

## **Inferring power-relevant thoughts and feelings in others: A signal detection analysis**

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### *Abstract*

*Drawing inferences about other people's thoughts and feelings related to power issues ('power-relevant' thoughts and feelings) can affect how hierarchies are formed. Perceivers who infer such thoughts and feelings can be biased (i.e., over- or underestimating the occurrence of power-relevant thoughts and feelings). We investigated whether the perceiver's gender and the perceiver's preference for a high or low power position ('power preference') affects the perceiver's bias toward attributing power-relevant thoughts and feelings to others. Participants were 80 female and 35 male students who indicated their power preference and then guessed whether videotaped target individuals had experienced power-relevant thoughts and feelings or not. Using a signal detection approach, we found that men who preferred a high power position overestimated the occurrence of power-relevant thoughts and feelings in others more than men who preferred a low power position. No such difference in overestimation bias was found for women. Copyright © 2006 John Wiley & Sons, Ltd.*

The formation of power hierarchies in interpersonal interactions is ubiquitous in social life (Bales, 1950; Mazur, 1985; Schmid Mast, 2001, 2002). In both hierarchy formation and in power struggles, the way interaction partners are assessed in terms of their relative power is extremely important (e.g., Berger, Conner, & Fisek, 1974). Insight into an opponent's power-relevant thoughts and feelings can give one a competitive edge (Jellison & Ickes, 1974). For example, being able to infer that another person is thinking about challenging my power position can increase my chances to win an impending power struggle because it would not take me by surprise and I could better prepare for it. In the present study, we addressed the question of how perceiver gender and power preference separately or jointly affect perceivers' inferences about others' power-relevant thoughts and feelings.

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Power has been defined in many different ways (e.g., Burgoon, Johnson, & Koch, 1998; Ellyson & Dovidio, 1985; French & Raven, 1959). We focus on *power preference*, which we understand as striving for control or influence over another.

## POWER AND THE PERCEPTION OF POWER

Power is a fundamental dimension of our social interactions (Wiggins, 1979) and can have dramatic effects on how we behave (e.g., Milgram, 1965). Many studies have investigated how perceivers infer power in others (Hall, Coats, & Smith LeBeau, 2005). However, there is a lack of research on how others' thoughts and feelings are assessed in terms of power and on how variables such as gender and power preference might affect how power-relevant inferences are drawn. The results of social projection research have shown that perceptions of others are affected by the perceiver's own characteristics (Ames, 2004). With regard to the realm of power in particular, Schmid Mast (2005) reported that individuals who expect power hierarchies to form (interpersonal hierarchy expectation) perceive social interactions as particularly pronounced in hierarchical structure. Moreover, men were higher in interpersonal hierarchy expectation than women were.

These findings lead us to speculate that people, and particularly men, who aim at a high power position (power preference) might be on the lookout for signs of high or low power in others and even project their own preoccupation with power onto others. The specific question we address in the present study is whether the perceiver's gender and power preference, separately or jointly, are related to the overestimation of power-relevant thoughts and feelings in others (overestimation bias). Power-relevant thoughts and feelings are thoughts and feelings concerned with high or low power positions within a hierarchy. Inferring power-relevant thoughts and feelings in others is seen as an indicator of the perceiver's preoccupation with power as a topic and not with power as a subjective experience of powerfulness or powerlessness. A corollary goal of the present study was to determine if these same two variables (gender and power preference) are related to the perceiver's sensitivity (accuracy) in distinguishing other people's power-relevant thoughts and feelings from their non-power-relevant thoughts and feelings.

*Bias* and *sensitivity* are two distinct aspects of perception that can be assessed separately using a signal detection theory approach. Bias in inferring the power-relevant thoughts and feelings of others can be either an overestimation bias (inferring too many power-relevant thoughts and feelings) or an underestimation bias (inferring too few power-relevant thoughts and feelings). Sensitivity is used interchangeably with accuracy and indicates how well an individual can differentiate between a power-relevant thought or feeling and a non-power-relevant thought or feeling.

## GENDER DIFFERENCES IN POWER AND POWER HIERARCHIES

In terms of everyday perceptions and social stereotypes, people tend to associate men more strongly with hierarchies and women more strongly with egalitarian structures (Schmid Mast, 2004). Consistent with these stereotypes, men express a stronger preference than women do for social groups to be hierarchically organized in terms of power (Social Dominance Orientation; Pratto, Stallworth, & Sidanius, 1997). Men are also more likely than women to perceive relationships as being hierarchically organized (Schmid Mast, 2005). Taken together, these findings suggest that men are more concerned with, involved in, and oriented towards power hierarchies.

This conclusion fits with findings that reveal men as being generally more competitive than women. For instance, men use a more directive or autocratic leadership style, whereas women display a more democratic or participative style (Eagly & Johnson, 1990). Men are also more motivated to assume the leadership position, especially in competitive games and assertive situations (Eagly, Karau, Miner, & Johnson, 1994). Moreover, men have been found to behave more competitively and women more cooperatively in face-to-face bargaining situations (Walters, Stuhlmacher, & Meyer, 1998).

Recall that power-relevant thoughts and feelings are defined as a concern with high or low power positions within a hierarchy. Because men are more preoccupied with hierarchies and competition, they might be more vigilant about power-relevant themes when they try to attain high power (high power preference) as compared to when they are not striving for more power (low power preference). Women, on the other hand, are less concerned with hierarchies and competition. Their striving for power (power preference) might therefore be less related to overestimating power-relevant thoughts and feelings in others.

A separate question is whether men who strive for a high power position (high power preference) are also more *accurate* at distinguishing others' power-relevant thoughts and feelings from their non-power-relevant thoughts and feelings (sensitivity) than men who do not strive for a high power position (low power preference). The present study therefore also addresses how gender affects the relation between accurate inference of power-relevant thoughts and feelings in others and power preference.

## INFERRING POWER-RELEVANT THOUGHTS AND FEELINGS IN OTHERS

In the present study, we asked whether perceiver gender and power preference had separate and/or interactive effects on the perception of power-relevant thoughts and feelings in others. To answer this question, we used the empathic accuracy paradigm (Ickes, 1997, 2001; Ickes, Bissonnette, Garcia, & Stinson, 1990) in conjunction with signal detection analyses (MacMillan & Creelman, 1991). In the empathic accuracy paradigm, participants view the unstructured interactions of target persons on videotape. Each time the tape is stopped, the participants are asked to infer the specific content of a given target person's thought or feeling at precisely the moment the 'tape stop' occurred. The content of each of the inferred thoughts or feelings is then compared with the content of the corresponding thought or feeling that the target person reported having had at that moment (for methodological details, see Ickes, 2001).

## METHOD

### Participants

The participants were 115 (80 females, 35 males) undergraduates from Northeastern University, Boston. They participated for partial course credit and were on average 19 years old; 80% were Caucasian, 11.5% Asian, 4.5% Hispanic, 3% African American, and 1% Native American.

### Stimulus Tapes

The stimulus targets were 24 students (drawn from the same pool as the participants, mostly females) who were videotaped during a competitive interaction with a peer. Before the interaction took place,

each dyad member first generated a list of the five most influential movies in the past 10 years and then tried to convince the other about his/her choices during a subsequent 8-minute videotaped interaction. The person who succeeded in putting more of his/her initial movies on a final list won 2 dollars. After the interaction, targets watched the videotape and were asked to stop it at exactly the location where they had a thought or a feeling during the interaction and to write down the thought or feeling, along with the corresponding time, on the video timer. Targets were explicitly instructed to report only thoughts and feelings they distinctly remembered experiencing at the time of the interaction and *not* to report any thoughts and feelings they experienced for the first time while watching the interaction. This procedure reflects the empathic accuracy paradigm developed by Ickes (1997, 2001). There is considerable evidence for the validity of the thoughts and feelings reported using this procedure (e.g., Ickes, 2003; Ickes, Robertson, Tooke, & Teng, 1986).

From the total sample of 12 videotaped interactions, we selected 60 stimulus thoughts and feelings, of which approximately 1/3 were expressive of high power, another 1/3 expressive of low power, and the remaining 1/3 neutral with respect to power. These statements were independently rated by 33 raters (drawn from the same pool as the participants, males and females, gender not recorded) on a scale ranging from -4 (low power) to +4 (high power) with 0 as the neutral point (non-power-relevant). The reliability of these ratings was 0.98 (Cronbach's alpha). Based on these ratings, we selected the 13 most high-power-expressive thoughts and feelings (range: 2.00 to 3.70), the 13 most low-power-expressive thoughts and feelings (range: -3.24 to -1.03), and the 13 most neutral thoughts and feelings (range: -0.39-0.56).

This selection resulted in a total of 39 thoughts and feelings derived from 10 different targets. Examples of power-relevant thoughts and feelings were: 'I can so dominate him' or 'Happy because I knew that I was going to win' (both high power), 'I feel bad, lost the battle' or 'Uncomfortable again, she proved me wrong again' (both low power). Examples of non-power-relevant thoughts and feelings were: 'I hate Titanic' or 'Happy because I was thinking about my girlfriend.'

To create the standard stimulus videotape, we included for each of the 39 thoughts and feelings the previous 18 seconds of context information that appeared on the original source videotape. Our precedent for this editing procedure was a study by Gesn and Ickes (1999), who created a 'standard stimulus' videotape for assessing empathic accuracy that consisted of 30 excerpts of 15-second durations that were sampled from videotapes of three client-therapist interactions.

## Procedure

Two participants were recruited for each session (randomly generating same- and opposite-gender dyads). After arriving at the lab and signing the informed consent form, both participants were escorted to a lab room where they completed the Control (i.e., dominance) scale of the California Psychological Inventory (CPI dominance, Gough, 1975).

The participants were then instructed that they would have an 8-minute interaction with each other in which one person would take on the role of the owner of an art gallery (high power) and the other person would take on the role of an assistant to the owner (low power). The participants were instructed what each role entailed (for detailed description of instructions see Schmid Mast & Hall, 2003).<sup>1</sup> After separating the participants, the experimenter asked each participant which role he/she preferred to take on (power preference). Schmid Mast and Hall (2003) found that the reasons participants gave for

<sup>1</sup>After assessing participants' power preference, we assigned the high- or low power position (owner or assistant) to participants randomly (power assignment). Power assignment did not affect any of the reported results, which is why we are not including any discussion of it in this manuscript. In hindsight, this outcome is not too surprising because the tape the participants were watching was not of the person with whom they thought they would be in a hierarchical relationship.

choosing the high (or low) power role were related to wanting (or not wanting) to exert control and influence and to assume responsibility and leadership. They also found that participants in the high power role actually did report feeling significantly more powerful than participants in the low power role.

The participants were then instructed that, before the interaction took place, we wanted to see how good they were at reading other people's minds. To that end, they would each watch a videotape with 39 short clips and infer for each clip the content of the thought or feeling that the target person in the videotape had at the precise moment when the tape stopped. Details of the competitive interaction the videotargets were involved in were provided. The participants' task was to guess what the target person had been thinking or feeling at each 'tape stop,' to write down the inferred thought or feeling, and to rate it on whether it was related to high power, low power, or not related to power. The participants were instructed that a thought or feeling should be rated as being related to high (low) power if it expressed that the target person was feeling or thinking he/she was more (less) successful or influential in putting his or her movies on the final list. The participants completed this mind reading task individually in separate rooms and were then informed that there would be no dyadic interaction with a partner and that the actual experiment was now over. They were then debriefed and released.

### Signal Detection Analysis

Because the focus of the present research was preoccupation with power, we began by aggregating the high power and low power thought/feeling entries into the single category of 'power-relevant' thoughts and feelings, to be contrasted with the neutral category of 'non-power-relevant' thoughts and feelings. For the stimulus videotape, this resulted in an objective division of the 39 thoughts and feelings into 26 power-relevant thoughts and feelings and 13 non-power-relevant thoughts and feelings. We then assessed the participants' success in assigning each of the targets' thoughts and feelings to these two categories through the use of signal detection analysis.

Signal detection analysis enabled us to distinguish between sensitivity and bias. Sensitivity describes how well a perceiver differentiates between signal and noise. In the present case, it measured how accurately a participant inferred that specific thoughts and feelings were power-relevant or non-power-relevant. Sensitivity ( $d'$ ) is defined as the difference between the  $z$ -transformed hit rate (proportion of cases inferring a power-relevant thought or feeling when such a thought and feeling was indeed present) and the  $z$ -transformed false alarm rate (proportion of cases inferring a power-relevant thought and feeling when a non-power-relevant thought and feeling was present) (MacMillan & Creelman, 1991).<sup>2</sup>

Bias describes how much a perceiver favors one response over the other. In the present case, it measures the degree to which participants 'favored' making inferences that the thoughts and feelings were either power-relevant or non-power-relevant. Bias is expressed by the criterion ( $c$ ), which can be calculated for each participant individually and is defined as the sum of the  $z$ -transformed hit rate and the  $z$ -transformed false alarm rate multiplied by  $-0.5$  (MacMillan & Creelman, 1991). If the criterion for saying that a thought or feeling is power-relevant is low (= low threshold of saying that a thought or feeling is power-relevant), the value of  $c$  is less than 0 (negative value). This corresponds to a bias to overestimate the number of power-relevant thoughts or feelings.

We calculated sensitivity and bias for each participant individually according to the aforementioned formulas. Sensitivity ranged from  $-1.38$  to  $0.98$  ( $M = -0.018$ ,  $SD = 0.52$ ). Bias ranged from  $-1.04$  to

<sup>2</sup> $Z$ -scores were obtained from a table of the Gaussian distribution. The hit or false alarm rate was converted to standard deviation units corresponding to areas in a standard Gaussian distribution.

1.11 ( $M = -0.35$ ,  $SD = 0.34$ ). On average, participants showed an overestimation bias. For the remainder of this article we therefore refer to bias as the overestimation bias and use positive values to describe it. There is a precedent in the research literature for the procedures we have used. A similar signal detection approach to analyze data generated within an empathic accuracy paradigm has previously been reported by Schweinle, Ickes, and Bernstein (2002).

### Power Preference

Power preference reflects a person's wish for a high- or low-power position in a particular situation. In other words, power preference is the situation-specific power motivation of an individual. It can be distinguished from trait dominance, which is an overall tendency to prefer a high power position. Power preference captures how much power one wants in a specific situation. For instance, if one feels competent in the specific situation, high trait dominance most likely translates into the wish to be in a high power position in that specific situation, whereas if one feels less competent, even high trait dominant people might wish to take on the low power position (Fallon & Guo, 1994). Power preference has been used in another study with a similar design and was found to be related to differences in dominance behavior (Schmid Mast & Hall, 2003, 2004).

We used the CPI dominance scale to validate our power preference measure (convergent validity). The reliability of the CPI dominance scale was 0.82 (Cronbach's alpha). As expected, the results showed that trait dominance was related to power preference for the women,  $r(78) = 0.58$ ,  $p < 0.0001$  (with preference for assistant = 0 and preference for owner = 1, point-biserial correlation), as well as for the men,  $r(32) = 0.58$ ,  $p < 0.0001$ . There was no gender difference in the CPI dominance measure,  $t(113) = 0.22$ ,  $p = 0.83$  ( $M$  women = 3.84,  $M$  men = 3.86).

Women preferred the low power role (assistant,  $N = 63$ ) more often (79%) than the high power role (owner,  $N = 16$ ),  $\chi^2(1, N = 80) = 26.45$ ,  $p < 0.0001$ . In contrast, men preferred the high power role ( $N = 19$ ) nonsignificantly more often (54%) than the low power role ( $N = 16$ ),  $\chi^2(1, N = 35) = 0.26$ ,  $p = 0.612$ . We judge these splits to be relatively optimal in terms of minimizing potential floor or ceiling effects.

## RESULTS

For the overestimation bias and the sensitivity each, we calculated a 2 (participant gender) by 2 (power preference: high versus low) ANOVA. The results for the overestimation bias revealed no participant gender main effect,  $F(1, 110) = 0.01$ ,  $p = 0.91$ , a marginally significant power preference main effect,  $F(1, 110) = 3.60$ ,  $p = 0.06$ , and a significant Gender X Power Preference interaction,  $F(1, 110) = 4.75$ ,  $p = 0.031$ . Simple main effects analyses showed that, for female perceivers, there was no difference in overestimation bias between high and low power preference individuals,  $t(77) = 0.23$ ,  $p = 0.817$  ( $M = 0.34$  versus  $M = 0.36$ ), whereas for male perceivers, high power preference individuals displayed significantly more overestimation bias ( $M = 0.50$ ) than low power preference individuals did ( $M = 0.20$ ),  $t(33) = 2.39$ ,  $p = 0.023$  (Figure 1). Recall that an overestimation bias occurs more often when a perceiver says that a power-relevant thought and feeling occurred than it actually did (the perceiver uses a liberal criterion). We can therefore conclude that men who wanted a high power position were considerably more likely to attribute power-relevant thoughts and feelings to others than were men who wanted a low power position. The overestimation bias was significantly different from 0 for both men and women (no bias at all would correspond to  $c = 0$ ):  $t(34) = 4.97$ ,  $p < 0.0001$  (men) and  $t(78) = 10.10$ ,  $p < 0.0001$  (women).

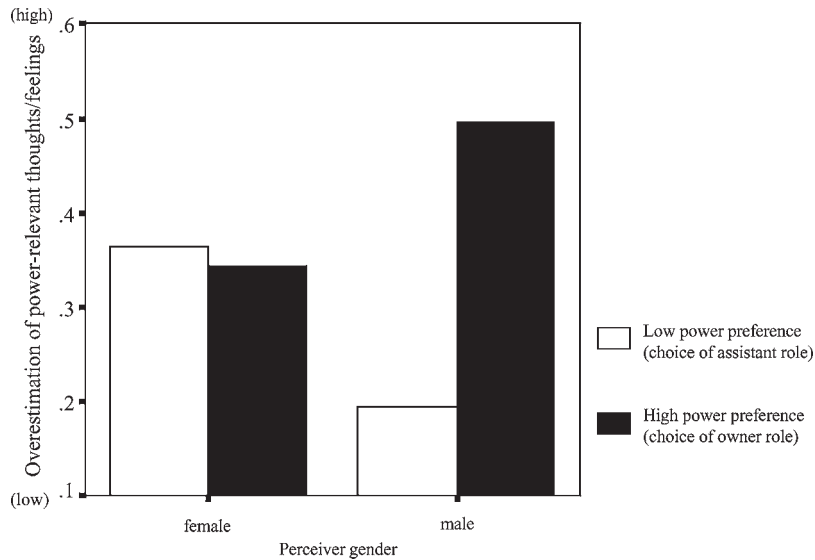


Figure 1. Overestimation of power relevant thoughts/feelings according to perceiver gender and power preference

For the sensitivity measure, there was no significant main or interaction effect (all  $F$ 's < 2.19). These null results indicate that gender and power preference did not affect how accurately the participants were able to distinguish the target persons' power-relevant thoughts and feelings from their non-power-relevant thoughts and feelings. Moreover, participants performed no better than chance in assessing power-relevant thoughts and feelings in others,  $t(113) = 0.36$ ,  $p = 0.72$  ( $M = -0.02$ ).

## DISCUSSION

The goal of the present research was to investigate how gender and power preference, separately and jointly, affect the perception of power-relevant thoughts and feelings in others with respect to sensitivity (accuracy) and bias. Results showed that perceivers' accuracy (i.e., sensitivity) in inferring power-relevant thoughts and feelings was not related to gender or power preference. For bias, however, the results showed that for male perceivers, power preference was related to how biased they were. Men who preferred to occupy a high power position overestimated the occurrence of power-relevant thoughts and feelings in others more than men who preferred to occupy a low power position. In women, bias was unrelated to power preference.

Women and men both overestimated the occurrence of power-relevant thoughts and feelings in others. This probably occurred because power was very salient to participants at the time they performed the mind reading task: Participants were about to engage in an interaction with another in either a high or low power role; they were informed that the targets in the stimulus tape were in a competitive interaction; and they were asked to classify each inferred thought or feeling as power-relevant or non-power-relevant.

Although on average the men were not more preoccupied with power-relevant thoughts and feelings in others (overestimation bias) than the women were, gender did moderate the relationship between power preference and overestimation bias. High and low power preference men differed in the strength

of their overestimation bias, whereas high and low power preference women did not. For men, the motivation to occupy a high power position may make them hyper-attuned to the possible power motives of others. To illustrate, when strangers meet for the first time, the individual who aspires to a high power position needs to take the potential power of the opponent into consideration because a power struggle might lie ahead (Mazur, 1985). Having a liberal criterion when inferring power-relevant thoughts and feelings in others (an overestimation bias) might facilitate preparing oneself for a potential power struggle. Note also that power-aspiring men are not only attuned to high power but to the entire spectrum of the power dimension (including both high and low power-relevant thoughts and feelings) because we included both in our measure of power relatedness.<sup>3</sup> For high power preference people it is functional to attend to both high *and* low power thoughts and feelings in another person. If the other has high power thoughts, high power preference individuals can gear up for competition and if the other has low power thoughts, they can prepare to be the victor or at least plan accordingly. This might be the reason why men with a preference for a high power position are on heightened alert for any signs of either high or low power in others.

Why didn't we find the same effect in women? One explanation might be that women prefer to extend their influence by forming strong egalitarian bonds with others, whereas men prefer to extend their influence by achieving a higher position of status/power than others.<sup>4</sup> According to this interpretation, the participants' own expressed power preference was both salient and important to the men, but less salient and less important to the women. Alternatively, based on the fact that the topic of power was evident in the task, one could argue that men were more easily primed by the power topic than women were. However, because we did not directly assess these hypothesized differences in salience, importance, or priming, this alternative interpretation must remain speculative. Either way, however, the results are of theoretical interest.

Research has shown that power differences among group members have distinct effects on their behavior and their attitudes in same- as compared to opposite-gender groups (Bourhis, 1994). We did not address the target gender issue in the present study because the targets in our study were mostly but not exclusively female. This issue deserves attention in future research. Another issue for future research is suggested by the findings showing that social projection (the perceiver projects his/her thoughts and feelings onto the target) is stronger with increased similarity between the perceiver and the target (Ames, 2004). Accordingly, the question of how gender affects perceptions of power-relevant thoughts and feelings in same- and opposite-gender interactions is one that future research should consider.

In terms of accuracy (i.e., sensitivity), we did not find any effect of gender or power preference. Research has shown that women are more accurate than men at inferring others' personality characteristics, emotional states, and behavioral motivations (Ambady, Hallahan, & Rosenthal, 1995; Hall, 1984). Because inferences about power-relevant issues can be seen as a more masculine domain as compared to inferring emotions or motives (the dispositions on which most of the interpersonal sensitivity literature is based), we would indeed expect the gender difference to narrow or disappear in this case. We must also note, however, that our task was difficult and that the average participant's performance was no better than chance. This might be the more likely explanation for the lack of gender and power effects on accuracy.

<sup>3</sup>We also conducted the same analyses (ANOVAs for sensitivity and bias) for high power-relevant thoughts and feelings and low power-relevant thoughts and feelings separately and did not find any effect of power preference or gender. This outcome indicates that the effect on overestimation bias reported in this study was not due to overestimation of either high or low power-relevant thoughts; rather, it appears to be an effect of hyper-responsiveness to *hierarchies*, i.e., different power positions within the hierarchy.

<sup>4</sup>Note that this interpretation is also consistent with our finding that the women showed less preference for high power positions than the men did.

The findings of our study are relevant for a better understanding of how power hierarchies are formed. Moreover, knowing that high power preference people are particularly prone to infer power-relevant thoughts and feelings in others might contribute to the resolution of power conflicts if one can develop ways of identifying and counteracting this bias.

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