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RESEARCH REPORT

Excluded and Behaving Unethically: Social Exclusion, Physiological Responses, and Unethical Behavior

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Across 2 studies, we investigated the ethical consequences of physiological responses to social exclusion. In Study 1, participants who were socially excluded were more likely to engage in unethical behavior to make money and the level of physiological arousal experienced during exclusion—measured using galvanic skin response—mediated the effects of exclusion on unethical behavior. Likewise, in Study 2, results from a sample of supervisor–subordinate dyads revealed a positive relationship between experience of workplace ostracism and unethical behaviors as rated by the immediate supervisors. This relationship was mediated by employees' reports of experienced physiological arousal. Together, the results of these studies demonstrate that physiological arousal accompanies social exclusion and provides an explanatory mechanism for the increased unethical behavior in both samples. Theoretical implications of these findings for research on ethical behavior and social exclusion in the workplace are discussed.

Keywords: social exclusion, ostracism, unethical behavior, physiological arousal, emotional responses

As social beings, humans have an inherent desire to belong and to be accepted as a member of a group (for a review, see Baumeister & Leary, 1995). The breaking of social bonds among people in situations involving exclusion creates a lack of belongingness and really does hurt, as the experience of being excluded by others parallels that of physical pain (e.g., Eisenberger, Lieberman, & Williams, 2003; MacDonald & Leary, 2005). The manifestation of social exclusion, often labeled *ostracism* (Williams, 2001), in everyday life suggests that these processes are prevalent and occur across a wide range of social settings, including in the workplace. The experience of workplace exclusion, defined as "the extent to which an individual perceives that he or she is ignored or excluded by others" at work (Ferris, Brown, Berry, & Lian, 2008, p. 1348), can occur in many different ways. For example, employees may be purposefully left out of conversation with their peers in the break room, or they may feel excluded from taking part in activities with others in their office (Ferris et al., 2008). In addition, researchers have found that ostracism in the workplace can result from an employee feeling "out of the loop," or uninformed about information that is mutually known by others (Jones, Carter-Sowell, Kelly, & Williams, 2009).

Organizational scholars have addressed the issue of employees being excluded with conceptual models outlining the antecedents and outcomes of exclusion in the workplace (e.g., Robinson, O'Reilly, & Wang, 2013; Scott, Restubog, & Zagenczyk, 2013). Empirical research examining the adverse impact of exclusion in the workplace has demonstrated a negative association between ostracism and job attitudes (e.g., job satisfaction, organizational commitment) and in-role job performance (Ferris et al., 2008). In addition, more recent studies have linked ostracism to workplace deviant behaviors, such as making fun of a co-worker or neglecting to follow boss's instructions (Ferris et al., 2008); studies have also shown that employees who are ostracized at work are less likely to engage in organizational citizenship and other prosocial behaviors (Balliet & Ferris, 2013). Although this work has begun to unpack the potential negative consequences of exclusion in the workplace, it has focused primarily on behaviors in organizations that are either functional or dysfunctional to an organization such as those related to employees' participation in prosocial behaviors (e.g., helping a co-worker) and deviant work behaviors (e.g., gossiping about a co-worker).

Despite conceptual and empirical overlap between workplace deviance and unethical behavior, they are distinct concepts (Kish-Gephart, Harrison, & Trevino, 2010; Trevino, Weaver, & Reynolds, 2006). *Workplace deviance* is defined as an organizational member's action that violates organizational norms (Bennett & Robinson, 2000), while *unethical behavior* involves violations of widely accepted societal moral norms (Trevino et al., 2006). Therefore, workplace deviance may or may not match the societal norms. Similarly, a behavior may violate accepted societal moral norms while being normative in the organization. Thus, despite some overlap, the two are distinct. Here, we examine the relationship between social exclusion and unethical behaviors.

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Perhaps more important, however, is the question of why exclusion is consistently associated with a wide variety of negative behaviors and, in this case, unethical behavior. In their review of workplace ostracism, Robinson et al. (2013) argued that the relationship between ostracism and negative behavioral outcomes is mediated, in part, by the psychological effect of ostracism. Several mediating psychological mechanisms for the link between exclusion and negative behaviors have been demonstrated. Emotional responses such as anger (Buckley, Winkel, & Leary, 2004; Chow, Tiedens, & Govan, 2008), threatened sense of control (Gerber & Wheeler, 2009; Warburton Williams, & Cairns, 2006), and hostile cognition (DeWall, Twenge, Gitter, & Baumeister, 2009) are among them.

Studies examining the effects of people's psychological responses have relied on participants' report of various types of psychological states following social exclusion (for a meta-analytic review, see Gerber & Wheeler, 2009), including reduced mood (e.g., Leary et al., 2003; Zadro, Williams, & Richardson, 2004), lowered self-esteem (e.g., Leary, Tambor, Terdal, & Downs, 1995), and arousal (DeWall & Baumeister, 2006; Zadro, Williams, & Richardson, 2005). Despite the potentially important role of physiological mechanisms (e.g., Blackhart, Eckel, & Tice, 2007), few studies have explored the interplay of exclusion, physiological responses, and behaviors (Gunther Moor, Crone, & van der Molen, 2010). We argue that physiological reactions co-occur with psychological responses during experienced exclusion, and these physiological markers can be used as a stronger predictor of behavioral responses such as unethical behaviors, in particular, because these reactions are less likely to be within people's control.

We investigated the relationship between exclusion and unethical behavior by examining physiological responses to ostracism (i.e., physiological arousal *during* the experience of exclusion) as the underlying mechanism. In addition to addressing the general need for research on exclusion–physiological effects, the current investigation makes several important contributions to the literature. First, we assessed the behavioral outcomes of the exclusion–physiological relationship. We examined the effects of exclusion on unethical behaviors as opposed to deviant or prosocial behaviors, which have been the primary focus of prior research. Second, in addition to testing in a controlled laboratory setting, we examined the link between social exclusion, physiology, and unethical behavior in the workplace. Although evidence has suggested that exclusion elicits physiological arousal (e.g., Stroud, Tanofsky-Kraff, Wilfley, & Salovey, 2000), it is unclear what implications physiological arousal has for organization-relevant unethical behaviors. Third, we manipulated and measured experienced exclusion, allowing us to draw conclusions about the causal effects of social exclusion on physiological activity and unethical behaviors.

Theory Development and Hypotheses

Many empirical studies have shown the adverse psychological, emotional, physiological, and behavioral consequences of exclusion (e.g., Baumeister, DeWall, Ciarocco, & Twenge, 2005; Ferris et al., 2008; Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007; Williams, Cheung, & Choi, 2000). Research has consistently shown that emotional distress created by exclusion is related to enhanced activation of the limbic system (Eisenberger, 2012; Kross, Berman, Mischel, Smith, & Wagner, 2011), which leads to increased sympathetic arousal of the autonomic nervous system (Cavanagh & Allen, 2009). Furthermore, research has found that people who are excluded have greater levels of salivary cortisol, one biomarker of increased physiological arousal and stress reactivity to negative emotion, following a period of exclusion (Blackhart et al., 2007; Stroud et al., 2000).

Together, these findings suggest that social exclusion results in increased physiological arousal[1], while also illustrating that exclusion has effects on both short-term physiological reactions (as indexed by increased activity of the sympathetic nervous system) as well as on longer term reactions (as indexed by increased levels of cortisol). We believe that the strongest mechanisms through which exclusion impacts behavior are likely physiological ones because these reactions are less likely to be within people's control. Consistent with Bernstein and Claypool (2012), we posited that the social pain of exclusion results in greater experienced physiological arousal.

> *Hypothesis 1:* Excluded individuals are more likely to experience heightened levels of physiological arousal compared with individuals who are not excluded.

Most models of ethical decision making (e.g., Jones, 1991; Rest, 1986; Trevino, 1986) follow the tradition of rational decision making in emphasizing the role of a "cognitive, deliberate, and governed by reason" process (Tenbrunsel & Smith-Crowe, 2008, p. 571). Recent work has challenged this notion, demonstrating that somatic-markers are important in general for effective decision making (Damasio, 1994) but also in particular for moral judgments and behaviors (Greene & Haidt, 2002; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Teper, Inzlicht, & Page-Gould, 2011). The somatic-markers hypothesis (Bechara & Damasio, 2005) proposes that somatic markers induce an associated physiological affective state, which can influence cognitive processing. In other words, the somatic marker created by the relevant stimuli produces a net somatic state, which subsequently affects decisions and behaviors.

Given this importance of somatic states, and following Dienstbier and Munter's (1971) emotion-attribution approach to moral behavior, we argue that physiological arousal resulting from exclusion can increase unethical behaviors. Under tempting situations, when people have an opportunity to engage in unethical behaviors, behavior is heavily influenced by negative emotional

[1] Whereas we proposed that experienced exclusion results in physiological *arousal*, some social psychological theories of social exclusion and rejection posit that individuals experience a state of emotional *numbness* as a consequence of being excluded or rejected by others (DeWall & Baumeister, 2006). The proposition that exclusion results in temporary feelings of numbness and increased insensitivity to pain has been supported by a pattern of results indicating no significant differences in self-reported emotion among participants who were socially excluded and those who were not (Baumeister, Twenge, & Nuss, 2002). This emotional numbing hypothesis fits with the lack of self-reported emotional reactions to exclusion; however, other studies have shown that exclusion is associated with emotional distress and self-reported heightened levels of negative affect (Chow et al., 2008; Gerber & Wheeler, 2009) and arousal (Zadro et al., 2005). To reconcile the contradictory findings, Bernstein and Claypool (2012) suggested that the social pain of exclusion generally results in greater arousal, except that when the pain becomes too great it leads to feelings of numbness.

states such as guilt, fear, or anxiety, which prevent people from behaving unethically. However, for the arousal associated with negative feelings to serve an inhibitory function, the individual must identify the arousal and discomfort as due to a moral situation (e.g., the possibility of being caught, the implications for moral self-image, and so forth), rather than due to other causes, such as experiences of ostracism. Dienstbier and Munter (1971) demonstrated that people cheat more and disregard the natural, inhibiting arousal as a result of cheating when they can attribute the emotional arousal associated with cheating to a placebo pill, which supposedly had associated emotional side effects. Therefore, if individuals are already in a high arousal state, they may likely misattribute the arousal associated with behaving unethically to the ostracism experience. In other words, the higher the arousal from an exclusion episode, the less likely a person is to associate the natural emotional responses connected with unethical actions to the current, ethical decision-making process. This makes a person more likely to behave in a disinhibited fashion and to engage in unethical behavior.

Of course, as noted earlier, several mediating psychological mechanisms can lead excluded individuals to engage in more unethical behaviors. Earlier, we noted that negative emotional responses and threatened sense of control are among them. Past research has showed that experienced anger can drive unethical behaviors (Schweitzer & Gibson, 2008). Thus, it is plausible that encountering an exclusion interaction could induce enough negatively valenced affect to compel an individual to behave unethically. Therefore, it is important to demonstrate that physiological arousal makes a unique contribution in explaining people's unethical behavior. To address this issue, we tested for the mediating effect of physiological arousal on increasing unethical behaviors after controlling for individuals' affective responses in order to effectively demonstrate the unique effects of physiological arousal.

In sum, we predicted that social exclusion would increase a person's likelihood to act unethically and that physiological arousal mediates this relationship.

Hypothesis 2: Excluded individuals are more likely to engage in unethical behaviors compared with individuals who are not excluded.

Hypothesis 3: Physiological arousal mediates the relationship between exclusion and unethical behaviors, such that excluded individuals are more likely to experience heightened physiological arousal, which in turn increases the likelihood of engaging in unethical behaviors.

Hypothesis 4: The indirect effect of exclusion on unethical behavior via physiological arousal remains significant after controlling for emotional responses.

Overview of Studies

We conducted two studies to test our hypotheses. In Study 1, we examined whether the changes in physiological arousal, as measured by skin conductance level[2], mediate an increase in unethical behavior. In doing so, we empirically investigated whether social exclusion leads to heightened levels of physiological arousal and results in unethical behaviors. In Study 2, we used data from pairs of supervisor–subordinates to test whether experience of workplace ostracism is positively related with unethical behavior in the workplace. We also tested for reports of physiological arousal as the mediating mechanism in this sample.

Study 1

Method

Participants. Forty-seven students (31 male; M_{age} = 23.6 years, SD = 3.6) participated in the study in exchange for course credit but also had an opportunity to earn money based on their reported performance. Nine participants (seven male; six participants in the exclusion condition and three in the inclusion condition) were excluded from the study due to technical errors resulting in incomplete/insufficient physiological responses.

Procedure. Participants were brought into the lab individually and randomly assigned to one of two conditions: inclusion or exclusion. Once at the computer, participants were asked to indicate their dominant hand. In order to obtain a measure of physiological activity (skin conductance level; SCL), the experimenter attached two pre-gelled surface electrodes to the middle volar surfaces of the first and second fingers of the nondominant hand. This configuration allowed participants to respond using their dominant hand to minimize the amount of movement during the experiment.

Prior to beginning the experimental tasks, participants were instructed to relax and clear their minds for a period of 1 min to allow the experimenter to obtain a baseline level of their physiological arousal. Following this, the experimenter left the room, and the computerized tasks were automatically initiated after the baseline measurement. Participants completed two tasks: a virtual ball-tossing game and a problem-solving matrix task. Participants first played Cyberball (Williams & Jarvis, 2006), a virtual ball-tossing game in which participants are engaged with two other players and each player must determine to whom they will pass the ball, which served as our manipulation of exclusion. Participants were told that they were paired with other participants and that the study was being conducted simultaneously in multiple labs. In reality, participants played Cyberball against a computer. In the exclusion condition, participants were thrown the ball for the first 10 throws but then were excluded by the other players for the rest of the 5-min session. In the inclusion condition, participants were thrown the ball equally throughout the duration of the 5-min session.

After playing Cyberball for 5 min, participants reported on a 5-point scale (1 = n*ot at all*, 5 = *extremely*) the extent to which, during the ball-tossing game, they felt the five positive and five negative emotions that compose the short form of the Positive and Negative Affect Schedule (PANAS; Mackinnon et al., 1999), with

[2] Results of experimental studies (e.g., Teper et al., 2011; Tranel & Damasio, 1994) provide robust empirical evidence to support the conclusion that changes in galvanic skin conductance reflect sympathetic arousal activation of the autonomic nervous system and thus serve as valid proxies for measuring and operationalizing physiological arousal. Galvanic skin conductance measurements have been shown to be significantly correlated and overlap with other measures of physiological arousal, including various indices of cardiovascular activity such as heart rate variability and respiratory sinus arrhythmia.

an additional item, "Angry," included in the measure (Chow et al., 2008). Afterward, participants completed a problem-solving matrix task (adapted from Wiltermuth, 2011) in which they were instructed that they would earn $0.25 for each correctly solved matrix (i.e., "Find the two numbers in the matrix that sum to 10") and were presented with 20 matrices of 12 three-digit numbers (e.g., 4.27) appearing on the screen for 15 s (see Figure 1 for an example). Participants were asked to only indicate whether they found the matching pair for each matrix. Half of the matrices (n = 10) were solvable (i.e., contained two numbers summing to 10), while the other half were unsolvable (i.e., did not contain two numbers summing to 10). That is, unbeknownst to participants, this task allowed us to gauge cheating behavior. If a participant reported finding a solution pair in an unsolvable matrix, it is a clear indication that he or she had cheated on that matrix.

After participants finished both tasks, two items were used to measure the extent to which participants felt both excluded and included (reverse-scored) during the ball-tossing game on a 9-point scale (1 = *not at all*, 9 = *very much*), which served as our manipulation check (α = .81). At the end, participants were paid in cash based on their reported number of solved matrices.

Physiological data recording and analysis. All materials were presented to participants using the stimulus presentation software E–Prime Version 2.0 (Psychology Software Tools). During all experimental tasks, participants' skin conductance level (SCL) was recorded using the Biopac MP150 system (Biopac Systems, Goleta, CA) and GSR100C electrodermal activity amplifier at a sample frequency of 1Hz. SCL was recorded using two pre-gelled electrodes (isotonic gel, 0.05% NaCl solution) attached to the system via two shielded electrode leads. The time phases for specific tasks were established using digital channel signal outputs from the E–Prime software in order to determine time points at which participants started and completed each task. SCL was quantified using the electrodermal analysis suite of Biopac's AcqKnowledge software to obtain mean SCLs for each participant during Cyberball (both overall and 30-s time intervals) and the matrix task. Mean baseline SCL was then subtracted from each of these means to obtain the level of physiological arousal during each time period.

Results and Discussion

The manipulation check, the average of the two questions, showed that participants in the exclusion condition felt significantly more excluded by other players (M = 6.60, SD = 1.68) than those in the inclusion condition (M = 3.72, SD = 1.39), $t(36)$ = 32.69, $p < .001$.

5.64	2.85	9.48
1.68	9.52	2.15
6.71	4.55	1.67
8.10	5.48	8.91

Found it ☐

Figure 1. An example of an unsolvable matrix.

To test Hypothesis 1, we compared the mean SCLs between conditions during Cyberball. As predicted, participants in the exclusion condition experienced a significantly higher level of physiological arousal (M = 1.86, SD = 1.25) compared with those in the inclusion condition (M = 0.86, SD = 1.73), $t(36)$ = 2.08, p = .04, d = 0.67 (see Figure 2).[3]

To test Hypothesis 2, we performed a t test that revealed that participants in the exclusion condition reported solving a higher number of unsolvable (M = 5.35, SD = 3.17) matrices than those in the inclusion condition (M = 3.39, SD = 2.25), $t(36)$ = 2.18, p = .033, d = 0.71. Results show that participants in both conditions cheated to some degree, but participants who were excluded cheated more, thus supporting Hypothesis 2. See Tables 1 and 2 for the means, standard deviations, effect sizes, and zero-order correlations between all of the measured variables and for each condition.

To assess whether physiological arousal mediated the relationship between the exclusion manipulation and unethical behaviors (Hypothesis 3), we followed procedures recommended by Preacher and Hayes (2004). The results of the bootstrapping analysis (with 5,000 iterations) indicated that the exclusion condition had a statistically significant effect on physiological arousal during exclusion (b = 1.00, SE = 0.49, p = .047) which, in turn, significantly affected the reported number of unsolvable matrices (b = 0.74, SE = 0.29, p = .014). The effect of our manipulation was reduced (from b = 1.96, SE = 0.90, p = .036 to b = 1.22, SE = 0.87, p = .18) when physiological arousal was included in the equation. The bootstrap analysis showed that the 95% bias-corrected confidence interval (CI) for the size of the indirect effect excluded zero [0.024, 1.855], suggesting that physiological arousal mediated the effect of exclusion on unethical behavior.

To test the Hypothesis 4 that the indirect effect of exclusion on unethical behavior via physiological arousal remains significant after controlling for emotional responses, we performed a multiple mediation analysis (i.e., simultaneous mediation by multiple variables). Results with 5,000 bootstrapping samples (Preacher & Hayes, 2008) revealed that the indirect effect of manipulation was significant through physiological arousal, as expected, 95% CI [0.079, 2.036]. People who were excluded experienced higher levels of physiological arousal, and this level of physiological arousal mediated the effect of interpersonal exclusion on level of cheating. Study 1 provided initial support for the proposed relationship between the experience of exclusion and unethical behaviors.

[3] To better understand individuals' physiological responses during the exclusion or inclusion experience, we conducted hierarchical linear modeling (HLM) analyses to uncover the pattern of arousal over the course of participation in Cyberball. Mean level of arousal for each 30-s time interval was computed. We tested a two-level hierarchical model where the Level 1 (within-participant) predictor was time and the Level 2 (between-participants) predictor was the condition (inclusion vs. exclusion). The results reveal that participants' levels of arousal were not significantly different between two conditions at the start of the Cyberball (γ_{01} = –.04, p = .94). Whereas changes in the level of arousal for participants in the inclusion condition were not significantly different from zero, excluded participants experienced significant changes in level of arousal (γ_{11} = .16, p = .02), representing increased arousal during Cyberball. However, comparing the mean SCLs during the matrix task, we found no significant difference across conditions, p = .40.

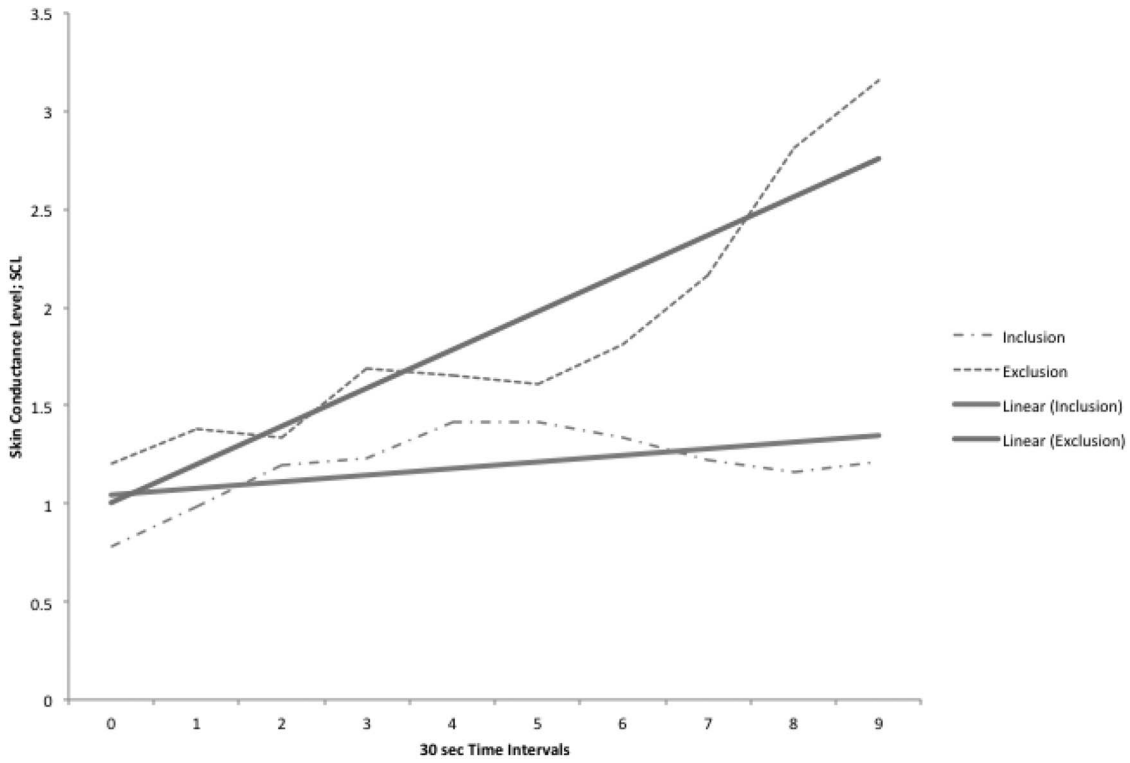

Figure 2. Skin conductance level, SCL (physiological arousal) over time by condition in Study 1. The graph shows mean changes in arousal (Cyberball minus baseline).

Study 2

In Study 1, we experimentally manipulated feelings of exclusion and demonstrated increases in unethical behaviors through increased physiological arousal. In Study 2, we examined whether employees' self-reported exclusion at work and physiological arousal predicted their supervisors' ratings of their unethical behavior. We collected data from subordinate–supervisor dyads to test our hypotheses in an organizational setting and also to eliminate common methods bias.

Method

Participants. We recruited participants for this study through a paid online participant pool, StudyResponse.com (a number of prior studies have used this website; e.g., Ng & Feldman, 2013; Reynolds & Ceranic, 2007). The website identified a pool of individuals and their immediate supervisors who consented to be contacted to participate in research studies. Per our request, StudyResponse contacted a random sample of 100 participants and their immediate supervisors to participate. We obtained completed data from 73 subordinate–supervisor pairs.

Data were collected from surveys administered to both employees and their supervisors who were currently working full time. The sample was drawn from a variety of jobs and organizations. Of the 73 employee respondents, 82% were male with the average age of 36.5 years ($SD = 5.9$). The employee respondents had a mean of 13.2 years of work experience ($SD = 6.7$) and a mean organizational tenure of 7.9 years ($SD = 4.6$). The mean position tenure was 5.6 years ($SD = 3.2$). Of the supervisors in the sample, 77%

Table 1
Descriptive Statistics and Correlations (Study 1)

Variable	Mean	*SD*	1	2	3	4	5
1. Condition	0.53	0.51					
2. Cheating	4.42	2.91	.34*				
3. Arousal (mean SCL)	1.39	1.56	.33*	.47**			
4. Negative affect	1.63	0.58	.20	.05	.30†		
5. Positive affect	2.44	0.82	−.15	−.22	.13	−.17	
6. Anger	1.47	0.92	.32*	.22	.36*	.57***	.02

Note. $N = 38$. SCL = skin conductance level.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2
Means and Comparison Tests for the Variables Assessed by Condition (Study 1)

Variable	*t* (36)	Cohen's *d*	Mean (*SD*) Exclusion	Mean (*SD*) Inclusion
Cheating	2.18*	.71	5.35 (3.17)	3.39 (2.25)
Arousal (mean SCL)	2.08*	.67	1.86 (1.25)	0.86 (1.73)
Negative affect	1.22	.40	1.74 (0.60)	1.51 (0.55)
Positive affect	−0.92	.30	2.32 (0.78)	2.57 (0.88)
Anger	2.10*	.65	1.75 (1.12)	1.17 (0.51)

Note. SCL = skin conductance level.
* $p < .05$.

were male, and the mean age was 41.2 years (SD = 7.5). The mean number of years of supervisor respondents' full-time work experience was 16.9 (SD = 7.9). They had a mean organizational tenure of 11.0 years (SD = 5.8), and the mean position tenure was 8.4 years (SD = 5.6).

Both subordinates and supervisors were asked to complete an online survey in reference to their current job. The supervisor survey contained questions measuring subordinates' unethical behaviors and asked supervisor to provide their own basic demographic information. The employee survey contained measures of ostracism, self-reported physiological arousal, as well as personal demographic information.

Measures.

Experienced exclusion. To measure ostracism at workplace, we used a 10-item measure of workplace ostracism developed by Ferris et al. (2008). Participants indicated how often they had experienced a variety of behaviors at work, such as "Others left the area when you entered," on a 7-point scale (1 = *never*, 7 = *always*). The responses were averaged to form a composite score of workplace ostracism (α = .97).

Self-reported physiological arousal. To measure arousal, we adopted items from the autonomic arousal subscale of the Depression Anxiety and Stress scale (DASS; Lovibond & Lovibond, 1995) consisting of five physiological–emotional symptoms of arousal (α = .92). Participants self-rated the extent to which they had experienced each symptom during or after interpersonal interactions at work on a 4-point scale labeled (1) *did not apply to me at all*, (2) *applied to me to some degree or some of the time*, (3) *applied to me a considerable degree or a good part of the time*, and (4) *applied to me very much or most of the time*. The five items were "I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)," "I perspired noticeably (e.g., hands sweaty) in the absence of high temperatures or physical exertion," "I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat), "I experienced trembling (e.g., in the hands)," and "I was aware of dryness of my mouth."

To provide evidence for validity of the self-reported measure of physiological arousal, we conducted a pilot study with a sample of 21 student participants (12 male; M_{age} = 24.6 years, SD = 3.5) in which we asked participants to watch a short video clip designed to induce high arousal emotional states while recording their physiological activity (skin conductance level; SCL) using procedures identical to those of Study 1. Participants watched a clip from the movie *Silence of the Lambs* (Goetzman & Demme, 1991; Gross & Levenson, 1995) while SCL was continuously recorded. Afterward, they were asked to complete the self-reported physiological arousal measure used in the survey (α = .82) using a 5-point scale (1 = *very slightly or not at all*, 5 = *extremely*). Results showed a positive correlation between induced physiological arousal (mean SCL) and self-reported measure of physiological arousal (r = .63, p = .002). This pilot study provides support for the convergent validity of our physiological arousal measure used with employee respondents.

Emotions. Following Kron, Goldstein, Lee, Gardhouse, and Anderson (2013), we measured feelings using two separate unipolar ratings of pleasant and unpleasant valence. Participants were asked to rate their feelings at work during or after interpersonal interactions using two separate scales, one ranging from (1) *no pleasant feelings* to (9) *strong pleasant feelings* and (1) *no unpleasant feelings* to (9) *strong unpleasant feelings*.

Unethical behaviors. We used Akaah's (1996) 17-item unethical behavior scale (a number of prior studies have used these items; Mayer, Aquino, Greenbaum, & Kuenzi, 2012) to measure supervisors' ratings of their subordinates' unethical behavior at work (α = .97). Each supervisor rated the extent to which their subordinate engaged in each of the described ethically questionable behaviors at work (e.g., "Falsifying time/quality/quantity reports") on a 7-point scale (1 = *never*, 7 = *always*).

Control variables. To accurately assess the relationship, we included a number of control variables that have been found to be significantly related to individuals' unethical behaviors. Relying on the recent meta-analysis by Kish-Gephart et al. (2010), we controlled for individual demographic characteristics (gender, age, and education level).

Results

The means, standard deviations, and zero-order correlations are presented in Table 3. To test the main effects predicted in Hypotheses 1 and 2, we conducted a series of regressions that predicted physiological arousal and unethical behaviors. Table 4 depicts the results of regression analyses. Hypothesis 1 predicted that ostracism at work would be positively related to arousal. Perceptions of ostracism were significantly associated with arousal (r = .579, p < .001). Thus, Hypothesis 1 was supported. Hypothesis 2 predicted that ostracism would be positively related to unethical behaviors. As the results on Table 3 show, feelings of ostracism were positively related to unethical behavior (r = .701, p < .001).[4] Thus, Hypothesis 2 was also supported. Conducting these analyses controlling for employees' individual characteristics variables resulted in similar findings (see Table 4).

Hypothesis 3 predicted the mediating role of arousal for the positive relationship between ostracism and unethical behaviors. Following procedures recommended by Preacher and Hayes (2004), the results of the bootstrapping analysis (with 5,000 iterations) indicated that ostracism had a statistically significant effect on physiological arousal (b = 0.31, SE = 0.05, p < .001) which, in turn, significantly affected the unethical behaviors as rated by the immediate supervisors (b = 0.56, SE = 0.21, p = .008). The effect of experienced ostracism was reduced (from b = 0.80, SE = 0.10, p < .001 to b = 0.62, SE = 0.11, p < .001) when physiological arousal was included in the equation. The bootstrap analysis showed that the 95% bias-corrected CI for the size of the indirect effect excluded zero [0.069, 0.340], suggesting that physiological arousal partially mediated the effect of ostracism on unethical behavior.

To test Hypothesis 4 that the indirect effect of ostracism on unethical behavior via physiological arousal remains significant

[4] The correlation observed between subordinates' self-reported ostracism and supervisors' ratings of their unethical behavior appears to be high. However, examining the past field research on social exclusion or ostracism in organizational settings, several co-worker-dyad studies (e.g., Ferris et al., 2008; Scott et al., 2013) have reported correlation coefficients between a target's self-reported ostracism and work-peer-rated measures (such as co-worker-reported incivility, negative exchange partner quality, distrust or interpersonal deviance) that range in magnitude from r = .50 to r = .65.

Table 3
Descriptive Statistics and Correlations (Study 2)

Variable	Mean	*SD*	1	2	3	4	5	6	7
1. Unethical behavior	2.61	1.84	—						
2. Ostracism	3.11	1.60	.70***	—					
3. Arousal	2.16	0.88	.58***	.57***	—				
4. Unpleasant feelings	5.15	2.25	.47***	.47***	.44***	—			
5. Pleasant feelings	6.82	1.46	.14	.08	.08	−.01	—		
6. Gender	0.82	0.39	.28*	.05	.13	.08	−.08	—	
7. Age	36.5	5.9	−.18	−.23†	−.33**	−.36**	−.08	−.00	—
8. Education	5.2	0.91	.00	.13	−.04	.09	.16	.19	.09

Note. $N = 73$. Gender coded as 0 = female, 1 = male. Education code ranges from 1 (*less than high school*) to 7 (*doctoral degree*).
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

after controlling for emotional responses, similar to Study 1, a multiple mediation analysis with 5,000 samples revealed that, as expected, the indirect effect of ostracism was significant through physiological arousal, 95% CI [0.045, 0.330].

Although results of Study 1 provide support for the our interpretation of experienced exclusion leading to heightened arousal to unethical behaviors, it is important to note that the correlational nature of the data in Study 2 prevents strong inferences regarding causal sequences in this sample since it is possible that those employees who engage in unethical behaviors would be at higher risk of being ostracized by their supervisors and co-workers because of their unethical and self-interested behavior.

Across the two studies, we used different operationalization of unethical behaviors as outcome variable. In Study 1 with a sample of undergraduate students, we used a cheating task (Wiltermuth, 2011) to measure participants' cheating behavior. In Study 2 with a sample of employees, we used a well-established measure of unethical behavior at work (Akaah, 1996; Mayer et al., 2012). The outcome variables we employed both have been previously used to measure unethical behavior. Thus, the consistent findings cross the two samples and the different operationalization of the dependent variable demonstrate that the findings can be generalized to wide range of ethical behaviors.

General Discussion

The current investigation examined the relationships among social exclusion, physiological reactions to being excluded, and unethical behavior. Across two studies using both samples of undergraduates and full-time working adults, we demonstrated that people who experienced interpersonal exclusion were more likely to engage in unethical behaviors and, as expected, the relationship between ostracism and greater unethical behavior was mediated by the level of physiological arousal elicited by social exclusion. These findings supported our prediction that physiological arousal serves as a mechanism through which ostracism increases a person's likelihood to behave unethically. The specific patterns of increased arousal and cheating for people who experienced social exclusion suggest that the consequences of exclusion are not only manifested at the physiological level but also have a significant effect on ethical behavior. In addition, these effects were observed using data from supervisor–subordinate dyads in organizational settings, suggesting that the influence of social exclusion through physiological arousal on unethical behavior is manifested in the workplace. It should be noted that we manipulated and measured experienced exclusion, allowing us to draw conclusions about the causal effects of social exclusion on physiological functioning and unethical behaviors. Nonetheless, we recognize that causal inferences cannot be reliably drawn from our findings in Study 2.

Table 4
Results of Regression Analyses (Study 2)

	Dependent variable: Unethical behavior				
		Model 2			
Variable	Model 1	Step 1	Step 2	Step 3	Step 4
Independent variable					
Ostracism		.70***		.55***	.58***
Arousal			.58***	.27**	.23*
Controls					
Gender	.28*				.24**
Age	−.18				.04
Education	−.03				−.11
Adjusted R^2	.07*	.48***	.33***	.53***	.57***

Note. Standardized regression coefficients (betas) are shown.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Our research adds to the growing body of recent literature outlining the conditions and contexts in which people are motivated to engage in either unethical or prosocial behaviors (Kish-Gephart et al., 2010). In particular, our findings demonstrate the mediating role of physiological responses in dictating a person's unethical behavior in response to situations involving social exclusion. As noted earlier, research on ethical decision making traditionally has emphasized rational aspects of ethical decision making (e.g., Rest, 1986); however, recent work has found that emotional processes, for instance, are important for effective ethical decision making and behavior (Greene & Haidt, 2002). Our study contributes to this body of research by highlighting the importance of physiological responses on morally relevant acts. When taken together, our results also suggest that physiological arousal may be an important determinant of moral behavior. This research adds to an emerging body of work that has examined the neural (Greene et al., 2001) and physiological (Carney & Mason, 2010; Teper et al., 2011) processes underlying moral decision making. By showing that cheating is more prevalent among individuals who are aroused, our findings specifically highlight that physiological responses can influence the likelihood of engagement in unethical behavior. The present study extends the under-

standing of when and how physiological arousal and emotional responses guide moral behaviors and decisions.

Another contribution of this research is that it extends the knowledge about employees' emotional, physiological, and behavioral reactions to social exclusion and ostracism in workplace. In particular, our results suggest that there is a strong relationship between subordinates' subjective perceptions of ostracism in the workplace and their supervisors' objective ratings of the likelihood that employees would engage in wide range of unethical behaviors at work. As Robinson et al. (2013) pointed out, the majority of previous work on ostracism in organizations has focused on the psychological impact that ostracism has on employees. However, our current findings broaden the methodological scope of research on exclusion and ostracism in organizations and indicate that physiological reactions to ostracism are important determinants of negative behavioral consequences (e.g., unethical behavior) in organizations. Our work would also appear to have theoretical implications for research on ostracism at work. For example, our results inform a social exchange-based perspective of workplace exclusion (Scott et al., 2013), which suggests that employees who engage in unethical behaviors as a result of workplace exclusion may be at risk of being further ostracized by their co-workers because of their unethical and self-interested behavior, which could create a self-reinforcing downward spiral for those employees who are socially ostracized at work. Of importance, longitudinal work in this area is needed to evidence that unethical behaviors do indeed follow—not precede—experiences of workplace ostracism. The issue of reverse causality is a limitation of our findings with the employee sample since we cannot rule this out with the study design in Study 2. As noted earlier, Study 1 revealed more direct causal evidence for our proposed relation. Additionally, we acknowledge that a limitation of our methodology is the possibility that the magnitude of our correlations could have been slightly inflated and were possibly skewed due to common methods bias (e.g., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Moreover, although social exclusion can lead to hypersensitivity or emotional numbness—of importance, both outcomes are possible—the outcomes of exclusion depend on numerous factors. For instance, recent findings by Bernstein and Claypool (2012) showed that outcomes of exclusion, such as pain sensitivity and emotional severity, could vary substantially depending on how social exclusion is manipulated (e.g., false-feedback vs. Cyberball). Researchers need to consider the implications within workplace. We showed patterns of increased arousal; however, emotional numbing could happen in workplace after continuous exposure to ostracism, which could have important implications for behavioral outcomes and therefore may need to be taken into consideration and examined more closely.

A limitation of the current research is that we relied on a single measure of physiological arousal (i.e., galvanic skin response). Future studies could collect multiple physiological measures (e.g., electroencephalogram, electromyography, functional magnetic resonance imaging), which would allow for more fine-grained measurements of participants' physiological and neural states elicited in response to social exclusion. Another limitation of our research emerges when looking at the effects of exclusion on unethical behavior, as one might imagine that there are situations in which people engage in more ethical behavior in an effort to demonstrate themselves as moral to reconnect with other people.

Furthermore, our investigation was specifically focused on testing the interrelationships among social exclusion and unethical behavior that were mainly self-interested. As a result, it may be necessary to consider whether there would be similar effects on different types of unethical behavior (e.g., pro-organizational unethical behaviors). Additionally, it is important to examine whether there are other stressors besides social exclusion, such as role conflict, role ambiguity, and role overload, or other interpersonal mistreatment constructs, such as bullying, harassment, and incivility that may have a significant influences on employees' unethical behavior. Therefore, future studies should investigate the generalizability of these results, along with utilizing other modalities for measuring physiological consequences of social exclusion.

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