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The Polarizing Effect of Arousal on Negotiation

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### Abstract

This research examines the impact of physiological arousal on negotiation outcomes. Conventional wisdom and extant prescriptive literature suggest that arousal should be minimized given its negative effect on negotiations, while prior research on misattribution of arousal suggests that arousal might polarize outcomes, either negatively or positively. In two experiments, we manipulated arousal and measured its effect on subjective and objective negotiation outcomes. Results support the polarization effect. When participants had negative prior attitudes toward negotiation, arousal had a detrimental effect on outcomes, whereas when participants had positive prior attitudes toward negotiation, arousal had a beneficial effect on outcomes, due to the construal of arousal as negative or positive affect respectively. Findings have important implications not only for negotiation, but also for research on misattribution of arousal, which previously has focused on the target of evaluation, in contrast to the current research, which focuses on the critical role of the perceiver.

*Keywords:* negotiation, misattribution of arousal, emotions, subjective value, economic outcomes

### The Polarizing Effect of Arousal on Negotiation

Our stomachs get tied up in knots. Our hearts start to pound. Our faces flush. Our palms sweat. These are all visceral responses signaling that something is wrong and that we are losing our composure in the negotiation. (Ury, 2006, p. 43)

Conventional wisdom suggests that heightened physiological activation is both pervasive and pernicious in negotiation. It is true that demanding or competitive situations often are accompanied by hallmark physiological responses, such as an upset stomach, quickened heart rate, flushed face, increased blood pressure, or shaking legs (Adler, Rosen, & Silverstein, 1998; Despres, 1997; Malhotra, 2010; Wheeler, 2004), and many individuals may even fear or dread these physical reactions (Williams, Chambless, & Ahrens, 1997). Yet, despite its prevalence and perceived negativity, physiological activation (or arousal) has rarely been examined within extant empirical research on negotiation (Wheeler, 2004), and has received limited attention within decision-making research more broadly (Ku, Malhotra, & Murnighan, 2005; Malhotra, 2010). The current research fills this gap by examining the effects of physiological arousal on negotiation and, in particular, by questioning whether such effects are necessarily detrimental for negotiation outcomes.

In this paper, we explore whether the effect of arousal on negotiation outcomes might actually depend on whether an individual has negative or positive pre-existing attitudes toward negotiation. While arousal is not defined consistently in the psychological literature (Blascovich et al., 1992), we use the term “arousal” to mean activation of the autonomic nervous system (see Schachter & Singer, 1962), including physical manifestations such as increased heart rate and sweat gland secretion. Although empirical research has not examined the impact of arousal on negotiation specifically, researchers have examined its effect on subjective evaluations and

behaviors in other contexts. A common finding of this research, which is consistent with the theory of misattribution of arousal (Schachter & Singer, 1962), is summarized by Storbeck and Clore (2008) as follows: “arousal can make judgments of positive objects more positive and of negative objects more negative” (p. 1837). Yet, whether negotiation is a “positive object” or a “negative object” is in the eye of the beholder—and, consequently, negotiations provide a fitting context in which to test whether the effect of arousal might vary depending on a perceiver’s prior attitudes.

By examining the effect of arousal on negotiation outcomes as a function of prior attitudes, the studies reported here advance research and theory in two important ways. First, the theory of misattribution of arousal until now has been investigated predominantly by controlling the valence (i.e., positivity or negativity) of the object of judgment (or target being evaluated) while manipulating participants’ levels of arousal (Reisenzein, 1983). For instance, in one of the most famous of studies on misattribution of arousal, Dutton and Aron (1974) selected an attractive female confederate as the target and measured male participants’ romantic attraction after crossing either a swaying bridge in a high arousal condition or a stable bridge in a low arousal condition (for studies containing both positively and negatively valenced targets, see Gorn, Pham, & Sin, 2001; White, Fishbein, & Rutstein, 1981). In our studies, we extend the theory of misattribution of arousal by focusing on the role of the perceiver, and exploring how the effect of arousal varies, not based on the target’s valence, but based on the individual evaluating the target. This shift in focus to the perceiver is a meaningful extension because under such conditions not all participants are expected to respond to arousal in the same direction, even when experiencing the same object of judgment. Instead, perceivers’ prior attitudes are hypothesized to moderate the impact of arousal, resulting in a polarization effect.

We also contribute to the negotiation literature by challenging the common intuition that arousal is necessarily harmful for negotiations. Although negotiation researchers previously have considered the effect of certain discrete, high arousal emotions, such as anger (e.g., Sinaceur & Tiedens, 2006; Van Kleef, De Dreu, & Manstead, 2004), anxiety (Brooks & Schweitzer, 2011), and envy (Moran & Schweitzer, 2008), arousal has not been studied in isolation. Disentangling arousal from valence is important as evidenced by research from other domains showing that arousal and valence have distinct effects (e.g., Gorn et al., 2001; Stefanucci & Storbeck, 2009). In decision-making studies, arousal specifically has been found to increase decision-making speed (Hackley & Valle-Inclan, 1999), promote shallow-level processing (Shapiro, MacInnis, & Park, 2002), and foster risk-seeking behavior (Ditto, Pizarro, Epstein, Jacobson, & MacDonald, 2006; Mano, 1994), all of which may have important implications in negotiations.

In the experiments reported below, we evaluate the interaction of arousal and prior attitudes on subjective evaluations (Studies 1 and 2) and objective outcomes (Study 2). To examine the underlying process, we also explore whether heightened arousal from physical exercise is misattributed to the negotiation and, in turn, interpreted as negative or positive affect, depending on prior attitudes toward negotiation (Study 1).

### **Study 1**

In Study 1, we explored how prior attitudes might moderate the impact of arousal on subjective negotiation outcomes. We focused initially on subjective evaluations to be consistent with past research on misattribution of arousal, which predominately evaluates subjective responses to targets, such as ratings of liking (Storms & Thomas, 1977), attraction (Dutton & Aron, 1974; Meston & Frohlich, 2003), or humor (Cantor, Bryant, & Zillmann, 1974). We

manipulated arousal using physical exercise, as has commonly been done in research on misattribution of arousal, because this is considered an affectively neutral procedure (e.g., Foster, Witcher, Campbell, & Green, 1998; White et al., 1981). We predicted that the impact of arousal on subjective outcomes would depend on prior attitudes.

### **Method**

The study was conducted in two stages occurring at different points in time. In the first stage, 247 students at a Northeast university responded to a survey as part of a longer battery of surveys from various researchers and distributed through a behavioral lab. Respondents indicated their prior attitudes toward negotiation by rating the extent to which they dread (-4) versus look forward to (+4) negotiating, bargaining, and haggling ( $\alpha = .83$ ), along with 21 other unrelated life activities adapted from Kahneman, Krueger, Schkade, Schwarz, and Stone (2004). Participants were compensated with a \$5 gift certificate to Amazon.com.

In the second stage, 176 individuals were randomly selected out of the 247 questionnaire respondents and invited via e-mail to participate in a laboratory experiment several weeks later. Given constraints in the lab, a limited number of individuals could participate each week such that invitations were distributed in waves until all experimental conditions were filled. This procedure resulted in 84 participants (51 male, 33 female) completing the experiment for payment of \$20 and entry into a \$100 raffle contingent on negotiation performance. Analyses of demographic variables provided no evidence of response bias. Specifically, participants in the follow-up experiment did not differ significantly from participants who completed the prior attitudes survey in terms of age, sex, or native language.

At the point of recruitment, no connection was communicated between the prior attitudes survey and laboratory experiment, and participants were not aware that the experiment would

involve a negotiation. Once they arrived, participants were informed that the researchers were interested in the effects of negotiating while on mobile phones and that participants would be walking on a treadmill while negotiating, given that people are often active when using mobile phones. The negotiation task was a distributive bargaining case in which participants negotiated over the price of a used car based on provided information.

Participants were led to believe that they were negotiating with another participant, yet they actually negotiated with a confederate. All participants were told that they had been randomly assigned to the role of a potential buyer of the car and that their objective was to negotiate a purchase price that was as low as possible. The confederates, who were blind to study hypotheses and experimental condition, were trained to follow a negotiation script to maximize consistency (see also Filipowicz, Barsade, & Melwani, 2011). Two participants expressed suspicion about the authenticity of the confederate and were excluded from further analyses.

Participants had approximately five minutes to prepare and were walking on the treadmill while doing so to become accustomed to the setup. The treadmill speed (which was set by the experimenter) served as the experimental manipulation of arousal. Participants were randomly assigned to either a high arousal condition ( $n = 42$ ) in which the treadmill was set at 3.0 miles per hour or a low arousal condition ( $n = 40$ ) in which the treadmill was set at 1.5 miles per hour. Participants were instructed to hold on tightly to the treadmill handle bars at all times (while using a mobile phone headset), which allowed us to measure participants' heart rates surreptitiously via the treadmill heart rate monitor. As a manipulation check, we confirmed that the average heart rate of participants in the high arousal condition ( $M = 117.02$  beats/minute,



$SD = 13.75$ ) was significantly higher than in the low arousal condition ( $M = 87.75$  beats/minute,  $SD = 14.65$ ),  $t(80) = 9.33$ ,  $p < .001$ .

All negotiations were interrupted before an agreement was reached to remove the salience of the agreement (or lack thereof) from participants' reports of their global subjective outcomes. The experimenter interrupted the negotiation at a specific point in the confederate script or at the ten-minute mark, whichever occurred more quickly, and participants were told that they would be able to continue the negotiation if time permitted (for a similar procedure, see Van Kleef et al., 2004).

Participants then completed a post-negotiation questionnaire to measure subjective outcomes (i.e., feelings about the self, process, relationship, and instrumental outcome), using the previously validated 16-item Subjective Value Inventory (Curhan, Elfenbein, & Xu, 2006). Responses were measured on a 7-point scale, and a global subjective value score was formed based on average responses across all items ( $\alpha = .80$ ; see Curhan, Elfenbein, & Eisenkraft, 2010). Participants also rated (on a scale ranging from 1 = *very slightly or not all* to 5 = *extremely*) the degree to which they had experienced negative affect—nervous, frustrated, and irritable ( $\alpha = .78$ )—and positive affect—excited, enthusiastic, and content ( $\alpha = .72$ )—during the negotiation. Participants then described in their own words why they felt physiologically aroused (e.g., increased heart rate, sweating palms), if at all, and answered demographic questions.

## **Results and Discussion**

**Subjective value.** To test our interaction hypothesis, we regressed subjective value on arousal, prior attitudes, and the interaction of arousal with prior attitudes. We also included a control variable for whether English was the participant's native language because past research

has found this variable to have an effect on subjective value (Elfenbein, Curhan, Eisenkraft, Shirako, & Baccaro, 2008). We found a significant interaction between arousal and prior attitudes,  $\beta = .46$ ,  $t(77) = 2.83$ ,  $p = .006$ .<sup>1</sup> Among those who had negative prior attitudes, participants in the high arousal condition had lower subjective value, on average, than participants in the low arousal condition. By contrast, among those who had positive prior attitudes, participants in the high arousal condition had higher subjective value, on average, than participants in the low arousal condition (see Figure 1). The English language control variable was not significant.

**Mediation analysis.** We examined whether negative and positive affect mediate the relationship between prior attitudes and subjective outcomes using participants' ratings of the emotions experienced during the negotiation. Given that our prediction concerned the construal of heightened arousal, we expected mediation in the high arousal condition but not in the low arousal condition. In order to statistically compare the indirect effects across the high and low arousal conditions, our model included prior attitudes as the independent variable, subjective value as the dependent variable, negative and positive affect as simultaneous mediators, and covariates for arousal and native language. The bootstrap estimates and bias-corrected 95% confidence intervals are based on the SPSS version of the Preacher and Hayes (2008) macro with 5,000 samples. Consistent with our hypothesis, the total indirect effect of prior attitudes on subjective value through negative and positive affect was significant in the high arousal condition,  $b = 0.12$ , CI: [0.048, 0.20], but not in the low arousal condition,  $b = 0.019$ , CI [-0.015, 0.054]. A pairwise contrast confirmed that these indirect effects are statistically different from each other, CI [0.023, 0.18]. These results suggest that heightened arousal is construed as

negative or positive affect, as a function of one's prior attitudes, which in turn influence evaluations of the negotiation experience (i.e., subjective value).

### **Study 2**

In Study 2, we tested whether the pattern of results found for subjective outcomes also extends to economic performance. This study represents not only a replication and extension of our Study 1 findings, but also a further extension of the misattribution of arousal paradigm, which has not previously been used to evaluate economic outcomes. We also enhanced the external validity of Study 2 through three procedural revisions. First, we increased the representativeness of the negotiation by using an integrative negotiation task (see details below). Second, we increased the generalizability of the results by having pairs of real participants negotiate (as opposed to participants paired with a confederate). Finally, we increased the ecological validity by using a more naturalistic manipulation of arousal in which participants were instructed either to walk (high arousal condition) or to be seated (low arousal condition) during their negotiations.

We hypothesized an interaction between arousal and prior attitudes predicting subjective outcomes, as in Study 1, as well as a similar interaction predicting economic outcomes. We reasoned that participants would construe their own arousal as negative or positive affect, depending on their prior attitudes, and that this negative or positive affect, in turn, would drive economic performance. This logic is supported by past research demonstrating that positive affect is associated not only with higher subjective value but also with higher objective outcomes (e.g., Elfenbein et al., 2008).

## Method

Similar to Study 1, Study 2 involved two stages that were administered in seemingly unrelated contexts and separated in time by several weeks. All first-year Master's of Business Administration students at a Northeast university ( $N = 401$ ) were invited to participate, although not all students completed the two required stages. Our sample included 125 dyads (comprised of 164 males and 86 females) for which both members participated in both stages. Analyses of demographic variables suggested no evidence of response bias in that those students who participated did not differ significantly from those who did not participate in terms of age, sex, or native language.

In the first stage, prior attitudes toward negotiation ( $\alpha = .80$ ) were measured, using the same approach as in Study 1. In the second stage, participants completed a scored negotiation simulation based on the New Recruit exercise (Neale, 1997). Participants were randomly assigned to job candidate or recruiter roles, and the negotiation involved eight issues concerning the job candidate's compensation package. Two of these issues were distributive, two of the issues were compatible (Thompson & Hrebec, 1996), and four of the issues were integrative (Froman & Cohen, 1970; Pruitt, 1983). Participants were told that each point earned would secure them one raffle ticket and that four tickets, each worth \$125, would be drawn.

Participants were instructed to negotiate via phone and, in their confidential instructions, participants assigned to the low arousal condition were instructed to remain seated throughout the entire negotiation, whereas participants assigned to the high arousal condition were instructed to walk continuously, either indoors or outdoors, throughout the entire negotiation. The rationale provided was that students frequently negotiate their compensation packages by phone, and with our ever-increasing reliance on mobile phones, these negotiations often occur with one or both

parties walking. All participants were informed that some individuals would be seated and others would be walking, but despite such disclosure, participants were asked not to discuss whether they were seated or walking to minimize the chance that some participants might feel as though they were at an advantage or a disadvantage relative to their counterpart.

We treated participants in the job candidate role as the focal subjects, theorizing that our sample could relate to this role most readily in the immediate future. That is, we assigned the high arousal condition to half of the job candidates, and the low arousal condition to the other half of the job candidates—and only job candidates are included in the analyses below.

Participants in the recruiter role were conceptualized as randomly selected counterparts, and therefore, to make the counterparts as uniform as possible, all participants playing the recruiter role were instructed to be seated.

Immediately after their negotiations, participants were instructed to complete a post-negotiation questionnaire that included the same subjective value measure used in Study 1 ( $\alpha = .93$ ). Participants also reported the agreement reached and total points earned (all dyads reached an agreement). As a manipulation check, participants were asked what their primary mode of communication was, whether they were walking or sitting during their negotiations, and whether they disclosed this information to their counterpart (to check for protocol violations). Ten participants were excluded from analyses for not following the protocol. Lastly, participants answered demographic questions and reported whether they had a pre-existing relationship (in real-life) with their counterpart.

## **Results and Discussion**

**Subjective value.** As in Study 1, we regressed subjective value on arousal, prior attitudes, the interaction of arousal with prior attitudes, and a control variable for participants'

native language. We also included two control variables pertaining to the dyadic nature of Study 2 (i.e., unlike Study 1, neither role was played by a confederate), including whether the candidate and recruiter had a pre-existing relationship and counterparts' prior attitudes toward negotiation.

Results for subjective value replicated Study 1. That is, we found a significant interaction between arousal and prior attitudes on subjective value,  $\beta = .26$ ,  $t(108) = 2.13$ ,  $p = .03$ . Among participants with negative prior attitudes, those in the high arousal (walking) condition reported lower subjective value, on average, than those in the low arousal (seated) condition. By contrast, among participants with positive prior attitudes, those in the high arousal condition reported higher subjective value, on average, than those in the low arousal condition (see Figure 2). Additionally, the control variable for counterparts' prior attitudes was significant,  $\beta = -.23$ ,  $t(108) = -2.45$ ,  $p = .02$ , indicating that the more one's counterpart looked forward to negotiation, the lower one's own subjective value. No other control variables were significant.

**Objective value.** To test our hypothesis with respect to objective outcomes, we regressed the number of points earned by the job candidate on arousal, prior attitudes, and the interaction of arousal with prior attitudes. We also included the same control variables as those used in the regression model with subjective value. The interaction term between arousal and prior attitudes was significant in predicting objective value, indexed by points,  $\beta = .31$ ,  $t(108) = 2.56$ ,  $p = .01$ . As hypothesized, among participants with negative prior attitudes, those in the high arousal (walking) condition earned fewer points, on average, than those in the low arousal (seated) condition, whereas among participants with positive prior attitudes, those in the high arousal condition earned more points, on average, than those in the low arousal condition (see Figure 3). In addition, the control variable for participants' native language was significant,

$\beta = .29$ ,  $t(108) = 3.04$ ,  $p = .003$ , indicating that native English speakers, on average, earned more individual points.

### **General Discussion**

Negotiation can be viewed as either a negative or positive endeavor; some individuals dread it, while others look forward to it. Using the misattribution of arousal paradigm, we show that arousal polarizes negotiators' subjective and objective value in a direction consistent with negotiators' pre-existing attitudes toward negotiation. Taken together, our findings suggest that individuals who dread negotiation, consistent with conventional wisdom, feel worse and perform less well in negotiations when they are physiologically aroused, because they construe their arousal as negative affect, yet individuals who look forward to negotiation have more favorable subjective experiences and perform better when their arousal is heightened, because they construe their arousal as positive affect.

Until now, the vast majority of research on misattribution of arousal documented effects moderated by the valence of the target. We shift attention from the target to the perceiver, demonstrating a polarization effect whereby perceivers' prior attitudes moderate the impact of arousal. This extension of the theory of misattribution of arousal is critical given that arousal often is misattributed to targets that do not have a single valence.

The current findings also have important implications for negotiation practice. The effect of arousal on negotiation outcomes has been largely overlooked by researchers, which is ironic given the prevalence of heightened arousal while negotiating. Despite the absence of empirical research, lay theories and prescriptive literature (e.g., Ury, 2006) suggest that arousal should be detrimental for negotiation. However, our findings demonstrate that this is not always the case.

In fact, some individuals seem to benefit from arousal in terms of its effect on subjective and objective outcomes.

This paper represents an important step towards examining the role of arousal as an independent variable in negotiation, yet it is not without limitations. First, our studies relied upon self-reports of individuals' prior attitudes toward negotiation, and we measured these attitudes in generalized terms, whereas they may vary by negotiation type or nature of the relationship between negotiators. We made these design choices because we prioritized collecting attitudinal measures in a separate context from the negotiation studies to minimize demand effects. Second, our manipulations of arousal were rather blunt—albeit consistent with previous research on misattribution of arousal. In Study 1, for example, we carefully monitored heart rate via the treadmill read-out, but we did not obtain other measurements of arousal, such as galvanic skin response or blood pressure. Consequently, we cannot pinpoint the exact impact of our arousal manipulations on the autonomic nervous system.

Future research might continue to examine the role of the perceiver in misattributing arousal from one source to another. For instance, negotiation was a compelling context because prior attitudes toward negotiation vary considerably, but additional studies might explore other contexts, such as public speaking, academic performance, or competitive sports. Across all of these contexts, research could investigate strategies to train individuals to develop more positive attitudes toward the target, including emotion regulation (Gross, 1998), in light of the possible beneficial effects associated with arousal for individuals with positive prior attitudes.



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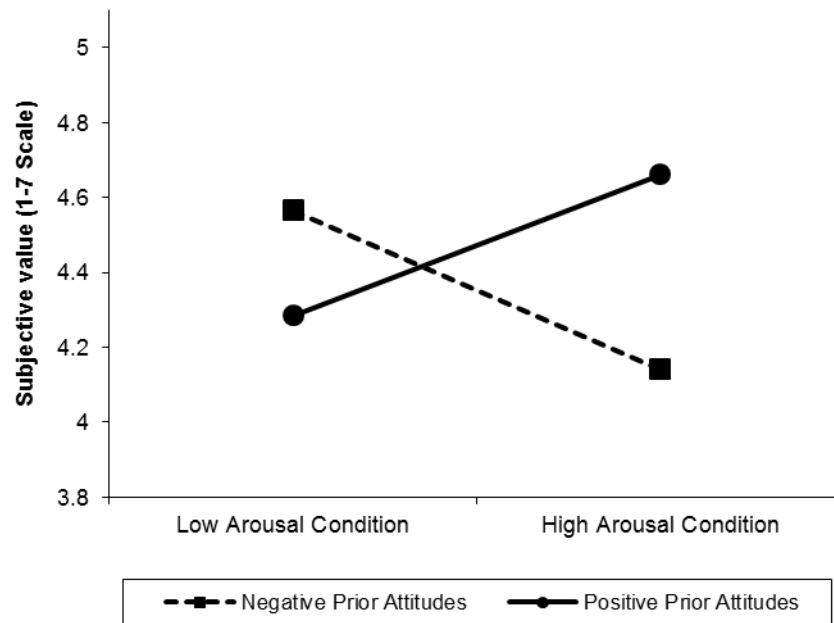
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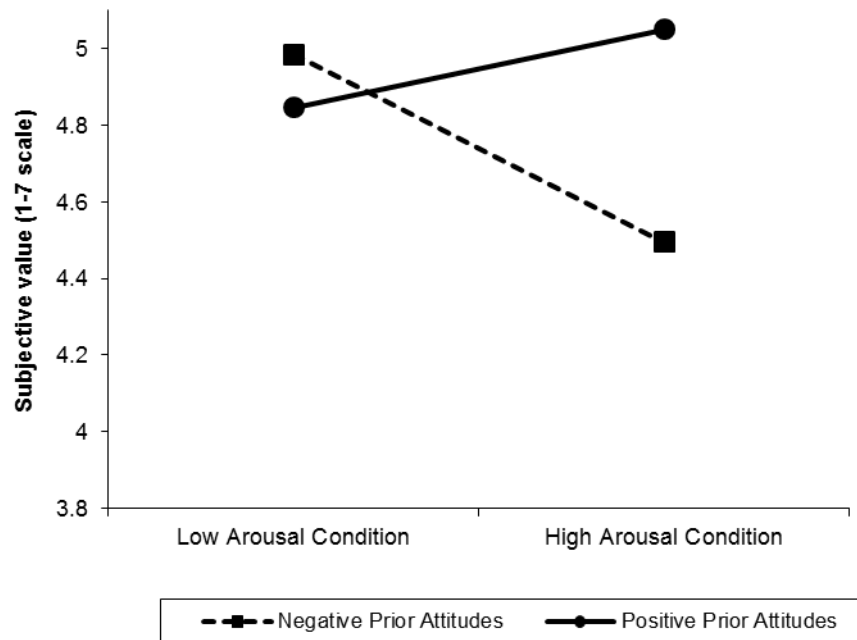
## Footnotes

<sup>1</sup> A strict interpretation of misattribution of arousal requires that the arousal source be ambiguous (for a review, see Foster et al., 1998). To explore this issue, we coded participants' written descriptions of why they felt aroused ( $n = 58$ ); some participants attributed their arousal fully to the treadmill (i.e., unambiguous source), whereas others attributed their arousal at least in part to the negotiation (i.e., ambiguous source). We then examined a three-way interaction between arousal, prior attitudes, and participants' perceptions of the arousal source as a predictor of subjective value. The three-way interaction was significant,  $b = 0.79$ ,  $t(49) = 2.35$ ,  $p = .02$ . Further probing, following Hayes (2012), revealed that the two-way interaction between arousal and prior attitudes was not a significant predictor of subjective value when the arousal source was unambiguous,  $b = -0.32$ ,  $t(49) = -1.03$ ,  $p = .31$ , but was significant when the source was ambiguous,  $b = 0.47$ ,  $t(49) = 3.73$ ,  $p = .0005$ , suggesting that misattribution of arousal provides a better process account than alternative theories.

## Figures

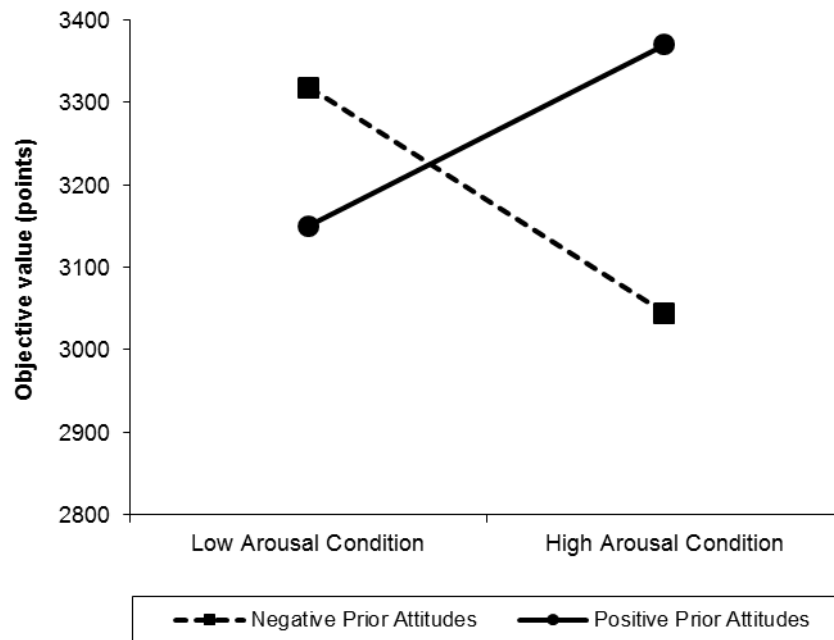


*Figure 1.* Subjective value as a function of experimental condition (low versus high arousal) for participants with negative versus positive prior attitudes toward negotiation, Study 1. All continuous independent variables were centered by transforming them into deviation scores (see Aiken & West, 1991). In order to graphically display the interaction involving prior attitudes (i.e., a continuous variable), prototypical values were chosen based on plus or minus one standard deviation ( $SD = 1.51$ ) from the mean ( $M = -0.68$ ); the dichotomous covariate is set to equal zero (see Aiken & West, 1991).



*Figure 2.* Subjective value as a function of experimental condition (low versus high arousal) for participants with negative versus positive prior attitudes toward negotiation, Study 2. All continuous independent variables were centered by transforming them into deviation scores (see Aiken & West, 1991). In order to graphically display the interaction involving prior attitudes (i.e., a continuous variable), prototypical values were chosen based on plus or minus one standard deviation ( $SD = 1.59$ ) from the mean ( $M = 0.21$ ); the dichotomous covariates are set to equal zero and the continuous covariate is set to equal its mean value (see Aiken & West, 1991).





*Figure 3.* Individual points earned as a function of experimental condition (low versus high arousal) for participants with negative versus positive prior attitudes toward negotiation, Study 2. All continuous independent variables were centered by transforming them into deviation scores (see Aiken & West, 1991). In order to graphically display the interaction involving prior attitudes (i.e., a continuous variable), prototypical values were chosen based on plus or minus one standard deviation ( $SD = 1.59$ ) from the mean ( $M = 0.21$ ); the dichotomous covariates are set to equal zero and the continuous covariate is set to equal its mean value (see Aiken & West, 1991).