Notice:

The work from which this copy was made included a formal copyright notice. This work is protected by copyright law. Uses may be allowed with permission from the rightsholder, or if the use is "fair use" or within another exemption. The user of this work is responsible for determining lawful uses. (Title 17, US Code 1998.)
The Role of Causal Attributions in Competitive Situations

Kristine L. Brady
Virginia Polytechnic Institute and State University

David Trafimow
New Mexico State University

Richard M. Elster and Douglas R. Southard
Virginia Polytechnic Institute and State University

Previous data have shown that successful women are judged to have masculine characteristics (J. A. Doyle (1989), The Male Experience (2nd ed.), Dubuque, LA: Wm. C. Brown; D. L. Gill (1986), Psychological Dynamics of Sport, Champaign, IL: Human Kinetics; D. J. Murphy (1988), "Sport and Gender," in W. M. Leonard II (Ed.), A Sociological Perspective of Sport (3rd ed.), New York: Macmillan; P. Willis (1994), "Women in Sport in Ideology," in S. Birrell and C. L. Cole (Eds.), Women, Sport, and Culture, Champaign, IL: Human Kinetics). Two experiments were conducted to test two different explanations for this effect, the appraisal and attribution hypotheses. In Experiment 1, male participants who lost to a female confederate on a masculine-relevant task rated her as having more masculine and fewer feminine characteristics than when the task was described as feminine-relevant. However, heart rate and blood pressure data failed to support the appraisal hypothesis that these reactions were due to the stress of losing to the female. Consequently, the alternative hypothesis that these ratings were due to attributional processes was more consistent with the data. Consistent with Experiment 1, the attribution hypothesis fared better than did the appraisal hypothesis.

*To whom correspondence should be addressed at Department of Psychology, Radford University, Radford, VA 24142.
In our society, there are certain attitudes and behaviors that are considered appropriate for men, but not for women, and vice versa. Competitiveness is considered an appropriate masculine characteristic (Messner & Sabo, 1994; Kidd, 1990) while cooperation is considered an appropriate feminine attribute (Wesley, Miles, & Kniska, 1991; Doyle, 1989). While this view is likely changing, most men and women have considered sports and competition to be male activities requiring masculine traits (Gill, 1986). For example, Wesley et al. found that male and female participants made gender-stereotyped attributions to an unknown confederate when a confederate playing the Prisoner’s Dilemma Game was in a competitive condition. This masculine attribution was not male when the game was described as cooperative. These societal norms have also been shown to affect behavior. Schaffer (1981) found that men are more competitive than women in game-playing situations. Females have been considered to be less competitive and less concerned about winning than men (Beutel & Marini, 1995; Finkenberg, DiNucci, McCune, & McCune, 1994; Gill, 1986). Further, men are even more competitive when they compete against women with a history of achievement on the presenting task (Schaffer, 1981) and they perform better under competitive conditions (Sally, 1991). Finally, these sex differences in competitiveness have been documented across cultures (Richard, 1993).

Men and women have been assigned to specific gender roles through socialization (Kimmel, 1987). When members of one sex engage in behaviors outside of their gender role assignments, observers’ attributions of them may change; they may be perceived as having attributes of the other sex. When a woman is successful in a competitive situation or outperforms a man in a competitive situation, she is thought to possess “masculine traits” (Doyle, 1989; Gill, 1986; Murphy, 1988; Willis, 1994). The reason for this remains unclear. One possibility is that men make this inference as a means of defending their masculinity. Perhaps it is less threatening to lose to a “masculine” woman than to a “feminine” one. Another possibility is that this inference is the result of standard attributional processes. These possibilities will be explicated presently.

**Appraisal Theory and Competitive Situations**

A theory of a defensive response to stressful situations was developed by Lazarus and Folkman (1984). According to this theory, the stressful situation can be reappraised in order to decrease the anxiety associated with it. This results in a revision of the consequences so that they become less important. Reappraisal of a situation or person can be seen as a form of
defensiveness which serves to decrease the amount of stress and lessen the
degree of threat experienced by the participant. Previous research in this
area has used cardiovascular reactivity as a means for measuring anxiety
and stress due to feelings of threat (Eisler & Skidmore, 1987).

The male role not only places men under pressure to achieve and suc-
cceed in competitive situations, it also instills within them a perpetual fear
of losing (Barnett, Biener, & Baruch, 1987). Yet what happens when men
lose in competitive situations? How do they cope with such intense feelings
of threat and stress? According to Steinberg (1993), men are more likely
than women to defensively respond to failure because success is so exten-
sively tied to their masculinity. Given that it is not masculine to lose to a
woman, men should experience increased stress when they lose to a female,
especially if the task is one in which men are supposed to excel. When a
man loses to a woman at such a task, this may be perceived as a threat to
his masculinity, thereby increasing the likelihood of reappraisal. A defensive
reappraisal would occur when the male participant perceives the woman
as having predominantly masculine characteristics. Consequently, his loss
to the woman would have less important implications about his own mas-
culinity.

Attribution Theory and Competitive Situations

People often engage in causal attributions as an everyday form of ex-
plaining their environment (Jones & Davis, 1965; Kelley, 1973; Quattrone,
1982; Schneider, 1991; Trafimow & Schneider, 1994). For example, the aug-
mentation principle (Kelly, 1972) states that attributions to the person (that
a dispositional characteristic of the person was responsible for the behavior)
are especially likely when the behavior is one that would not be expected
on the basis of the situation (also see Schneider, Hastorf, & Ellsworth,
1979 and Fiske & Taylor, 1984 for reviews). People reason that if a behavior
is unlikely, given the situation, then the dispositional characteristic of the
person that produced the behavior must have been especially strong in order
to overcome the situational push against its performance.

This augmentation principle provides a possible alternative explanation
for why women who are successful at masculine tasks are deemed to have
masculine characteristics and to lack feminine ones. Clearly, if the task is
a masculine task, then a woman, by definition, would not be expected to
perform well at it relative to a male. Therefore, if a woman does perform
well at such a task, it is reasonable (although not necessarily correct) to
infer that she is more masculine, and less feminine, than the average
woman.
EXPERIMENT 1

The first study was conducted with two goals in mind. First, we wanted to test previous assumptions that women who are successful at “masculine” tasks will be thought to possess masculine traits and that women who succeed at “feminine” tasks will be thought to possess feminine ones. If the data corroborate these assumptions, the second goal was to test the appraisal and attribution hypotheses against each other.

Method

Participants. Participants were 53 male undergraduate students from psychology and sociology courses at a major university who participated for extra-credit.

Procedure. In the first stage of the experiment, all participants completed the 40-item Masculine Gender Role Stress scale (MGRS; Eiser & Skidmore, 1987) which measured how committed participants were to the masculine gender role. Being unsuccessful in various “masculine” areas, such as work, attracting women or competitive situations, is more stressful/threatening to high MGRS men than to low MGRS men. Participants were told that they would be participating in a two-part experiment that included a non-physical competition against another student. No information regarding the nature of the experiment was provided at this time. Participants were contacted by phone for the second phase of the experiment by a female experimenter. They were told that another student would be scheduled at the same time and that this would be their opponent. Participants in the high- and low-MGRS groups were randomly assigned to one of two different gender-relevant conditions. In the masculine-relevant condition, participants were told that the competitive task was one in which men should excel. In the feminine-relevant condition, participants were told that women should excel. The task was the Stroop color word task (Stroop, 1935).

At the scheduled competition, participants were met by a confederate who arrived and introduced herself as a fellow student participating in the experiment. Two female undergraduate confederates alternated posing as the participant’s opponent in the pseudo-competition. Each confederate was trained to respond in a standardized fashion to each participant. The participant and confederate were then met by one of two female experimenters and screened to ensure abstinence from alcohol, caffeine, medications, and nicotine. The participant and confederate were then placed in separate rooms. The participant was asked to rate his opponent on the Personal Attributes Questionnaire (PAQ), a 55-item assessment instrument which meas-
ured the degree to which the respondent perceived his opponent as masculine or feminine (Spence, Helmreich & Stapp, 1974). Upon completion of the PAQ, the participant and the confederate were taken into the experimental room. The participant was placed in front of a computer that contained the Stroop color-word task. The confederate was seated directly across from him in a mock set-up that looked identical to the participants’ set-up. A blood pressure cuff was placed on the participant’s arm which inflated normally every minute. A blood pressure cuff was also placed on the confederate’s arm which inflated every minute with an extremely low inflation rate (approximately 60 mmHg). Three cardiovascular measures were taken every 60th second for the rest of the experiment (20 minutes). These were Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP), and Heart Rate (HR).

After the participants were taught the Stroop color word task, the gender-relevance of the task was described over an intercom. The experimenter informed the participant and confederate that the competition was going to start. They were informed that three competition trials would ensue and that the person who achieved the highest percentage correct during 2 of the 3 trials would win the competition. The experimenter started the first trial, told the opponents to begin and then left the room. After each trial, a one minute rest period occurred and a blood pressure reading was taken before the false feedback was given. The participants were told that they lost in the first trial, won in the second trial, and lost the final tie breaker. Three cardiovascular measurements were obtained directly after the participant was informed of losing the competition; these were used as physiological measures of threat/stress experienced by the participants. After the mock competition, the participant and confederate were escorted out of the competition room and separated once again. The participant was then asked to re-rate his opponent on the same PAQ after which he was debriefed.

The participant was asked to return for a baseline measurement session which was scheduled 7-14 days after the participant completed the experimental phase. Upon arrival to the lab, the participant was seated in the same chair as during the competition. After the participant rested for 15 minutes, 5 cardiovascular readings were obtained. Based on Obrist’s (1981) recommendation, these readings were averaged for each measure (SBP, DBP, and HR) and were used as the participants’ baseline measure of cardiovascular responding.

Results

PAQ Data. Prior to analysis, difference scores were computed by subtracting pretest measures of masculinity and femininity from posttest meas-
ures in order to obtain an index of how the competitive situation affected participants’ ratings of the female confederate. Subsequently, a series of 2 (high or low MGRS) × 2 (masculine or feminine gender relevance) Analyses of Variance (ANOVAs) were performed on these difference scores. Both ANOVAs revealed one main effect. First, there was a greater increase in masculine ratings from pre-test to post-test in the masculine gender-relevant condition than in the feminine gender-relevant condition \( (M = 8.27\) and \( M = 1.27)\), \( F(1, 48) = 8.66, p < .01\). Second, there was a greater decrease in femininity ratings from pre-test to post-test in the masculine gender-relevant than in the feminine gender-relevant condition \( (M = -6.42\) and \( M = -1.81)\), \( F(1, 48) = 6.19, p < .05\). However, both masculinity and femininity difference did not depend upon whether participants were high or low MGRS scorers \( (p > .1\) in both analyses), nor were there any interactions. In sum, telling male participants that they lost to a woman on a “masculine” task caused them to change their perceptions of the woman and to consider her to be more masculine, and less feminine, than if the task had been described as a “feminine” one.

**Physiological Data.** First, a repeated measures ANOVA was conducted to determine if participants were sufficiently engaged in the stressful, competitive task. All four groups experienced a significant increase in HR \( F(2, 94) = 6.58, p = .00\) and SBP \( F(2, 94) = 3.84, p < .02\) during the competitive task when compared to the pre-competition and recovery periods (See Fig. 1). Participants also experienced an increase in DBP, although this difference only approached significance \( F(2, 94) = 1.65, p < .19\). These results suggest that the participants experienced significant cardiovascular reactivity during the competition and found the task to be stressful. Therefore, it cannot be argued that the physiological measures were not sensitive enough to pick up differences between groups.

In order to test for differences in cardiovascular responding across conditions, four 2 (high or low MGRS) × 2 (masculine or feminine gender relevance) Analyses of Covariance (ANCOVAs) were performed on each of the three recovery measures (SBP, DBP, and HR). In order to control for differences in resting blood pressure and/or heart rate, the respective return-day baseline measures (SBP, DBP, HR, or all three of them together) were used as covariates. Regardless of which measure was used as the dependent variable or which measure was used as the covariate, no main effects or interactions were obtained \( (p > .1\) in all cases).

Although the gender relevance manipulation failed to affect any of the physiological measures, it remains possible that the participants’ physiological arousal mediated the effect of this manipulation on their PAQ ratings. We tested this by repeating the analyses in the previous section indicating a gender relevance effect on both masculinity and femininity dif-
Fig. 1. Systolic blood pressure before, during, and after the competition.
ference scores, but this time controlling for physiological effects by using the physiological measures as covariates. In sum, two additional series of 2 (high or low MGRS) × 2 (masculine or feminine gender relevance) ANCOVAs were performed on the masculinity and femininity difference scores obtained from the PAQ, but with the two blood pressure measures and the heart rate measure used separately, or in combination, as covariates (so four ANCOVAs were performed on each type of difference score). Surprisingly, however, the previously obtained effect of gender relevance on masculinity and femininity difference scores remained significant \((p < .05)\) in every analysis. Thus, there is no support for the hypothesis that physiological arousal mediated the effect.

**Discussion**

The effects of the gender relevance manipulation on masculinity and femininity difference scores is consistent with both hypotheses; however, the appraisal hypothesis implies several additional findings. First, high scorers on the MGRS should have been more anxious than low MGRS scorers about losing to a woman, and consequently, should have produced greater difference scores. Second, participants in the masculine-relevant condition should have evidenced greater physiological arousal than participants in the feminine-relevant condition. Third, physiological arousal should have mediated the effect of the gender relevance manipulation on masculinity and femininity difference scores. More generally, although it is clear that participants in the masculine-relevant condition changed their appraisal of the female confederate, there is little evidence that this change was the result of an attempt to reduce anxiety, or decrease threat. One might argue that the competitive task did not cause enough arousal in the participants to elicit group differences, thus providing support for the defensive argument. However, the results in Fig. 1 demonstrate that participants were aroused physiologically and that the task was, indeed, stress producing.

**EXPERIMENT 2**

Experiment 1 demonstrated that the attribution hypothesis correctly predicts null findings where the appraisal hypothesis incorrectly predicts differences (pertaining to the physiological measures). In contrast, Experiment 2 is an attempt to demonstrate that the attribution hypothesis correctly predicts differences where the appraisal hypothesis incorrectly
predicts null findings. Male and female participants in Experiment 2 were presented with masculine-relevant and feminine-relevant situations, but in vignette forms rather than in an actual interaction. Further, the male who lost to a female in these vignettes was someone else, rather the participant so there was no reason for any participant to be personally threatened. Thus, according to appraisal theory, there is no reason to expect differences in PAQ ratings as a function of the gender relevance manipulation. In contrast, the attribution hypothesis does predict such an effect.

Method

Participants. Participants were 106 undergraduate students (male, 55; female, 51) from psychology courses at a major university who participated for extra-credit.

Procedure. After signing an informed consent form, participants were represented with two vignettes. One vignette described a masculine-relevant competition (men usually win) while the second described a feminine-relevant competition (women usually win). The order of these vignettes were counterbalanced across participants. After reading the vignettes, participants were asked to rate the female opponent from each vignette on the PAQ. Finally, participants were debriefed.

Results

Before analyzing the data, PAQ items pertaining to masculinity were summed to obtain a masculinity score and those pertaining to femininity were summed to obtain a femininity score. Because all participants experienced both the masculine- and feminine-relevant conditions (but in different orders), it was possible to perform between-participants analyses on PAQ responses to the first vignette and to perform within-participants analyses on responses to both vignettes. Participant sex was included as a between-participants factor in both sets of analyses.

Between-Participants Analyses. Consistent with the attribution hypothesis, participants in the masculine-relevant condition rated the target woman as more masculine \( M = 3.78 \) and \( M = 3.19, F(1, 100) = 8.75, p < .001 \), and less feminine \( M = 2.91 \) and \( M = 3.49, F(1, 100) = 63.08, p < .001 \), than did participants in the feminine-relevant condition. However, there was no main effect of participants' sex nor an interaction in either analysis.

The lack of an interaction is important because it is inconsistent with a possible alternative hypothesis that men (as opposed to women) are defensive even about other men losing to a woman at a “masculine” task.
**Within-Participants Analyses.** Using a more sensitive within-participants analysis simply confirms the previous findings. Participants rated the target woman in the masculine-relevant condition as more masculine \( [M = 3.81 \text{ and } M = 2.98, F(1, 100) = 163.86, p < .001] \), and less feminine \( [M = 2.86 \text{ and } M = 3.60, F(1, 100) = 164.22, p < .001] \), than the target woman in the feminine-relevant condition. Further, there was again no interaction between gender relevance and sex in either analysis.

**Discussion**

Based on the attribution hypothesis, we predicted that participants would rate the female opponent as more masculine in the masculine-relevant scenario than in the feminine-relevant one. Similarly, we predicted that they would rate the female opponent as more feminine in the feminine-relevant condition than in the masculine-relevant condition. These predictions were confirmed. Finally, the fact that the participants’ sex did not interact with the manipulation further support the attribution hypothesis and disconfirms the other one.

**GENERAL DISCUSSION**

The results of both experiments were clearly more consistent with the attribution hypothesis than with the appraisal hypothesis. In Experiment 1, male participants were placed in competitive situations in which they lost to a female. It appears that the male participants changed their perception of their opponent when the task was masculine-relevant, but not as a defensive reaction to anxiety. There was difference in cardiovascular responding between conditions. In Experiment 2, evidence of perceptual change was predicted, but this time in a situation where there was no reason for participants to be defensive. Further, female participants (who have even less reason to be defensive) showed the same effects of the gender relevance manipulation as did men.

Our findings are consistent with previous gender-related research on the PAQ. Helmreich & Spence (1977) administered the PAQ to female college students and athletes. Most of the female athletes rated themselves as masculine or androgynous while the female college students rated themselves as feminine. Other researchers have also compared female athletes with female nonathletes (Colker & Widom, 1980). The female athletes in this study rated themselves as significantly more masculine and/or androgynous than the female non-athletes. Because competitive women rate them-
selves as more masculine than do less competitive women, it is worth considering the possibility that they are right; perhaps competitive women really are more masculine than are other women. More generally, perhaps it is time for researchers to consider the possibility that at least some of the perceptions men have are reasonable inferences from women’s behaviors.

REFERENCES


