings on women's stronger responsiveness to cooperative interdependence in Study 4 present the possibility that cooperative structures may benefit women more than they benefit men, at least, in terms of relational outcomes. An aversion to compete with other women may not be a liability that prevents women from achieving excellence and productivity if they are able to get there through cooperation. Egalitarian organizational structures with distributed leadership and collaborative work cultures may thus be the right environment for women (and perhaps men too) to succeed (also see Nicholson, 2001). Research examining how such organizational features relate to women's advancement may clarify the validity of this proposition.

Limitations and Directions for Future Research

The present research can be extended in several directions. First, future research might investigate several variables that may moderate the negative effects of same-gender competition on women's work relationships. To begin with, future research can examine how

women's and men's levels of cooperation with their same-gender coworkers moderate their responses to structural competition with them.

In addition to levels of cooperation strength, cultural factors may also moderate the gender difference in response to same-gender competition. Women who are socialized in micro female cultures with competitive norms may experience lower levels of relational damage following competition. For example, girls who play competitive sports may come to see competition with female peers as more acceptable than those who do not. The macro culture may also moderate the gender differences in response to competition. In societies with more traditional cultures and gender-segregated socialization (e.g., East Asian countries), the negative effects of competition on women's relationships can be greater when compared with those in more gender-egalitarian societies (e.g., northern European countries). The overall acceptability of competitiveness in a culture may also be a moderating factor. For example, American culture relishes competition (Kohn, 1992), whereas competitiveness is undesirable in some other cultures (Bonta, 1997). If competitiveness is counter-normative for boys and girls alike, would male relationships also suffer from competition? Or, would a gender difference still exist, albeit a smaller one, that protects male relationships in the presence of competition? Cross-cultural empirical work is needed to answer these questions.

Not only cultural differences but also individual differences can moderate the observed effects. Whereas a sense of competition can be provoked by arrangements of rewards and tasks (structural competition), there are also individual differences that dispose some people to perceive and engage in competition more than others do, such as a trait that "concerns the desire on the part of an individual to be number one" (Kohn, 1992, p.4). These differences in trait-level competitiveness may interact with structural elements, such that some workers will experience a subjective sense of competition in the absence of competitive structural arrangements while some will not experience it, even when they are under structural

competition. Future research may investigate the ways in which individual variation in competitiveness is associated with relational outcomes in same-gender competition.

In addition to moderators, more research into mediating processes will enhance our understanding of the phenomenon. Whereas we found evidence for the proposed mediational mechanism in Studies 2 and 4, even stronger evidence emerged for the reverse causal mechanism in Studies 2, 3, and 4, by which relational damage leads to negative affect. Therefore, we cannot claim with confidence to have identified a mediator of the phenomenon. Future research may explore other mediating mechanisms.

Finally, whereas the scope of the present research was limited to relational consequences, further research may identify additional outcomes that might accompany or follow relational damage women experience in response to same-gender competition. One such variable worthy of further study is performance. If research finds that women's performance suffers as a result of their competitive interactions with their same-gender peers (cf. Gneezy & Rustichini, 2004), this has important implications for how organizations should structure tasks. Performance implications of same-gender competition is of theoretical interest, as well, because extant perspectives on gender and competition draw on stereotype threat theory (Steele & Aronson, 1995) which predicts that women may experience greater performance impairments when competing against men in domains in which they are stigmatized (e.g., Gneezy, Niederle, & Rustichini, 2003). In contrast, our results suggest that competing against women may have its own costs to the extent that relational concerns hurt performance.

Conclusion

We examined and found support for the proposition that women react more negatively to competing with other women, compared to competing with men, and more negatively than men competing with other men. These adverse reactions may be the basis for the claims that

competition between women is more vicious than competition between men. But as we have noted, women are not more competitive toward other women than men are toward other men. It is just that they experience more negative relational consequences when they have to compete with their same-gender peers.

References

- Allen, T. D., Herst, D. E., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: a review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278–308. doi: 10.1037/1076-8998.5.2.278
- Armour, S. (2005). Do women compete in unhealthy ways at work? *USA Today*.
http://usatoday30.usatoday.com/money/workplace/2005-12-29-women-bosses-usat_x.htm
- Bakan, D. (1966). *The duality of human existence*. Chicago, IL: Rand McNally.
- Barsh, J., & Yee, L. (2011). Unlocking the full potential of women in the US economy. *Mckinsey and Company*.
http://www.mckinsey.com/client_service/organization/latest_thinking/unlocking_the_full_potential
- Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review, 11*(2), 167–203. doi: 10.1177/1088868307301033
- Bem, S. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*, 155–162. doi: 10.1037/h0036215
- Benenson, J. F., & Schinazi, J. (2004). Sex differences in reactions to outperforming same - sex friends. *British Journal of Developmental Psychology, 22*(3), 317–333. doi: 10.1348/0261510041552729
- Bertrand, M., & Hallock, K. F. (2000). The gender gap in top corporate jobs: National Bureau of Economic Research.
- Bielby, W. T., & Baron, J. N. (1986). Men and women at work: Sex segregation and statistical discrimination. *American Journal of Sociology, 91*(4), 759–799. doi: 10.1086/228350
- Bonta, B. D. (1997). Cooperation and competition in peaceful societies. *Psychological Bulletin, 121*(2), 299–320. doi: 10.1037/0033-2909.121.2.299
- Britton, D. M. (2000). The epistemology of the gendered organization. *Gender & Society, 14*(3), 418–434. doi: 10.1177/089124300014003004
- Broverman, I. K., Broverman, D. M., Clarkson, F. E., Rosenkrantz, P. S., & Vogel, S. R. (1970). Sex-role stereotypes and clinical judgments of mental health. *Journal of Consulting and Clinical Psychology, 34*(1), 1–7.
- Broverman, I. K., Vogel, S. R., Broverman, D. M., Clarkson, F. E., & Rosenkrantz, P. S. (1972). Sex - role stereotypes: A current appraisal. *Journal of Social Issues, 28*(2), 59–78. doi: 10.1111/j.1540-4560.1972.tb00018.x

- Buhrmester, M. D., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3–5. doi: 10.1177/1745691610393980
- Burda, P. C., Vaux, A., & Schill, T. (1984). Social support resources variation across sex and sex role. *Personality and Social Psychology Bulletin*, 10(1), 119–126. doi: 10.1177/0146167284101014
- Campbell, A. (2013). *A mind of her own: The evolutionary psychology of women*. Oxford, England: Oxford University Press.
- Caspi, A. (2000). The child is father of the man: personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology*, 78(1), 158–172. doi: 10.1037/0022-3514.78.1.158
- Charles, M., & Grusky, D. B. (2005). *Occupational ghettos: The worldwide segregation of women and men*. Stanford, CA: Stanford University Press.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, A. P. Fiske & G. Linzey (Eds.), *The handbook of social psychology*. Boston, MA: McGraw-Hill.
- Cooter, R. D. (2000). Three effects of social norms on law: expression, deterrence, and internalization. *Oregon Law Review*, 79(1), 1–22.
- Couch, G. (2013). Tour culture different for women. *Fox Sports*.
<http://msn.foxsports.com/tennis/story/wimbledon-men-women-players-culture-dramatically-different-maria-sharapova-serena-williams-feud-063013>
- Datta Gupta, N., Poulsen, A., & Villeval, M. C. (2013). Gender matching and competitiveness: Experimental evidence. *Economic Inquiry*, 51(1), 816–835. doi: 10.1111/j.1465-7295.2011.00378.x
- Derks, B., Ellemers, N., van Laar, C., & de Groot, K. (2011). Do sexist organizational cultures create the Queen Bee? *British Journal of Social Psychology*, 50(3), 519–535. doi: 10.1348/014466610X525280
- Derks, B., Van Laar, C., Ellemers, N., & de Groot, K. (2011). Gender-bias primes elicit queen-bee responses among senior policewomen. *Psychological Science*, 22(10), 1243–1249. doi: 10.1177/0956797611417258
- Drexler, P. (2014). Women behaving badly in LinkedIn exchange. *CNN*.
<http://edition.cnn.com/2014/03/01/opinion/drexler-linkedin-exchange/>
- Duguid, M. (2011). Female tokens in high-prestige work groups: Catalysts or inhibitors of group diversification? *Organizational Behavior and Human Decision Processes*, 116(1), 104–115. doi: 10.1016/j.obhdp.2011.05.009
- Dutton, J. E., & Ragins, B. R. (2007). *Exploring positive relationships at work: Building a theoretical and research foundation*. Mahwah, NJ: Erlbaum.

- Eagly, A. H., & Mladinic, A. (1989). Gender stereotypes and attitudes toward women and men. *Personality and Social Psychology Bulletin*, *15*(4), 543–558. doi: 10.1177/0146167289154008
- Eccles, J. S., & Harold, R. D. (1991). Gender differences in sport involvement: Applying the Eccles' expectancy-value model. *Journal of Applied Sport Psychology*, *3*(1), 7–35. doi: 10.1080/10413209108406432
- Elfenbein, H. A. (2007). Emotion in organizations: A review and theoretical integration. *Academy of Management Annals*, *1*(1), 315–386. doi: 10.1037/0033-2909.128.2.203
- Ellemers, N., Heuvel, H., Gilder, D., Maass, A., & Bonvini, A. (2004). The underrepresentation of women in science: differential commitment or the queen bee syndrome? *British Journal of Social Psychology*, *43*(3), 315–338. doi: 10.1348/0144666042037999
- Elliot, A. J., & Harackiewicz, J. M. (1994). Goal setting, achievement orientation, and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, *66*(5), 968–980. doi: 10.1037/0022-3514.66.5.968
- Elster, J. (1989). Social norms and economic theory. *Journal of Economic Perspectives*, *3*(4), 99–117. doi: 10.1257/jep.3.4.99
- Ely, R. J. (1994). The effects of organizational demographics and social identity on relationships among professional women. *Administrative Science Quarterly*, *39*(2), 203–238. doi: 10.2307/2393234
- Ely, R. J., & Meyerson, D. E. (2000). Theories of gender in organizations: A new approach to organizational analysis and change. *Research in Organizational Behavior*, *22*(NA), 103–151. doi: 10.1016/S0191-3085(00)22004-2
- Fehr, E., & Fischbacher, U. (2004). Third-party punishment and social norms. *Evolution and Human Behavior*, *25*(2), 63–87. doi: 10.1016/S1090-5138(04)00005-4
- Fineman, S. (1993). Organizations as emotional arenas. In S. Fineman (Ed.), *Emotions in organizations* (pp. 9–35). London, England: Sage Publications.
- Frijda, N. H. (1988). The laws of emotion. *American Psychologist*, *43*(5), 349–358. doi: 10.1037//0003-066X.43.5.349
- Garcia-Retamero, R., & López-Zafra, E. (2006). Prejudice against women in male-congenial environments: Perceptions of gender role congruity in leadership. *Sex Roles*, *55*(1-2), 51–61. doi: 10.1007/s11199-006-9068-1
- Gerard, H. B., & Hoyt, M. F. (1974). Distinctiveness of social categorization and attitude toward ingroup members. *Journal of Personality and Social Psychology*, *29*(6), 836–842. doi: 10.1037/h0036204
- Glick, P., & Fiske, S. T. (1999). Sexism and other "isms": Independence, status, and the ambivalent content of stereotypes. In W. B. Swann, J. H. Langlois & L. A. Gilbert (Eds.), *Sexism and stereotypes in modern society* (Vol. 193–221). Washington, DC: American Psychological Association.

- Gneezy, U., Leonard, K. L., & List, J. A. (2009). Gender differences in competition: Evidence from a matrilineal and a patriarchal society. *Econometrica*, *77*(5), 1637–1664. doi: 10.3982/ECTA6690
- Gneezy, U., Niederle, M., & Rustichini, A. (2003). Performance in competitive environments: Gender differences. *Quarterly Journal of Economics*, *118*(3), 1049–1074. doi: 10.1162/00335530360698496
- Gneezy, U., & Rustichini, A. (2004). Gender and competition at a young age. *American Economic Review*, *94*(2), 377–381. doi: 10.1257/0002828041301821
- Goodwin, M. H. (1990). *He-said-she-said: Talk as social organization among black children*. Bloomington, IN: Indiana University Press.
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: The Guilford Press.
- Hox, J. J. (2010). *Multilevel analysis: Techniques and applications* (2nd ed.). New York, NY: Routledge.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. doi: 10.1080/10705519909540118
- Ibarra, H. (1997). Paving an alternative route: Gender differences in managerial networks. *Social Psychology Quarterly*, *60*(1), 91–102. doi: 10.2307/2787014
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692–724.
- Kahn, W. A. (1992). To be fully there: Psychological presence at work. *Human Relations*, *45*(4), 321–349. doi: 10.1177/001872679204500402
- Kilduff, G. J., Galinsky, A., Gallo, E., & Reade, J. (2012). *Whatever it takes: Rivalry and unethical behavior*. Paper presented at the International Association for Conflict Management 25th Annual Conference, Spier, South-Africa.
- Kimmel, M. J., Pruitt, D. G., Magenau, J. M., Konar-Goldband, E., & Carnevale, P. J. (1980). Effects of trust, aspiration, and gender on negotiation tactics. *Journal of Personality and Social Psychology*, *38*(1), 9–22. doi: 10.1037/0022-3514.38.1.9
- Kinicki, A. J., McKee-Ryan, F. M., Schriesheim, C. A., & Carson, K. P. (2002). Assessing the construct validity of the job descriptive index: a review and meta-analysis. *Journal of Applied Psychology*, *87*(1), 14–32. doi: 10.1037/0021-9010.87.1.14
- Kline, R. B. (2010). *Principles and practice of structural equation modeling*. New York, NY: Guilford Press.
- Kohn, A. (1992). *No contest: The case against competition*. Boston, MA: Houghton Mifflin

- Kram, K. E., & Isabella, L. A. (1985). Mentoring alternatives: The role of peer relationships in career development. *Academy of Management Journal*, 28(1), 110–132. doi: 10.2307/256064
- Leaper, C. (1991). Influence and involvement in children's discourse: Age, gender, and partner effects. *Child Development*, 62(4), 797–811. doi: 10.1111/j.1467-8624.1991.tb01570.x
- Lever, J. (1978). Sex differences in the complexity of children's play and games. *American Sociological Review*, 43(4), 471–483. doi: 10.2307/2094773
- Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist*, 45(4), 513–520. doi: 10.1037/0003-066X.45.4.513
- Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Harvard University Press.
- McCullough, M. E., Rachal, K. C., Sandage, S. J., Worthington Jr, E. L., Brown, S. W., & Hight, T. L. (1998). Interpersonal forgiving in close relationships: II. Theoretical elaboration and measurement. *Journal of Personality and Social Psychology*, 75(6), 1586–1603. doi: 10.1037/0022-3514.75.6.1586
- Milligan, S. (2013). Why the misogynist media are trying to create a Hillary Clinton-Elizabeth Warren-Caroline Kennedy catfight. *US News*.
<http://www.usnews.com/opinion/blogs/susan-milligan/2013/12/03/why-the-media-want-a-hillary-clinton-elizabeth-warren-catfight>
- Moskowitz, D. S., Suh, E. J., & Desaulniers, J. (1994). Situational influences on gender differences in agency and communion. *Journal of Personality and Social Psychology*, 66(4), 753–761. doi: 10.1037/0022-3514.66.4.753
- Nicholson, N. (2001). Managing the human animal. *Industrial Management & Data Systems*, 101(2), 90–91. doi: 10.1108/imds.2001.101.2.90.4
- Niederle, M., & Vesterlund, L. (2011). Gender and competition. *Annual Review of Economics*, 3, 601–630. doi: 10.1146/annurev-economics-111809-125122
- Olson, J. M., & Zanna, M. P. (1993). Attitudes and attitude change. *Annual Review of Psychology*, 44(1), 117–154. doi: 10.1146/annurev.ps.44.020193.001001
- Parks-Stamm, E. J., Heilman, M. E., & Hearn, K. A. (2008). Motivated to penalize: Women's strategic rejection of successful women. *Personality and Social Psychology Bulletin*, 34(2), 237–247. doi: 10.1177/0146167207310027
- Robson, D. (2014). Frenemy territory: No love lost among some women tennis stars. *USA Today Sports*. <http://www.usatoday.com/story/sports/tennis/2014/01/19/sloane-stephens-victoria-azarenka-maria-sharapova-grigor-dimitov-john-isner-australian-open-mike-bryan-bob-bryan/4647113/>
- Rose, A. J., & Asher, S. R. (2004). Children's strategies and goals in response to help - giving and help - seeking tasks within a friendship. *Child Development*, 75(3), 749–763. doi: 10.1111/j.1467-8624.2004.00704.x

- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, *132*(1), 98–131. doi: 10.1037/0033-2909.132.1.98
- Rudman, L. A. (1998). Self-promotion as a risk factor for women: The costs and benefits of counterstereotypical impression management. *Journal of Personality and Social Psychology*, *74*(3), 629–645. doi: 10.1037/0022-3514.74.3.629
- Rudman, L. A., & Glick, P. (1999). Feminized management and backlash toward agentic women: the hidden costs to women of a kinder, gentler image of middle managers. *Journal of Personality and Social Psychology*, *77*(5), 1004–1010. doi: 10.1037/0022-3514.77.5.1004
- Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues*, *57*(4), 743–762. doi: 10.1177/0146167294204001
- Rudman, L. A., & Goodwin, S. A. (2004). Gender differences in automatic in-group bias: why do women like women more than men like men? *Journal of Personality and Social Psychology*, *87*(4), 494–509. doi: 10.1037/0022-3514.87.4.494
- Schneider, B. H., Benenson, J. F., Fülöp, M., Berkics, M., & Sándor, M. (2011). Cooperation and competition. In P. K. Smith & C. H. Hart (Eds.), *The Wiley-Blackwell Handbook of Childhood Social Development, Second Edition* (pp. 472–490). London, England: Blackwell Publishing.
- Sheppard, L. D., & Aquino, K. (2013). Much ado about nothing? Observers' problematization of women's same-sex conflict at work. *Academy of Management Perspectives*, *27*(1), 52–62. doi: 10.5465/amp.2012.0005
- Sills, J. (2007). Catfight in the boardroom *Psychology Today* (Vol. 40, pp. 61–62).
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797–811. doi: 10.1037/0022-3514.69.5.797
- Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, *42*(5), 893–898. doi: 10.1016/j.paid.2006.09.017
- Strough, J., & Berg, C. A. (2000). Goals as a mediator of gender differences in high-affiliation dyadic conversations. *Developmental Psychology*, *36*(1), 117–125. doi: 10.1037/0012-1649.36.1.117
- Tanenbaum, L. (2011). *Catfight: Women and competition*. New York, NY: Seven Stories Press.
- Tannen, D. (1990). *You just don't understand: Women and men in conversation*. New York, NY: Ballantine.

- Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality and Social Psychology*, *86*(6), 849–861. doi: 10.1037/0022-3514.86.6.849
- Toma, C., Yzerbyt, V., & Corneille, O. (2009). Anticipated cooperation vs. competition moderates interpersonal projection. *Journal of Experimental Social Psychology*, *46*, 375–381. doi: 10.1016/j.jesp.2009.11.005
- Uhl-Bien, M., Graen, G. B., & Scandura, T. A. (2000). Implications of leader-member exchange (LMX) for strategic human resource management systems: Relationships as social capital for competitive advantage *Research in Personnel and Human Resources Management* (Vol. 18, pp. 137–186). Greenwich, CT: JAI Press.
- Vigil, J. M. (2007). Asymmetries in the friendship preferences and social styles of men and women. *Human Nature*, *18*(2), 143–161. doi: 10.1007/s12110-007-9003-3
- Wageman, R. (1995). Interdependence and group effectiveness. *Administrative Science Quarterly*, *40*(1), 145–180. doi: 10.2307/2393703
- Weldon, M. S., Blair, C., & Huebsch, P. D. (2000). Group remembering: Does social loafing underlie collaborative inhibition? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*(6), 1568–1577. doi: 10.1037/0278-7393.26.6.1568
- Wenzel, M. (2002). The impact of outcome orientation and justice concerns on tax compliance: The role of taxpayers' identity. *Journal of Applied Psychology*, *87*(4), 629–645. doi: 10.1037/0021-9010.87.4.629
- Williams, K. D. (1997). Social ostracism. In R. M. Kowalski (Ed.), *Aversive interpersonal behaviors. The Plenum series in social/clinical psychology* (pp. 133–170). New York, NY: Plenum Press.
- Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: The motivational role of pride. *Journal of Personality and Social Psychology*, *94*(6), 1007–1017. doi: 10.1037/0022-3514.94.6.1007
- Wilson, D. S., & O’Gorman, R. (2003). Emotions and actions associated with norm-breaking events. *Human Nature*, *14*(3), 277–304. doi: 10.1007/s12110-003-1007-z
- Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting knowing what to want. *Current Directions in Psychological Science*, *14*(3), 131–134. doi: 10.1111/j.0963-7214.2005.00355.x

Tables

Table 1*Study 1: Means, Standard Deviations, and Correlations*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
<i>Participant characteristics</i>													
1. Gender (1 = female, 0 = male)	0.45	0.50											
2. Race (1 = White, 0 = others)	0.85	0.36	.11										
3. Age	33.17	11.28	.30**	.02									
4. Tenure	5.21	6.18	.15	.11	.66***								
5. Normative perceptions of same-gender competition	3.24	1.43	.31*	.05	.11	.12	(.88)						
6. Normative perceptions of opposite-gender competition	3.29	1.43	.14	.00	.10	.11	.84***	(.90)					
<i>Same-gender coworker</i>													
7. Cooperation strength	3.86	0.98	.05	.10	.06	.07	.16	.09					
8. Competition intensity	1.77	0.99	-.24**	-.01	-.11	-.05	-.27**	-.27**	-.16				
9. Coworker liking	5.59	1.38	-.02	-.02	.00	-.01	.04	-.02	.46***	-.22*			
<i>Opposite-gender coworker</i>													
10. Cooperation strength	3.81	0.90	-.04	-.09	-.01	.00	.00	.03	.50***	-.18*	.14		
11. Competition intensity	1.59	0.84	-.07	.11	.04	.04	-.20*	-.27**	-.21*	.61***	.05	-.22*	
12. Coworker liking	5.56	1.09	-.10	-.15	.00	.06	-.06	-.08	.12	-.10	.23**	.36***	-.12

Note. $N = 126-127$ due to missing data in some cells. Where appropriate, Cronbach's alphas are shown on the diagonal in parentheses. All tests are two-tailed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2
Study 1: Means of Variables by Condition

Variables	Female participants		Male participants	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Normative perceptions of competition</i>				
Same-gender coworkers	3.73 _a	1.40	2.84 _b	1.30
Opposite-gender coworkers	3.52 _a	1.42	3.11 _a	1.42
<i>Same-gender coworker ratings</i>				
Cooperation strength	3.91 _a	0.93	3.81 _a	1.02
Competition intensity	1.51 _a	0.81	1.99 _b	1.08
Coworker liking	5.47 _a	1.67	5.55 _a	1.09
<i>Opposite-gender coworker ratings</i>				
Cooperation strength	3.77 _a	0.98	3.87 _a	0.80
Competition intensity	1.53 _a	0.73	1.64 _a	0.92
Coworker liking	5.44 _a	1.07	5.68 _a	1.09

Note. $n = 57-70$ per cell. Means in the same row that do not share the same subscript are significantly different from one another at $p < .05$. All tests are two-tailed.

Table 3A*Study 1: Main multi-level regression analysis of coworker liking*

Variables	<i>b</i>	<i>SE</i>	<i>t</i> (df)
A: Participant gender (1 = female, 0 = male)	-0.23	0.21	-1.13 (1, 200.8)
B: Coworker gender (1 = same-gender, 0 = opposite-gender)	-0.13	0.17	-0.74 (1, 101.8)
C: Competition intensity (participant mean-centered)	0.08	0.33	0.24 (1, 200.8)
A × B	0.19	0.25	0.78 (1, 108.2)
A × C	-0.05	0.50	-0.09 (1, 200.8)
B × C	-0.04	0.60	-0.06 (1, 73.1)
A × B × C	-2.06*	0.91	-2.26 (1, 72.8)
Intercept	5.67***	0.14	39.30 (1, 200.8)

Note. Coworker liking is the dependent variable. Estimations of *b* are unstandardized regression coefficients. All tests are two-tailed.

* $p < .05$. *** $p < .001$.

Table 3B*Study 1: Multi-level regression analyses predicting coworker liking as a function of coworker gender and competition intensity, separately for female and male participants*

Variables	Female Participants			Male Participants		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
A: Coworker gender	0.08	0.20	0.41	-0.13	0.15	-0.84
B: Competition intensity	0.03	0.39	0.08	0.08	0.32	0.24
A × B	-1.97*	0.76	-2.60	-0.06	0.57	-0.10
Intercept	5.44***	0.15	35.86	5.67***	0.14	40.83

Note. Coworker liking is the dependent variable. Competition intensity is mean centered by participant. Estimations of *b* are unstandardized regression coefficients. All tests are two-tailed.

* $p < .05$. *** $p < .001$.

Table 4
Study 2: Means of Variables by Condition

Variables	Same-gender coworker		Opposite-gender coworker	
	Female participants	Male participants	Female participants	Male participants
Normative perceptions of competition	3.25 _a (1.51)	2.92 _b (1.24)	3.08 _b (1.51)	3.01 _b (1.18)
Relational damage	5.17 _a (1.09)	4.17 _b (1.21)	4.17 _b (1.30)	3.86 _b (1.08)
Negative emotions	4.26 _a (1.22)	3.41 _b (1.36)	3.72 _b (1.43)	3.41 _b (1.34)

Note. $n = 78-98$ per cell. Standard deviations are indicated in parentheses. Means in the same row that do not share the same subscript are significantly different from one another at $p < .05$. All tests are two-tailed.

Table 5
Study 3: Means, Standard Deviations, and Correlations

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Age	25.43	5.58					
2. Negative emotions	2.08	1.11	-.07	(.87)			
3. Positive emotions	5.02	1.22	.02	-.27***	(.88)		
4. State-competitiveness	3.84	1.82	-.23**	.25***	.13*		
5. State-cooperativeness	5.29	1.31	-.02	-.15*	.17*	-.21**	
6. Relational damage	2.39	0.68	.01	-.37***	.25***	-.10	-.41***

Note. $N = 208-214$ due to missing data in some cells. Where appropriate, Cronbach's alphas are shown on the diagonal in parentheses. All tests are two-tailed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6
Study 3: Means of Outcome Variables by Condition

Variables	Same-gender coworker				Opposite-gender coworker			
	Female participants		Male participants		Female participants		Male participants	
	Competition	Cooperation	Competition	Cooperation	Competition	Cooperation	Competition	Cooperation
Negative emotions	2.68 _a (1.28)	2.07 _{b,c} (0.78)	2.33 _{a,b} (1.32)	1.59 _c (0.82)	1.78 _{b,c} (1.02)	1.87 _{b,c} (1.12)	2.08 _{b,c} (0.97)	2.17 _{a,c} (1.17)
Positive emotions	4.63 _a (1.16)	4.69 _{a,b} (1.44)	5.26 _{b,c} (1.05)	5.48 _c (1.05)	4.70 _{a,b} (1.40)	5.37 _c (1.04)	5.08 _{a,c} (0.95)	4.93 _{a,c} (1.43)
State-competitiveness	4.15 _{a,c} (1.92)	3.12 _b (1.88)	4.43 _a (1.55)	3.35 _{b,c} (1.70)	3.88 _{a,b} (1.86)	3.54 _{a,b} (1.88)	4.12 _{a,c} (1.77)	4.04 _{a,b} (1.84)
State-cooperativeness	4.63 _a (1.45)	5.68 _b (1.31)	4.93 _{a,c} (1.33)	5.42 _{b,c} (1.27)	5.27 _{a,b} (1.31)	5.64 _b (1.45)	5.35 _{b,c} (0.89)	5.44 _{b,c} (1.19)
Relational damage	2.91 _a (0.83)	2.33 _b (0.79)	2.27 _b (0.59)	2.15 _b (0.59)	2.25 _b (0.57)	2.32 _b (0.64)	2.44 _b (0.62)	2.40 _b (0.60)

Note. $n = 25-28$ per each cell. Standard deviation is indicated in parentheses. Means in the same row that do not share the same subscript(s) are significantly different from one another at $p < .05$. All tests are two-tailed.

Table 7
Study 4: Means, Standard Deviations, and Correlations

Variables	<i>M</i>	<i>SD</i>	1	2	3	4
1. Age	26.36	10.07				
2. Negative emotions	1.84	1.03	-.04	(.88)		
3. Positive emotions	4.63	1.12	.004	-.07	(.84)	
4. Relational damage	2.23	0.71	-.10	-.35***	.39***	(.82)

Note. $N = 97-104$ due to missing data in some cells. Where appropriate, Cronbach's alphas are shown on the diagonal in parentheses. All tests are two-tailed.

*** $p < .001$.

Table 8
Study 4: Means of Outcome Variables by Condition

Variables	Female participants		Male participants	
	Competition	Cooperation	Competition	Cooperation
Negative emotions	2.47 _a (1.14)	1.36 _b (0.71)	1.85 _b (1.06)	1.73 _b (0.88)
Positive emotions	4.31 _a (1.02)	4.87 _a (1.02)	4.69 _a (1.19)	4.60 _a (1.24)
Relational damage	2.54 _a (0.64)	1.83 _b (0.48)	2.20 _a (0.57)	2.44 _a (0.91)

Note. $n = 24-30$ per cell. Standard deviations are indicated in parentheses. Means in the same row that do not share the same subscript(s) are significantly different from one another at $p < .05$. All tests are two-tailed.

Figures

Figure 1A. Study 1: The relationship between competition intensity and same-gender coworker liking for female and male participants

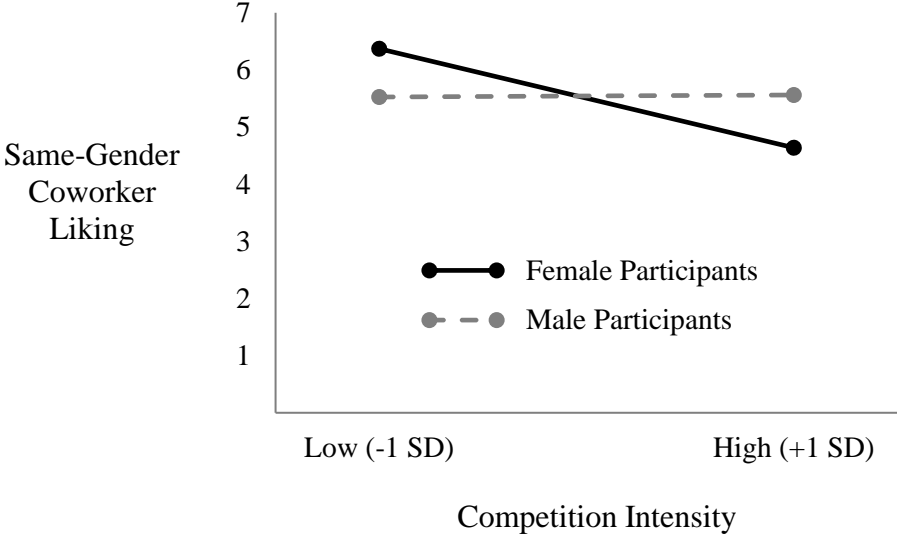


Figure 1B. Study 1: The relationship between competition intensity and opposite-gender coworker liking for female and male participants

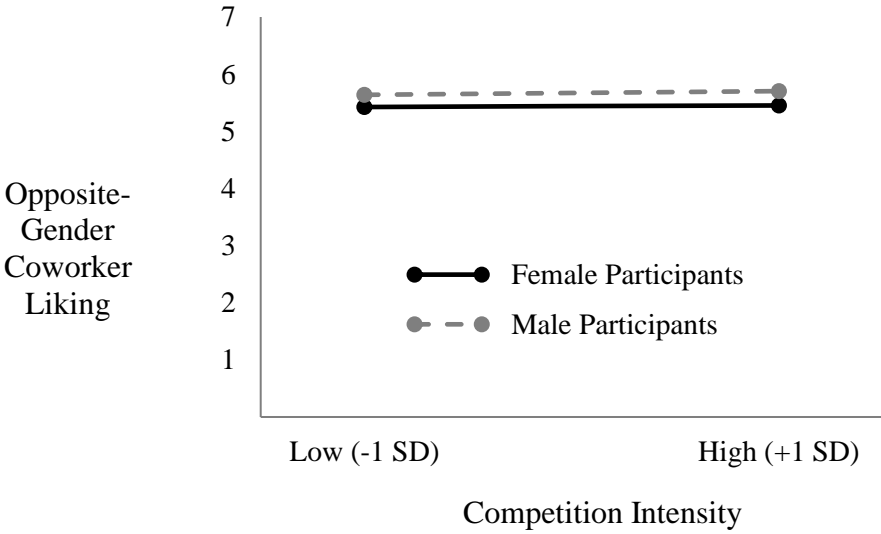
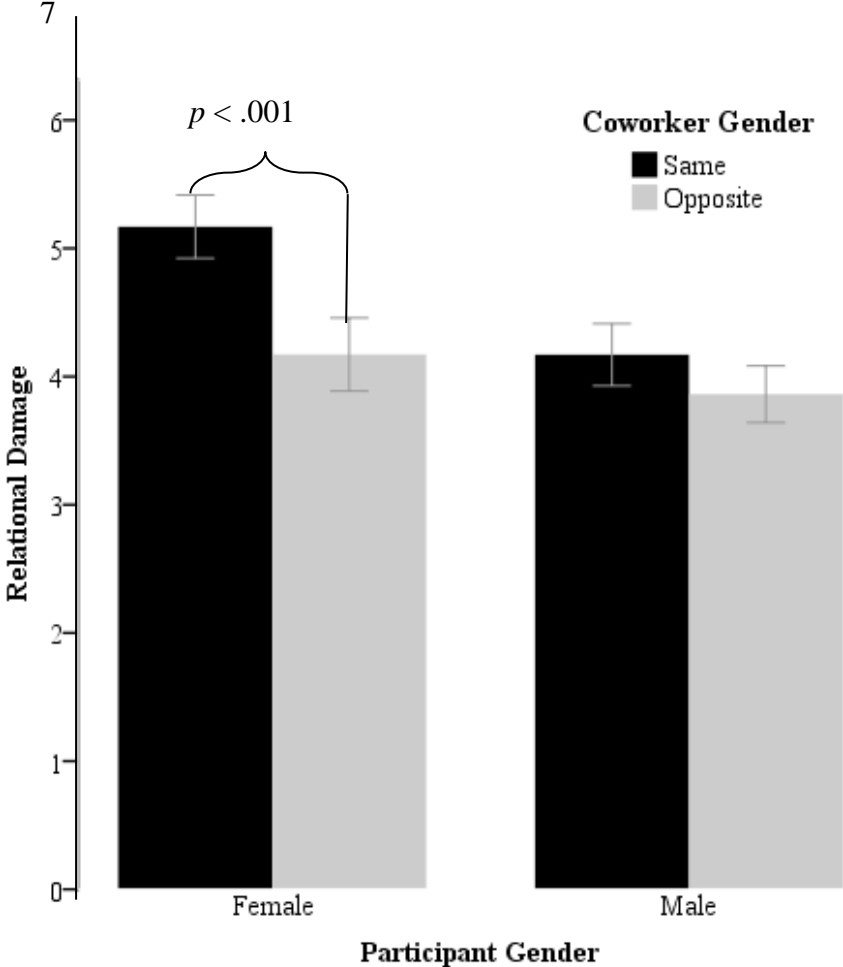


Figure 2. Study 2: Relational damage by participant and coworker gender



Note. Error bars represent 95% confidence intervals within condition.

Figure 3. Study 3: Moderated mediation model testing the hypothesized mechanism

