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The social context of undermining behavior at work ☆

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Abstract

We developed a fairness theory perspective to explain the experience of being "singled out" for social undermining from supervisors and coworkers, and tested our predictions across four distinct social contexts. We argued and predicted that attitudinal and behavioral reactions to undermining (from supervisors and coworkers) would be strongest when a correspondingly low level of undermining was found in the social context. The hypothesized cross-level interaction was supported for supervisor and coworker undermining among a sample of officers from the national police force in the Republic of Slovenia (Study 1), replicated for supervisor undermining among soldiers in the US National Guard (Study 2), and further replicated with group-member undermining among a sample of individuals working in student teams (Study 3). We then predicted that justice perceptions would mediate the singled out interaction and tested the mediated-moderation model in a coworker-network context among employees of a restaurant chain (Study 4). The results substantially supported the mediation prediction. These findings from diverse settings demonstrate that considering the social context is important when trying to understand the effects of social undermining behaviors at work.

Keywords: Social undermining; Abusive supervision; Fairness theory; Deviance; Networks

Social undermining is defined in a work context as behavior intended to hinder, over time, a worker's ability to establish and maintain positive interpersonal relationships, work-related success, and favorable reputation (Duffy, Ganster, & Pagon, 2002). Not only do employees who experience undermining react negatively in terms of attitudinal, health, and behavioral outcomes, but they react more strongly than they do to positive behaviors (e.g., Duffy et al., 2002; Taylor, 1991). While informative, the cumulative results from this literature leave unanswered several fundamental questions about how individuals respond to social undermining. In particular, investigations of undermining and other similar behaviors typically examine only the simple relationship between an individual's perceptions of negative treatment and outcomes, and therefore fail to capture the richer and more complex social environment in which reactions to undermining behaviors are formed.

We argue that individuals do not experience social undermining in a vacuum but rather form judgments,

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in part, based on the experiences of those around them (Olson, Buhrmann, & Roese, 2000). Through a fairness theory lens (Folger & Cropanzano, 1998), we argue that reactions to being undermined by supervisors and coworkers can be understood fully only when we consider the social context in which the undermining is experienced. Specifically, we consider the consequences of being singled out for undermining.

In this paper, we (1) develop and test a social-context-based theory of reactions to undermining, (2) subject our predictions to tests involving different sources of undermining (i.e., from supervisors and coworkers), and (3) explore the robustness of the theory across a variety of social contexts including police officers, military soldiers, student group members, and restaurant employees.

A fairness theory of social undermining in context

Folger and Cropanzano's (1998) fairness theory synthesizes a number of perspectives on equity considerations in organizations, including referent-cognitions theory (Folger, 1993) and group-value theory (Lind & Tyler, 1988; Tyler & Lind, 1992). Fairness theory suggests that when individuals face negative situations (such as being undermined by a coworker or supervisor) they make cognitive comparisons known as counterfactual thoughts; i.e., they compare what actually happened to what might have been. According to fairness theory, an individual responds to being the target of social undermining by concocting various alternative versions of actual occurrences (Kasimatis & Wells, 1995). As a consequence, they often evaluate and react to present circumstances not simply in terms of the reality that actually occurs but also in terms of what should, could, and/or would have occurred (Roese & Olson, 1995; Sherman & McConnell, 1995). These three facets of cognitive comparisons—should, could, and would—form the basis for fairness theory and serve as a theoretical foundation for predicting that the social context of undermining will play a role in determining how severely employees react to undermining.

In the case of social undermining behavior, a salient part of the social context is whether or not supervisors and coworkers are undermining other relevant individuals in the work group in addition to the focal individual. In particular, based on fairness theory, we predict that the relationship between undermining and attitudinal, behavioral, and well-being outcomes will be stronger when one is singled out for undermining.

Singled out for undermining

Because the fairness theory approach makes specific assumptions about the types of behaviors and social contexts that elicit counterfactual thinking, it is useful to briefly elaborate on the definition and background of social undermining behavior. The American Heritage Dictionary (1983) defines "undermine" as "to weaken by wearing away gradually or imperceptibly" (p. 738). The study of *social* undermining is based in Rook's (1984) social psychological work on the quantity of problematic social exchanges individuals experience. Later researchers focused less on the quantity and more on the quality of exchanges such as intentional interference, ridicule, and insensitivity in interpersonal relationships (e.g., Ruehlman & Karoly, 1991). For example, Vinokur and colleagues defined social undermining as negative emotions such as anger and dislike that are directed at a target, negative evaluations of the target's attributes, actions, and efforts, and other behaviors designed to hinder the target's ability to attain instrumental goals (Vinokur & van Ryn, 1993; Vinokur, Price, & Caplan, 1996). Building on these general definitions, Duffy et al. (2002) defined social undermining in workplace contexts as behaviors that hinder another's ability to establish and maintain positive interpersonal relationships, work-related success, and favorable reputation. Specific examples of undermining in workplace contexts are intentionally making someone feel incompetent, withholding important or required information, giving the silent treatment, talking behind someone's back, and spreading rumors about a particular individual. While considerable construct confusion exists in the study of antisocial work behavior (O'Leary-Kelly, Duffy, & Griffin, 2000), social undermining at work has a specific and fairly narrow domain that includes active (e.g., saying derogatory things) and passive (e.g., withholding important information) behaviors intentionally designed to weaken a target by degrees.

Supervisors and coworkers are essential to a worker's relationships, work-related successes, and workplace reputation and, therefore, employees have potent reactions to undermining from these individuals (e.g., Duffy et al., 2002; Tepper, 2000). A substantial body of empirical work indicates that negative events, especially those that violate normative behavioral expectations such as undermining, are the primary triggers of should, could, and would counterfactual thoughts (e.g., Folger & Cropanzano, 1998; Olson et al., 2000). Should counterfactuals concern whether or not ethical standards were violated: *Should* the perpetrator of the behavior have acted differently? The definition of undermining suggests that they are often unethical. For example, an undermining coworker would violate many people's ethical standards by withholding information from a target, resulting in damage to the target's reputation or failure

in the target's work results. Victims of such undermining would reasonably conclude that the perpetrator *should* have acted differently. Research also suggests that employees who perceive they are targets of undermining will naturally generate would counterfactual thoughts: "What *would* my life be like if I were *not* the target of undermining?" As an example, a participant in one of our studies related the following anecdote when describing an example of supervisor undermining:

If my boss had not taken credit for my work solving that case, I would have been promoted and would have received a big enough raise that I would not need to be working a second job to support my family. I would be a hero at work, instead of just another s**** [expletive deleted]. I would not be so tired all the time. I just keep thinking about what this one break would have been like for me and how much better off I would be.

This example shows clearly that the difference between how the target imagines things would be and how they really are results in emotional distress or pain. In this case, the target reasons that life would have been better if the undermining had not happened. This rift plays a role in determining the magnitude of the employee's reaction to the event (Folger & Cropanzano, 1998, 2001) by making the deprived state more salient (Folger & Kass, 2000; Roese, 1994).

Although these mental simulations (should and would) are evoked in social situations and help determine reactions to undermining, the third facet—could counterfactuals—must be incorporated before we can predict the impact of undermining in the social context. Could counterfactuals ask: "Could the perpetrator of social undermining have acted differently?" (Folger & Cropanzano, 1998). The answer to this question, and ultimately the negative impact of the undermining behavior, depends on the social context in which the behavior occurs. In particular, cognitive comparisons that are judged as more *mutable* and more *feasible* are likely to foster stronger negative reactions.

Roese and Olson (1995) describe mutability as the "degree of ease with which elements of reality may be cognitively altered to construct a counterfactual statement" (p. 7). When attempting to deconstruct present circumstances, individuals often choose coworkers and close group members as salient social-comparison individuals (Bandura, 1986; Folger & Cropanzano, 1998). Indeed, as Folger and Cropanzano (1998) show, when an individual is exposed to salient social comparisons (in our case, other individuals in the work group who are not being undermined), that exposure will evoke could counterfactuals. When individuals are the targets of social undermining, they will likely generate a social-comparison file that contains information concerning how others have fared in the work environment (Folger & Cropanzano, 1998). That is, are salient others such as my coworkers and colleagues also being undermined? If supervisors or coworkers consistently undermine everyone they come in contact with, it is more difficult to imagine that they "could" have acted differently. By contrast, when one is the sole target—or singled out—for undermining behavior, one can more easily imagine that the supervisor or coworkers could have acted differently. Thus, the situation is more mutable.

The imagined or counterfactual reality must also seem feasible; i.e., it must appear *reasonable* that something else could have occurred (Dunning & Maddey, 1995). As Olson and his colleagues (2000) note, "simply acknowledging the existence of a better-off other is itself not sufficient to evoke distress; there must be the additional step of imagining that the fruits enjoyed by that upward target *could* or *should* have been extended to the perceiver" (p. 393). For example, the woman in the anecdote below believed her boss had undermined her credibility on the job by failing to "stick up" for her:

Coworkers were talking behind my back about my job promotion; questioning whether I deserved it. What's worse—my supervisor did *nothing* about it. Even when I spoke to him about it, he chose to ignore it. He just let people keep stabbing me in the back and believing that I really didn't deserve the promotion. The thing is, this person [supervisor] isn't just a "mouse" or something. I've seen him take up for my coworkers before—stopping people from gossiping and bad mouthing, so I know he *could* have done something about it. He just didn't want to.

In this case, the comparison is easily generated (mutable) by the recipient of the undermining behavior (failing to defend the subordinate) and is also feasible; i.e., it is reasonable given the supervisor's history that the alternative reality could have taken place. Fairness theory predicts that undermining in this type of social context would relate strongly and negatively to individual well-being. In contrast, consider an individual who is consistently undermined by a supervisor who also undermines all employees in the work group. Research demonstrates that this individual will likely still generate a positive imagined reality—reasoning that the underminer should have acted differently and life would be better if the undermining had not occurred—but given that the supervisor consistently undermines all employees, the imagined reality is less mutable and less feasible. Stated differently, if undermining happens to everyone, it is not as reasonable to expect that the supervisor could treat a single individual differently, and therefore the impact of the undermining behavior should be attenuated.

The preceding discussion of fairness theory lays a foundation to examine the social context of social undermining in the workplace. Folger and Cropanzano's (1998) theory posits that reactions to negative events are most potent when all three counterfactuals

(should, could, and would) can be activated. Targets who are undermined by supervisors or coworkers who consistently undermine most people will likely conclude that the perpetrators *should* have acted differently. The targets are likely to conclude that their lives *would* have been better if they had not been victimized. But, they are unlikely to conclude that the perpetrators *could* have acted differently—this imagined reality is not mutable or feasible. In this situation, the negative impact of the undermining is attenuated. Leung and Tong (2003), for example, argued that perceived injustices arouse less negative reactions if "the salient norm is more tolerant of justice violations" (2003; p. 101). Folger and Cropanzano explain: "Could some other form of conduct have occurred instead? That is, was it possible for the other person (e.g., manager or other authority) to act in a manner not so demeaning? If not, then the bond of culpability is broken and hostile response tendencies thereby mitigated" (1998; p. 192).

By contrast, when one individual is the sole target of social undermining in a group, then should, could, and would cognitive comparisons are relevant. Being singled out creates a more mutable and feasible cognitive comparison and a more damaging social context for undermining; we expect a stronger relationship between individual-level undermining and outcomes when group-level undermining is low. Leung and Tong (2003) referred to the singled out situation as one of discordance; i.e., the social norm for justice is fair (low group-level undermining), but the personal norm for justice is unfair (high individual undermining). To summarize, we expect the relationship between individual perceptions of undermining and outcomes to be stronger when a corresponding low level of undermining exists in the group context. As noted, supervisors' and coworkers' behaviors centrally determine workers' attitudes and behaviors. Therefore, we make parallel predictions regarding social undermining for these two groups. Formally:

Hypothesis 1. Group-level supervisor undermining will moderate the relationship between individual-level supervisor undermining and individual outcomes, i.e., job attitudes, well-being, and deviant behavior. The relationship between individual-level supervisor undermining and outcomes will be stronger when group-level supervisor undermining is low than when group-level supervisor undermining is high.

Hypothesis 2. Group-level coworker undermining will moderate the relationship between individual-level coworker undermining and individual outcomes, i.e., job attitudes, well-being, and deviant behavior. The relationship between individual-level coworker undermining and outcomes will be stronger when group-level coworker undermining is low than when group-level coworker undermining is high.

Study 1 method and results

Context and sample

The sample for this study was drawn from the national police force in the Republic of Slovenia (see Duffy et al., 2002). Slovenia's National Force is distributed in various cities and villages throughout the country in stations that resemble urban police departments in the United States. They share a centralized bureaucratic structure, but the population is relatively immobile, and thus most officers spend their entire careers in the same location. After we randomly selected stations, members of the research team administered questionnaires during work time on each of the three shifts. Originally developed and compiled in English, the questionnaire was independently translated into Slovene by linguists from the Interior Ministry of Slovenia, and then back-translated to English by a member of the research team to ensure that the meaning of items had not changed in translation. A total of 841 subjects participated in this study. Missing data reduced the analysis sample size to 737 from 42 police units. In each unit, all responding officers reported to the same supervisor. The majority of individuals in the sample were male (93%) with ages ranging from eighteen to 55. The average position tenure was 4 years, and the average time under one supervisor was 2.5 years.

Measures

Individual supervisor and coworker undermining

We assessed individuals' perceptions of supervisor and coworker undermining with the thirteen-item measures from Duffy et al. (2002). Each individual reported how often their supervisor intentionally engaged in undermining behaviors. The items were stated as follows: "hurt your feelings, put you down when you questioned work procedures, undermined your effort to be successful on the job, let you know that they did not like something about you, talked bad about you behind your back, insulted you, belittled you or your ideas, spread rumors about you, made you feel incompetent, talked down to you, gave you the silent treatment, delayed work to make you look bad, and did not defend you when people spoke poorly of you." Participants also responded to thirteen items concerning how often coworkers intentionally engaged in undermining behaviors directed at them. The items were: "insulted you, gave you the silent treatment, spread rumors about you, delayed work to make you look bad or slow you down, belittled you or your ideas, hurt your feelings, talked bad about you behind your back, criticized the way you handled things in a way that was not helpful, did not give as much help as promised, gave you incorrect or misleading information about the job, competed

with you for status and recognition, let you know they did not like something about you, and did not defend you when people spoke poorly of you." Response options ranged from 1 (not at all) to 6 (every day). The internal consistency reliability was .92 for the supervisor measure and .90 for the coworker measure. Duffy et al. (2002) provide substantial support for the unidimensionality of each measure and for the empirical differentiation of the supervisor and coworker undermining measures.

Group-level supervisor and coworker undermining

We created the group-level variable as the mean of the supervisor and coworker undermining perceptions across all members of the police unit. Higher scores represent higher levels of supervisor and coworker undermining within the unit. We followed LePine and Van Dyne (1998) in calculating the within-group agreement analysis using the formula provided by James, Demaree, and Wolf (1984). For these tests, values above .70 are adequate. In our study, $r_{wg(j)}$ for group-level supervisor undermining ranged from .73 to .98 (mean = .91), while the $r_{wg(j)}$ for group-level coworker undermining ranged from .93 to .99 (mean = .97).

Dependent variables

The choice of potential outcomes of these dynamics is broad. Previous research demonstrates that social undermining and social support are consistently related to job attitudes and deviant behavior, as well as health and well-being outcomes (e.g., Duffy et al., 2002; Tepper, 2000). Thus, in line with these extant findings, we test our hypotheses across an array of outcomes (job satisfaction, intention to quit, counterproductive work behaviors, and depression) designed to broadly capture the range of attitudinal, behavioral, and well-being outcomes affected by positive and negative social interactions. *Job satisfaction* was assessed with a three-item measure ($\alpha = .79$) from Camman, Fichman, Jenkins, and Klesh (1983). A sample item is: "All in all, I am satisfied with my job." *Intention to quit* was a three-item measure ($\alpha = .81$) from Camman et al. (1983). A sample item is: "I will probably look for a new job in the next year." Response options on these measures ranged from 1 (strongly disagree) to 7 (strongly agree). *Counterproductive work behaviors* included four items from Skarlicki and Folger (1997), Raelin (1994), and Robinson and Bennett (1995) and is intended to measure passive forms of workplace deviance such as taking extended work breaks, being absent when one is not sick, deliberately working more slowly than possible. Respondents were presented with a list of possible behaviors and asked to indicate how often they engaged in the behaviors on a scale ranging from 1 (never) to 6 (always). A sample item is: "I take extended breaks from work" ($\alpha = .88$). *Depression* was measured using the NIMH Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) ($\alpha = .91$). This scale comprises sixteen items that ask respondents to indicate their feelings about the future, themselves, their mood, and physical symptoms (e.g., appetite and sleep) in the past week (e.g., "I did not feel like eating," "I felt lonely"). Scores range from 1 (never) to 5 (all days), with higher scores indicating higher levels of depression.

Control variables

Based on a review of the relevant literature, we included three individual factors [age, tenure, and trait negative affectivity (NA)] and police unit size as control variables. Age, tenure, and NA may relate to perceptions of social interactions at work, job attitudes, and health (e.g., Lakey & Cassady, 1990), while unit size may relate to within-unit communication patterns as well as individual outcomes (Duffy, Shaw, & Stark, 2000). These factors were measured using the NA markers from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) ($\alpha = .87$).

Results

Table 1 presents the descriptive information and correlations for all variables in Study 1. Because participants were nested in units, and the undermining independent variable was assessed at the group level, we used HLM to test the hypotheses.

The tests of Hypotheses 1 and 2—the interaction of individual- and group-level undermining on the four outcome variables—is a "slopes as outcomes" or cross-level moderator analysis in HLM (e.g., Raudenbush, Bryk, Cheong, & Congdon, 2004). Stated as a final or full mixed model including the level 1 main effects, the level two main effects, the cross-level interactions, and using job satisfaction as an example outcome, the predicted equation is

$$\begin{aligned} Y_{ij}(\text{job satisfaction}) &= \gamma_{00} + \gamma_{10}\ (\text{age}) + \gamma_{01}\ (\text{unit size}) + \gamma_{20}\ (\text{tenure}) \\ &\quad + \gamma_{02}\ (\text{group-level supervisor undermining}) \\ &\quad + \gamma_{30}\ (\text{negative affectivity}) \\ &\quad + \gamma_{40}\ (\text{individual-level supervisor undermining}) \\ &\quad + \gamma_{41}\ (\text{individual-level supervisor undermining} \\ &\quad * \text{group-level supervisor undermining}) + u_{0j} + r_{ij}. \end{aligned} \tag{1}$$

The HLM model was estimated in three steps culminating with the simultaneous computation of the full mixed-model, i.e., Eq. (1) These analyses are shown in Table 2. The equations for supervisor undermining are shown in the upper rows of the table, and the equations for coworker undermining are shown in the bottom rows of the table. The columns labeled Model 3 show

Table 1
Study 1 descriptive statistics and correlations among all study variables

	Mean	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Age	30.53	7.49												
2. Tenure	3.06	2.25	.19**											
3. Squad size	31.16	12.87	−.01	.00										
4. Negative affectivity	2.59	.43	−.08*	−.03	−.01	(.84)								
5. Individual-level supervisor undermining	1.49	.68	−.10**	.05	.10**	.26**	(.92)							
6. Individual-level coworker undermining	1.77	.70	−.07*	.05	.04	.24*	.43**	(.90)						
7. Group-level supervisor undermining	1.48	.24	−.09**	.17**	.22**	.04	.25**	.13**						
8. Group-level coworker undermining	1.76	.18	−.05	.14**	.00	.08*	.22**	.34**	.43**					
9. Job satisfaction	4.09	.99	.13**	.03	−.03	−.12**	−.39**	−.30**	−.16**	−.22**	(.87)			
10. Intention to quit	3.16	1.67	−.02	−.06	.02	.15**	.22**	.22**	−.01	.05	−.34**	(.71)		
11. Counterproductive work behaviors	2.85	1.09	−.03	.00	.05	.10**	.22**	.14**	.08*	.14**	−.28**	.18**	(.84)	
12. Depression	1.90	.53	.03	.01	.05	.46**	.22**	.24**	.03	.07*	−.27**	.18**	.18**	(.91)

Coefficient α reliabilities are reported in the main diagonal where appropriate. $N = 737$.
* $p < .05$.
** $p < .01$.

the tests of Hypotheses 1 and 2—the interaction of the individual- and group-level undermining variables—for each outcome.

As the table shows, the cross-level interaction was significant in all four supervisor undermining equations (job satisfaction $\gamma = .31$, $p < .05$; intention to quit $\gamma = -1.12$, $p < .01$; counterproductive work behaviors $\gamma = -.38$, $p < .05$; depression $\gamma = -.39$, $p < .01$). We also computed an R^2 for group-level undermining as a level two moderator of the relationship between individual-level undermining and the outcomes. In HLM analyses, R^2 are computed relative to the variance available for explanation at a given level (Hofmann, Griffin, & Gavin, 2000). Level 2 "slopes as outcomes" R^2 values are calculated relative to the amount of between-group variation in slopes (Hofmann et al., 2000), not with reference to the total variance in the outcome variable. The R^2 calculation for a "slopes as outcomes" model is

$$R^2 \text{ level 2 slope model} = (\tau_{11} \text{ intercept-as-outcomes} - \tau_{11} \text{ slopes-as-outcomes}) / \tau_{11} \text{ intercept-as-outcomes}, \quad (2)$$

where τ_{11} intercept-as-outcomes is the residual between-group variance in slopes in a model without cross-level interaction terms, and τ_{11} slopes-as-outcomes is the residual between-group variance in slopes in a model with interaction terms. Using this formula, group-level undermining explains 38% of the variance in the relationship between individual-level undermining and job satisfaction, 90% of the slope variance in intention to quit, 43% in counterproductive behaviors, and 76% in depression.

To support Hypothesis 1 fully, the form of the interaction must conform to the hypothesized pattern; i.e., the relationship between individual-level supervisor undermining and outcomes should be stronger when group-level supervisor undermining is low. To address this, we calculated the simple slopes of the individual-level supervisor undermining relationship with each dependent variable for low (−1 *SD*) and high (+1 *SD*) level of group-level supervisor undermining. In each case, the slopes are significant for low and high group-undermining levels, but significantly stronger when group-level supervisor undermining is low. The simple slope estimates are reported for low and high group-level supervisor undermining in Table 2. Fig. 1(a–d) show the interaction effect for each of the dependent variables. As predicted, when group-level supervisor undermining is low, the relationships are significantly stronger: negative for job satisfaction and positive for intention to quit, counterproductive work behaviors, and depression.

Table 2 also shows the interactions when coworker undermining is the focal variable. The cross-level interaction is not significant in the job satisfaction ($\gamma = .14$, n.s.) or the counterproductive work behaviors equation ($\gamma = -.19$, n.s.), but is significant in the intention to quit ($\gamma = -1.29$, $p < .01$; $R^2_{\text{level 2 slope model}} = .68$) and depression equations ($\gamma = -.33$, $p < .01$; $R^2_{\text{level 2 slope model}} = .22$). The two significant interactions are depicted in Fig. 2. As the figure and the simple slopes calculations in Table 2 show, the relationship between individual-level coworker undermining and outcomes is significantly stronger when group-level coworker undermining is low. Thus, strong support is found for Hypothesis 1 (four of four equations) and moderate support for Hypothesis 2 (two of four equations) in Study 1.

Table 2
Study 1 hierarchical linear modeling analyses

	Job satisfaction			Intention to quit			Counterproductive work behaviors			Depression		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age	.02**	.01*	.01*	.00	.00	.00	−.01	.00	−.01	.00	.00	.00
Tenure	.01	.02	.02	−.05*	−.05*	−.05*	−.02	−.03	−.03	.00	.00	.00
Squad size	.00	.00	.00	.00	.00	.00	.01*	.00	.00	.00	.00	.00
Negative affectivity	−.25**	−.04	−.04	.59**	.39**	.38**	.28**	.16	.15	57**	.57**	.52**
Individual-level supervisor undermining		−.52**	−.58**		.52**	.74**		.30**	.38**		.10**	.17**
Group-level supervisor undermining		−.39*	−.43**		−.33	−.20		.01	.06		−.12*	−.06
Individual-level supervisor undermining × group-level supervisor Undermining			.31*			−1.12**			−.38*			−.39**
Simple slope calculations for individual-level supervisor undermining on outcomes												
Low group-level supervisor undermining			−.65**			.97**			.45**			.25**
High group-level supervisor undermining			−.56**			.67**			.35**			.14**
Age	.02**	.01**	.01**	.00	.00	.00	−.01	−.01	−.01	.00	.00	.00
Tenure	.01	.02	.02	−.05*	−.06*	−.06*	−.02	−.03	−.03	.01	.00	.00
Squad size	.00	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00
Negative affectivity	−.25**	−.10	−.10	.58**	.39**	.37**	.27**	.20*	.20*	.57**	.53**	.52**
Individual-level coworker undermining		−.36**	−.38**		.48**	.56**		.15**	.20**		.10**	.12**
Group-level coworker undermining		−.75**	−.74**		−.08	−.12		.60*	.53*		−.05	−.06
Individual-level coworker undermining × group-level coworker undermining			.14			−1.29**			−.19			−.33**
Simple slope calculations for individual-level coworker undermining on outcomes												
Low group-level coworker undermining			N/A			.72**			N/A			.16**
High group-level coworker undermining			N/A			.42**			N/A			.08**

$N = 737$. γ-coefficients are shown in the columns.
* $p < .05$.
** $p < .01$.

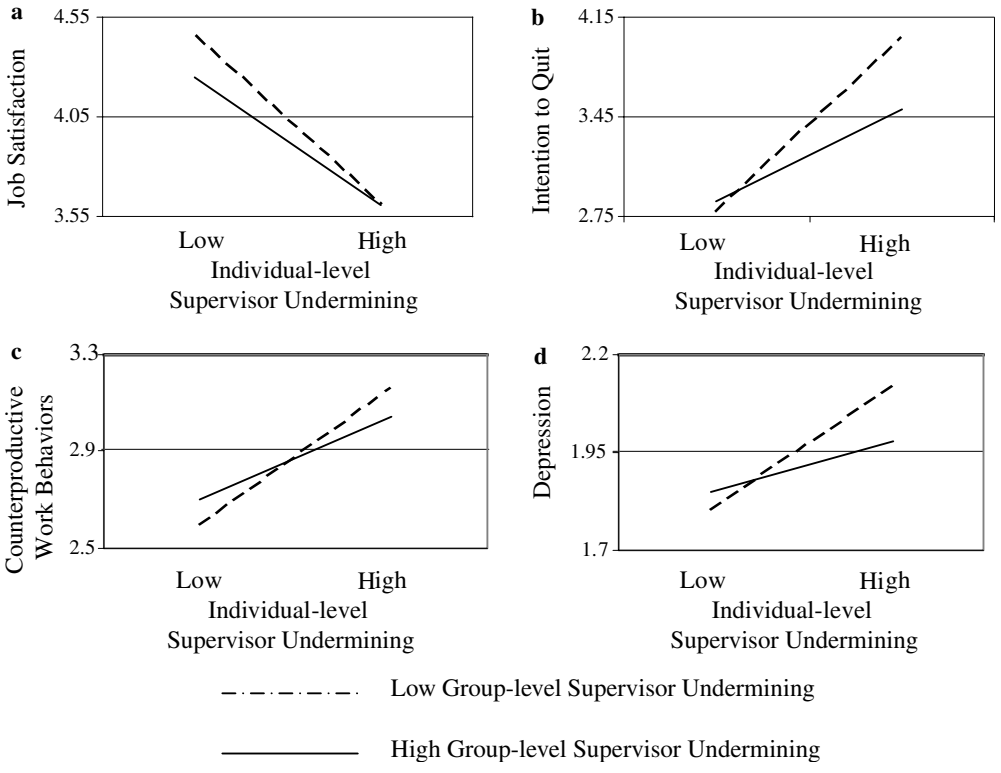


Fig. 1. Study 1 interaction between individual- and group-level supervisor undermining in predicting job satisfaction (a), intention to quit (b), counterproductive work behaviors (c), and depression (d).

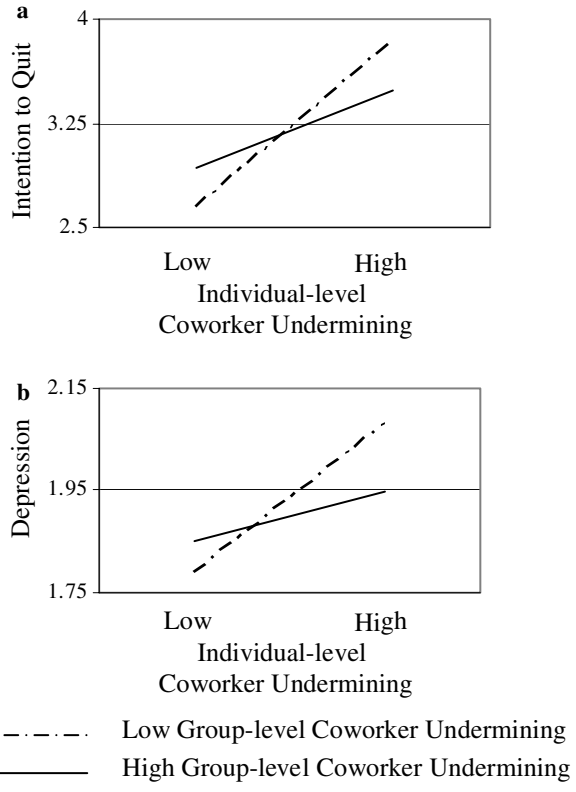


Fig. 2. Study 1 interaction between individual- and group-level coworker undermining in predicting intention to quit (a) and depression (b).

Study 2 method and results

Context and sample

The Study 1 setting was characterized by relationships between officers, supervisors, and work groups, which are long-term in nature. Interactions among members of these groups played such a large role in the work and personal lives of these individuals that we expected to see strong group-context effects emerge if they indeed existed. In many ways, then, Study 1 provided an optimal setting for observing these phenomena. We aimed to test the fairness theory hypothesis in a group setting that we expected to be *less* salient for the group members in Study 2. National Guard members work part time and meet with their supervisors and group members mostly on weekends. Because this is not their primary occupational attachment, it is reasonable to expect the nature of social interactions to be less salient than those in a primary career. Testing a model in this setting should indicate the robustness of the singled out interaction as well as provide evidence for external validity. We assessed two job-related outcomes (job satisfaction and job involvement) and one supervisor-related outcome (trust in supervisor) in this study.

Participants were 381 soldiers in 94 squads of the US National Guard. The research design generally

Table 3
Study 2 descriptive statistics and correlations among all study variables

	Mean	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	10.
1. Age	1.94	1.08									
2. Tenure	2.54	1.09	.72**								
3. Squad size	4.55	1.45	.08	.10*							
4. Negative affectivity	2.14	.88	−.07	.00	.03	(.76)					
5. Individual-level supervisor undermining	1.80	.84	.00	.03	.09*	.35**	(.94)				
6. Group-level supervisor undermining	1.79	.50	−.04	−.01	.13**	.00	.17**				
7. Job satisfaction	3.73	.89	−.02	−.02	−.07	−.31**	−.26**	−.09*	(.75)		
8. Job involvement	3.21	.58	.12**	.08	−.01	−.25**	−.21**	−.02	.56**	(.85)	
9. Trust in supervisor	3.65	.96	.01	−.01	−.03	−.26**	−.48**	−.11*	.40**	.38**	(.80)

Coefficient α reliabilities are reported in the main diagonal where appropriate. $N = 370$.
* $p < .05$.
** $p < .01$.

paralleled the procedure in Study 1, except participants mailed completed questionnaires in postage-paid envelopes. Subjects were informed that participation was voluntary and confidential. Because a measure of coworker undermining was not available in the data set, we focus only on supervisor undermining (the test of Hypothesis 1) in Study 2.

Measures

Individual- and group-level supervisor social undermining

A thirteen-item measure adapted to a National Guard context from the Duffy et al. (2002) measure and the Tepper (2000) abusive supervision measure was used. A confirmatory factor analysis of the items showed that all item loadings on a single factor were highly significant (t-values > 15, in each case), and fit indicators denoted a high degree of fit [$\chi^2 = 311.48$ ($df = 65$), RMR = .05, NFI = .92, CFI = .94]. As in Study 1, the mean of the items forms the individual level measure and the average of the individual scores by group forms the group-level measure. The internal consistency reliability was .91 for individual-level supervisor undermining. For group-level supervisor undermining, $r_{wg(j)}$ agreement indices ranged from .72 to .96 with a mean of .88.

Dependent variables

Job satisfaction ($\alpha = .75$) was assessed with the three-item measure from Camman et al. (1983). Job involvement was measured with a ten-item scale ($\alpha = .85$); e.g., "Being in the National Guard is a significant part of who I am as a person." Trust in supervisor was assessed with a three-item scale ($\alpha = .80$) created for this study. A sample item is: "To what extent do you have confidence and trust in your immediate supervisor?" Response options ranged from 1 (not at all) to 5 (to a very great extent).

Control variables

The set of control variables was identical to that used in Study 1 (age, tenure, NA, and squad size).

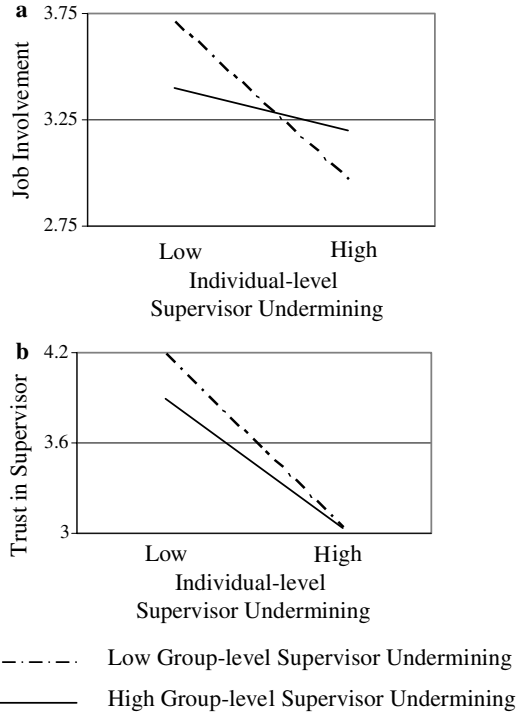
Table 4
Study 2 hierarchical linear modeling analyses

	Job satisfaction			Job involvement			Trust in supervisor		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age	−.01	−.01	−.01	.09	.09	.09*	−.01	.00	.00
Tenure	−.02	−.02	−.02	−.02	−.02	−.02	.02	.02	.02
Unit size	−.01	−.01	−.01	−.01*	−.01*	−.01	−.01	.00	.00
Negative affectivity	−.08**	−.06*	−.06*	−.30**	−.24**	−.24**	−.27**	−.12*	−.12*
Individual-level supervisor undermining		−.06*	−.06		−.18**	−.26**		−.46**	−.51**
Group-level supervisor undermining		−.01	−.01		−.13	−.16		−.44	−.45
Individual-level supervisor undermining × group-level supervisor undermining			−.02			.63**			.32
Simple slope calculations for individual-level supervisor undermining on outcomes									
Low group-level supervisor undermining			N/A			−.36**			−.56**
High group-level supervisor undermining			N/A			−.12			−.43**

$N = 370$. γ-coefficients are shown in the columns. N/A, simple slopes are not significantly different.
* $p < .05$.
** $p < .01$.

Results

Table 3 presents descriptive statistics and correlations for all variables in Study 2, and Table 4 reports the HLM analyses. The full mixed-model HLM equation was identical in structure to the one tested in Study 1 (see Eq. (1)). The results in Table 4 show that the interaction of individual- and group-level supervisor undermining is not significant in the job satisfaction equation ($\gamma = -.02$, n.s.). The cross-level interaction was significant in the job involvement equation ($\gamma = +.63$, $p < .01$; $R^2_{\text{level 2 slope model}} = .78$) and significant at marginal levels in the trust-in-supervisor equation ($\gamma = +.32$, $p < .10$; $R^2_{\text{level 2 slope model}} = .14$). The simple slope calculations are shown in the bottom rows of Table 4. In the job involvement equation, the simple slope of the individual-level supervisor undermining → job involvement relationship was strongly significant when group-level supervisor undermining was low ($\gamma = -.36$, $p < .01$), but only marginally significant when group-level supervisor undermining was high ($\gamma = -.12$, $p < .10$). In the trust-in-supervisor equation, the slope in the low group-level undermining condition was again stronger, although only marginally so. These interactions are depicted in Fig. 3(a and b). In summary, the results from Study 2—a weaker contextual situation than that of Study 1—provide some support for Hypothesis 1, especially in the job involvement equation.



* Interaction significant only at p<.10

Fig. 3. Study 2 interaction between individual- and group-level supervisor undermining in predicting job involvement (a) and trust in supervisor (b).

Study 3 method and results

Context and sample

Study 1 provides substantial support and Study 2 provides some support for our prediction that group-level undermining would moderate the effects of supervisory undermining on an array of attitudinal, behavioral, and well-being measures. In Study 3, we attempt to replicate the interaction in a dramatically different setting, i.e., by investigating group-member undermining in student work teams. Thus, we test Hypothesis 2 in Study 3. This approach allows us to examine the robustness of the singled out interaction in a context where undermining among group members (as opposed to undermining from supervisors) is at issue and also in a setting that does not involve strong hierarchical supervisory relationships.

The original participants in the study were 426 senior-level undergraduate students (in 103 student teams) registered for business-administration courses at a large university in the southern US. A total of eleven classes (taught by four instructors) were involved in the study. Student groups were required to complete several projects/assignments, and groups were kept intact throughout the term. Participants were asked at Time 3 to estimate the amount of time that group members spent per week working on group projects outside of class. The mean time was 1.54 h outside of class each week during the term or approximately 25 h outside of class *in addition* to in-class projects. Participants were guaranteed confidentiality and assured that participation was voluntary. They signed waivers allowing supplemental information to be collected from the instructor of the course, as needed. The average age of respondents was 23 years and the average group size was 4.45 members. Missing data across the three time periods and archival performance data reduced the analysis sample to 333.

The data-collection design paralleled that used by Duffy et al. (2000); i.e., data were collected at three time periods—during the first week of class before groups began to interact or complete projects (Time 1), at mid-term (Time 2, eight weeks following the Time 1 data collection), and just prior to final examinations (Time 3, eight weeks after Time 2 and sixteen weeks after Time 1). Control variables were collected at Time 1, group-member undermining at Time 2, and self-report outcomes at Time 3. Following the term, student exam scores (the average of all individual exams standardized by class) were collected from course instructors for those students who signed waivers.

Measures

Individual-level coworker undermining

This variable was assessed with a nine-item version of the Duffy et al. (2002) coworker undermining measure ($\alpha = .87$) at Time 2. Participants were asked how often other group members had "criticized you in front of other members," "intentionally ignored you," "given you the silent treatment," etc. The shortened version was necessary because of space and time constraints during questionnaire administration. Pilot tests indicated a very high correspondence ($r > .95$) between the shortened and full measure of coworker undermining. A confirmatory factor analysis showed that all item loadings were highly significant (t-values > 9) and model fit indicators denoted a high degree fit for a single factor solution [$\chi^2 = 157.19$ ($df = 27$), NFI = .91, CFI = .92, RMR = .02].

Group-level coworker undermining

Our measure of group-level coworker undermining was calculated as in Studies 1 and 2; i.e., the individual undermining variable was aggregated to the mean group level. Higher scores on this measure represent a higher level of undermining within the group. Within-group agreement value, $r_{wg(j)}$, for this variable undermining ranged from .89 to .99 (mean = .97).

Dependent variables

We examined Hypothesis 2 across four relevant dependent variables—group meeting absence, individual performance, self-report undermining, and depression. Absence, self-report undermining, and depression were collected at Time 3, and individual performance was collected from course instructors following the term. *Group meeting absence* was defined as the number of times participants reported missing scheduled group meetings during the term. *Individual performance* was defined as the average percentage of all individual exams during the term. This variable was standardized by class to allow cross-class comparisons. *Self-report undermining* was assessed with an eight-item scale with five response options adapted from Duffy et al.'s (2002) coworker undermining measure at Time 3. Because of space and time constraints and to reduce response consistency effects between the self-report undermining at Time 3 and reports of the behaviors of other group members at Time 2, we sampled several different items from the Duffy et al. (2002) measure, e.g., "spoke poorly of team members," "gossiped about team members," "ignored team members" ($\alpha = .87$). A confirmatory factor analysis of this measure yielded good indications of model fit [$\chi^2 = 121.16$ ($df = 20$), NFI = .90, CFI = .91, RMR = .02]. *Depression* was assessed with the ten-item measure from Survey Research Center (1977) ($\alpha = .87$). The items had five response options. A sample item is: "I felt down-hearted and blue."

Control variables

We controlled for age, grade point average (GPA), team size, and NA. GPA is a proxy for ability and motivation and may relate to interaction patterns as well as attitudes and performance (Shaw, Duffy, & Stark, 2000). Age, GPA, and NA were collected at Time 1, and team size was collected from course instructors following the term. NA was again assessed with the appropriate markers from the PANAS ($\alpha = .88$).

Results

Table 5 presents descriptive statistics and correlations for all variables in Study 3, and Table 6 reports the HLM analyses. The full mixed-model HLM equation was identical in structure to the one tested in Study 1 (see Eq. (1)). The results in Table 6 show that the interaction of individual- and group-level coworker undermining is significant in the group-meeting absence ($\gamma = -.31$, $p < .01$; $R^2_{\text{level 2 slope model}} = .92$), individual performance ($\gamma = .32$, $p < .05$; $R^2_{\text{level 2 slope model}} = .81$), and the self-report undermining ($\gamma = -.26$, $p < .05$; $R^2_{\text{level 2 slope model}} = .16$)

Table 5
Study 3 descriptive statistics and correlations among all study variables

	Mean	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Age	23.82	5.28										
2. GPA	3.32	.41	.24**									
3. Team size	4.45	.75	.04	.01								
4. Negative affectivity	1.99	.60	−.08	−.06	−.01	(.87)						
5. Individual-level coworker undermining	1.27	.43	.02	.11*	.12*	.10*	(.87)					
6. Group-level coworker undermining	1.26	.26	.03	.17**	.16**	−.04	.34**					
7. Group meeting absence	.26	.57	.12*	.08	.12*	.02	.13**	.07				
8. Individual performance	.00	.99	.05	.42**	−.05	−.04	−.08	−.08	−.10*			
9. Self-report undermining	1.33	.44	−.04	.02	.09	.08	.40**	.23**	.09	−.07	(.84)	
10. Depression	2.44	.60	−.04	−.03	−.01	.35**	.14**	.02	−.06	−.13**	.01	(.78)

$N = 333$. Coefficient α reliabilities are reported in the main diagonal where appropriate.
* $p < .05$.
** $p < .01$.

Table 6
Study 3 hierarchical linear modeling analyses

	Group meeting absence			Individual performance			Self-report undermining			Depression		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age	.01*	.01*	.01*	−.01	−.01	−.01	−.01	.00	.00	.00	.00	.00
GPA	.08	.06	.05	1.08**	1.13**	1.13**	.00	−.04	−.04	−.01	−.04	−.04
Team size	.09*	.08*	.07*	−.06	−.02	−.01	.06	.01	.01	.00	−.01	−.01
Negative affectivity	.03	.01	.02	−.04	−.03	−.03	.06	.03	.03	.34**	.33**	.33**
Individual-level coworker undermining		.15	.25*		−.04	−.15		.31**	.39**		.19*	.19*
Group-level coworker undermining		.02	.09		−.63**	−.71**		.27*	.33**		.04	.04
Individual-level coworker undermining × group-level coworker undermining			−.31*			.32*			−.26*			−.12
Simple slope calculations for individual-level supervisor undermining on outcomes												
Low group-level coworker undermining			.31**			−.21			.44**			N/A
High group-level coworker undermining			.20*			−.11			.35**			N/A

$N = 333$. γ-coefficients are shown in the columns. N/A, simple slopes are not significantly different.
* $p < .05$.
** $p < .01$.

equations, but not the depression equation ($\gamma = -.12$, n.s.). Plots of the three significant interactions are shown in Fig. 4(a–c), and reports of the simple slopes for low and high group-level undermining are shown in the bottom rows of Table 6. The plots again provide substantial support for the hypothesis derived from fairness theory, although in this case with coworker undermining as the focal variable. In each case, the slope of the individual-level undermining to outcome relationship is significantly stronger when the level of coworker undermining in the group is low. For group-meeting absence and self-report undermining, the relationship is significant and positive when group-level undermining is low (absence $\gamma = .31$, $p < .01$; self-report undermining $\gamma = +.44$, $p < .01$) and weaker when group-level undermining is high (absence $\gamma = .20$, $p < .05$; self-report undermining $\gamma = +.35$, $p < .01$). The relationship of individual-level coworker undermining to job performance is stronger when group-level coworker undermining is low (low $\gamma = -.21$ versus high $\gamma = -.11$), although in this unusual case, neither simple slope is significant. To summarize, the results in Study 3 provide strong support for Hypothesis 2 when group-meeting absence and self-report undermining are the dependent variables and no support when depression is the dependent variable. The Hypothesis 2 interaction is also supported in the individual performance equation, although this support is qualified by the non-significant main effect of individual undermining on performance in low and high group-level undermining cases.

Study 4

Theoretical extension

Although the findings from Studies 1–3 are informative and robust, we attempt in Study 4 to examine a more complete explanation for these dynamics. That is, we explored a theoretical mechanism or mediator, viz., justice perceptions, between the singled out interaction and the attitudinal, behavioral, and well-being outcomes investigated in the prior studies. While these variables are the outcomes commonly associated with social undermining behaviors, fairness theory would suggest that being singled out for undermining results in lowered justice perceptions, and it is justice that is the proximal precursor to the distal set. In a meta-analysis of the explanations literature, Shaw, Wild, and Colquitt (2003) argue that justifications for decisions provide the foundation for expecting beneficial effects on justice outcomes by reducing the possibility that individuals will generate upward should, could, and would counterfactuals. A singled out situation is ripe for should, could, and would counterfactual creation and should elicit feelings of injustice, which, based on prior

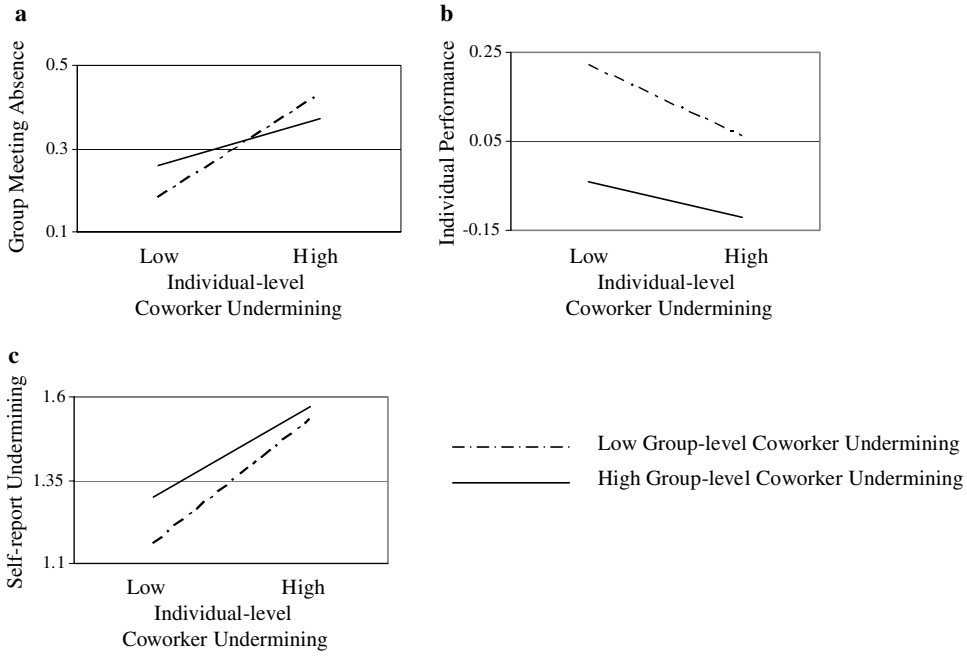


Fig. 4. Study 3 interaction between individual- and group-level coworker undermining in predicting group-meeting absence (a), individual performance (b), and self-report undermining (c).

empirical findings, should relate in turn to poorer job attitudes (Colquitt, Conlon, Wesson, Porter, & Ng, 2003), less well-being (Tepper, 2001), and more organizational retaliation (Skarlicki & Folger, 1997). The mediating role of justice can also be viewed from a relational view, where being singled out for undermining behavior could be construed as a behavior that fails to display the relational components of trust, neutrality, and status recognition (Lind, 2001; Lind & Tyler, 1988).

Thus, we conducted a fourth study to examine the mediating role of justice perceptions between the interaction of individual- and group-level undermining and an array of employee outcomes. In this study, we examine coworker undermining in a network context among employees of a restaurant chain. Formally:

Hypothesis 3. Justice perceptions will mediate the interaction between individual- and group-level coworker undermining and individual outcomes, i.e., job attitudes, well-being, and deviant behavior.

Context and sample

The data for this study were obtained from seventy domestic store locations of an international restaurant chain. Two data sources—an employee survey and supervisor evaluations of employee undermining—were used in this study. All employees in the seventy facilities were provided a questionnaire to complete during work time, guaranteed confidentiality, and assured that their participation was voluntary. At the same time period, supervisors completed a short employee evaluation form provided by the research team for all employees in the store. As in Study 3, we focused on undermining by coworkers, but in this study we operationalized undermining using sociometric or network data-collection techniques (described below).

In all, 3290 employees in the seventy stores completed questionnaires for an overall response rate of 66.2%. Response rates across stores ranged from a low of 21% to a high of 100%. Because social network calculations require a very high response rate, and because we took a conservative approach to our data analysis and interpretations, we eliminated from the analysis sample all stores with lower than 65% response rates. The analysis sample includes 38 stores and responses from 2338 employees—an average response rate of 80%.

Measures

Individual-level coworker undermining

We operationalized individual-level coworker undermining using social network data which was collected using a roster method. A roster that listed each employee in the restaurant was inserted in each employee questionnaire. The roster was numbered such that each employee name corresponded to a number [e.g., (1) John Smith, (2) Jane Smith, etc.]. The questionnaire included a numbered network form that matched the number of employees on the roster. With this method, each participant responded to each item for every other employee in the store. That is, respondents checked (or left

unchecked) a box for each of their fellow employees indicating whether or not the marker applied to this person. Because the roster method for collecting network information is intensive and time consuming for participants (they must respond to each item for each person in the store), it was not possible to include a full set of undermining markers. After extensive pilot testing, we chose two markers: "sometimes makes it difficult for you to do your job well," and "sometimes acts like s/he dislikes or disapproves of you"—to capture the essence of undermining behavior. Individual-level undermining was operationalized as the average number of coworkers nominated by the focal individual on the two undermining items ($\alpha = .87$).

Group-level coworker undermining

This variable was operationalized like those in Studies 1–3; i.e., the individual undermining variable was aggregated to the store level.

Justice mediators

We included three measures of justice—individual interactional justice, organizational interactional justice, and procedural justice. Individual interactional justice ($\alpha = .67$) was assessed with the four-item Perceptions of Fair Interpersonal Treatment (PFIT)—Individual measure from Donovan, Drasgow, and Munson (1998). A sample item is: "Employees treat each other with respect." Organizational interactional justice was measured with eight items from the PFIT—Organizational measure from Donovan et al. (1998) ($\alpha = .80$). A sample item is: "Employees' complaints are handled effectively." The PFIT items had three (1 = YES, 2 = ?, and 3 = NO) response options. The items were reverse-scored such that higher scores reflect higher levels of interpersonal justice. Procedural justice was assessed with a six-item scale based on the Folger and Konovsky (1989) measure ($\alpha = .81$). A sample item is: "Management here collects complete information before making decisions." The items had five Likert-type response options.

Dependent variables

Job satisfaction was assessed with the three-item scale from Camman et al. (1983) ($\alpha = .80$). Trust in coworkers was measured with an eight-item measure from Jehn and Mannix (2001); e.g., "To what extent do you trust your fellow employees?" and "To what extent do you feel comfortable working with these people?" ($\alpha = .88$). Depression was assessed with six items from the Survey Research Center (1977) measure ($\alpha = .69$). Social undermining as an outcome was assessed with a three-item measure completed by supervisors ($\alpha = .80$). Sample items are: "This employee criticized coworkers in a way that is not helpful," and "Says things to hurt someone else's feelings."

Table 7
Study 4 descriptive statistics and correlations among all study variables

	Mean	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Age	23.87	6.23													
2. Tenure	2.75	2.04	.36**												
3. Store size	69.60	15.06	−.05**	−.02											
4. Negative affectivity	2.00	.66	−.09**	−.06**	.05**	(.78)									
5. Individual-level coworker undermining	.04	.09	.01	.09**	.01	.13**	(.75)								
6. Group-level coworker undermining	2.39	1.17	.00	.03	.29**	.12**	.13**								
7. Interactional justice—individual	2.46	.50	−.04*	−.10**	.01	−.22**	−.17**	−.16**	(.67)						
8. Interactional justice—organizational	2.65	.44	.01	−.01	−.04	−.18**	−.16**	−.07**	.41**	(.80)					
9. Procedural justice	3.62	.69	.05**	.06**	−.04	−.21**	−.10**	−.06**	.34**	.66**	(.81)				
10. Job satisfaction	4.84	.67	.02	.01	−.05	−.29**	−.11**	−.08**	.28**	.47**	.49**	(.80)			
11. Trust in coworkers	3.85	.66	.00	−.02	−.01	−.18**	−.06**	−.11**	.49**	.43**	.45**	.47**	(.88)		
12. Depression	1.53	.42	−.04	−.04	.00	.38**	.11**	.10**	−.20**	−.20**	−.22**	−.32**	−.31**	(.69)	
13. Social undermining (supervisor reported)	1.56	.62	.07**	.14**	−.03	.03	.08**	.06**	−.15**	−.17**	−.15**	−.09**	−.12**	.04*	(.80)
14. Absence (supervisor reported)	1.16	.39	.02	−.08**	−.07**	.04	−.01	−.01	−.00	−.08**	−.06*	−.02	−.01	.02	.21**

$N = 2338$. Coefficient α reliabilities are reported in the main diagonal where appropriate.
* $p < .05$.
** $p < .01$.

Table 8
Study 4 hierarchical regression analyses with justice mediators as the dependent variables

	Interactional justice—individual			Interactional justice—organizational			Procedural justice		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tenure	−.02**	−.02**	−.02	−.01	−.01	−.01	.01	.01	.01
Store size	.00	.00	.00	.00	.00**	.00**	.00	.00**	.00**
Negative affectivity	−.17**	−.16**	−.15**	−.12**	−.10**	−.10**	−.20**	−.19**	−.19**
Individual-level coworker undermining		−.01**	−.02**		−.01**	−.02**		−.01**	−.03**
Group-level coworker undermining		−.05**	−.05**		−.01	−.01		−.01	−.02
Individual-level coworker undermining × group-level coworker undermining			.01**			.01**			.01**
Simple slope calculations for individual-level supervisor undermining on outcomes									
Low group-level coworker undermining			−.03**			−.02**			−.03**
High group-level coworker undermining			−.01**			−.01**			−.01**

$N = 2338$. γ-coefficients are shown in the columns.
** $p < .01$.

Control variables

The set of control variables was identical to that used in Studies 1 and 2 (age, tenure, NA, and squad size).

Results

Correlations and descriptive statistics are shown in Table 7. Tables 8 (justice dimensions as the dependent variables) and 9 (job satisfaction, trust, depression, and supervisor-rated social undermining as the dependent variables) include the HLM results (see Eq. (1) for an example of the full mixed model). We tested our mediation model using recommendations for analyzing direct, indirect, and total effects in moderated mediation outlined by Edwards and Lambert (2004).

Mediation tests

As Table 8 shows, the individual-by-group level coworker undermining interaction is significant for all three justice outcomes ($\gamma = .01$, $p < .01$, for all justice outcomes). $R^2_{\text{level 2 slope model}}$ estimates were 38% for individual interactional justice, 11% for organizational interactional justice, and 48% for procedural justice. Plots of the significant interactions are shown in Fig. 5(a–c). As these plots and the calculations of the simple effects (bottom of Table 8) show, the slope of individual-level undermining on justice outcomes is significant and negative when group-level coworker undermining is low and high, but significantly stronger when group-level coworker undermining is low.

Table 9 includes the results of the HLM analyses for the distal dependent variables. The interaction of individual- and group-level social undermining is significant in Model 3 of the trust ($\gamma = .01$, $p < .01$; $R^2_{\text{level 2 slope model}} = .87$) and the supervisor-reported undermining ($\gamma = -.01$, $p < .01$; $R^2_{\text{level 2 slope model}} = .10$) equations, but not significant in the job satisfaction or depression equations. The form of the two predicted interactions is shown in Fig. 6(a and b). These depictions, and the simple slope calculations in Table 9, again show that the relationship between individual-level undermining and outcomes is stronger when group-level social undermining is low.

The results in the Model 4 column of Table 9 include the justice mediators. These results demonstrate that the interaction between individual- and group-level undermining falls to non-significance in the trust equation and is attenuated in the supervisor-reported social undermining equation. Although this approach generally supports the mediation prediction (Hypothesis 3), it is not able to address the magnitude of the indirect effects of the interaction through the mediating variables, nor can it reveal how the indirect effects differ across levels of group-undermining. We used the path analytic approach advocated by Edwards and Lambert (2004) to address these shortcomings and to test our "first-stage"

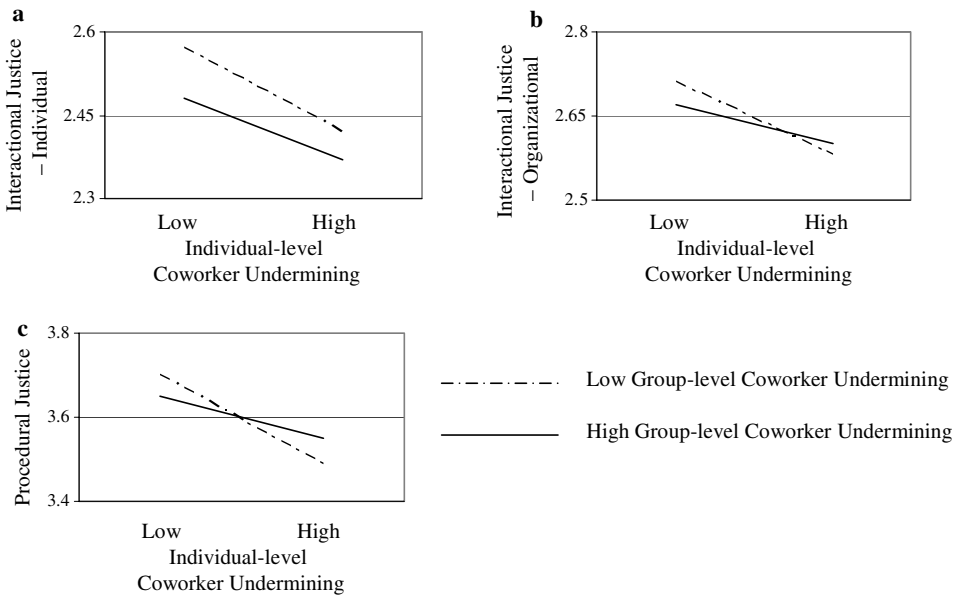


Fig. 5. Study 4 Interaction between individual- and group-level coworker undermining in predicting individual interactional justice (a), organizational interactional justice (b), and procedural justice (c).

mediation hypothesis. Briefly, this approach expresses the moderated mediation relationships as the integration of the family of equations that comprise moderated mediation tests. This is accomplished by substituting the regression equation(s) for the mediating variable(s) (the three justice mediators in our case) into the equation for a given dependent variable. These reduced form equations are then used to derive direct, indirect, and total effects of the independent variable (individual-level undermining) across levels of the moderator variable (group-level undermining).

Table 10 shows the path analytic results for all four dependent variables split by low and high group-level undermining. We used path analysis conventions for describing relationships in terms of direct, indirect, and total effects of individual-level undermining on the outcomes. Thus, P_{MX} refers to the paths from X (individual-level undermining) to M (the justice mediators); P_{YM} is the path from M (justice mediators) to Y (the distal outcomes); P_{YX} is the path from X to Y (that is, the direct effect of X on Y); $P_{YM} * P_{MX}$ refers to the indirect effects, and $P_{YX} + P_{YM} * P_{MX}$ is the total effect of X on Y. Because calculations of the indirect effects involve products of regression coefficients, the distribution of products is non-normal. Significance tests of product terms have a high Type 1 error rate (Shrout & Bolger, 2002), so we followed the suggestions of Edwards and Lambert (2004) and estimated the sampling distributions of the product of regression coefficients using a bootstrap procedure. Bootstrapped estimates from one thousand samples were used to construct confidence intervals for the significance tests of indirect and total effects.

As noted above, the interaction of individual- and group-level undermining significantly predicted all three justice dimensions, but did not significantly relate to job satisfaction. The analysis of simple effects in Table 10 shows that the significant interactions produce only small indirect effects in the low and high group-level undermining conditions, but the sum of the direct and indirect effects does result in a significantly larger total effect of individual undermining on job satisfaction when group-level undermining is low. Thus, Hypothesis 3 receives partial support in the job satisfaction equation.

For the trust equations, the results expressed as simple effects show that the paths from individual-level undermining to the three justice outcomes and trust are stronger when group-level undermining is low. The paths from justice to trust are not consistently moderated by group-level undermining (tests of second stage mediation), although the interaction of procedural justice and group-level undermining is significantly related to trust. The significant interactions between individual- and group-level undermining are strong enough to produce significant indirect effects through individual interactional justice and procedural justice, but not through organizational interactional justice. When combined, the direct and indirect effects produce a significantly larger total effect of individual-level undermining on trust when group-level undermining is low. Thus, Hypothesis 3 is supported in the case of trust.

Hypothesis 3 is not supported in the depression equation. The interaction of individual- and group-level undermining was not significantly related to depression, and the tests of indirect and total effects revealed no

Table 9
Study 4 hierarchical linear modeling analyses—mediation tests

	Job satisfaction				Trust				Depression				Supervisor-reported Undermining			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Age	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tenure	.00	.00	.00	.00	−.01	−.01	.00	.00	−.01	−.01	−.01	−.01	.05**	.05**	.05**	.05**
Store Size	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Negative affectivity	−.27**	−.26**	−.26**	−.16**	−.19**	−.18**	−.18**	−.05**	.24**	.24**	.24**	.21**	.04**	.03	.02	−.01
Individual-level coworker undermining		−.01**	−.01	−.01*		.00	−.01**	−.01**		.01**	.01**	.00		.01**	.02**	.01**
Group-level coworker undermining		−.02	−.02	−.01		−.03	−.03	−.01		.02*	.02*	.02		.00	.00	.00
Individual-level coworker undermining × group-level coworker undermining			.00	−.01**			.01**	.00			.00	.00			−.01**	.00
Interactional justice—individual				.06**				.45**				−.06**				−.08**
Interactional justice—organizational				.30**				.14**				−.05*				−.13**
Procedural justice				.32**				.25**				−.05**				−.05**
Simple slope calculations for individual-level coworker undermining on outcomes																
Low group-level coworker undermining			N/A				−.02**				N/A				.02**	
High group-level coworker undermining			N/A				−.01*				N/A				.01**	

$N = 2338$. N/A, simple slopes are not significantly different.
* $p < .05$.
** $p < .01$.

significant differences between low and high group-level undermining.

When evaluating the supervisor-rated undermining effects, the simple effects show again that the paths from individual-level undermining to justice and supervisor-rated undermining are stronger when group-level undermining is low. They also show significant "second-stage" moderation only for procedural justice, but neither of the interactional justice variables. We found no significant indirect effects in the supervisor-rated undermining equations, although the combined differences for the paths from individual-level undermining to justice and supervisor-rated undermining produce a significantly larger total effect when group-level undermining is low. Thus, Hypothesis 3 is supported in the case of supervisor-rated undermining.

To summarize, these path results demonstrate support for Hypothesis 3 in the trust and supervisor-rated undermining equations. In these cases, group-level undermining moderates the direct effect of individual-level undermining on the outcomes and the first-stage of the indirect effect of individual-level undermining on the outcomes mediated by justice. These differences are large enough to show a significantly larger total effect when group-level undermining is low. A weaker pattern—partially supporting Hypothesis 3—is found in the job satisfaction equations. In this case, significant interactions between individual- and group-level undermining in predicting justice outcomes are strong enough to produce a significantly larger total effect when individual-level undermining is low. No support for the hypothesized mediation model is found in the depression equation.

Supplemental analyses

Because the interaction of procedural justice and group-level undermining was significant (a second-stage mediation) in the trust and undermining equations, it was necessary to conduct additional tests to determine the goodness of fit of our hypothesized model with a full or omnibus model that included the three second-stage interaction terms. We accomplished this by using the multi-parameter test for variance-covariance components available in HLM. This likelihood-ratio test compares deviance statistics of restricted and unrestricted models. Deviance reductions are approximately χ^2 distributed. If the reduction in deviance generated by the full model is not significant, then the simpler model is preferred as a better representation of the data (Raudenbush & Bryk, 2002). When trust was the outcome, the deviance statistic for the restricted model (no second-stage moderators) was 3290.28 and the deviance for the model including the three second-stage moderators was 3286.59. This difference was not significant ($\chi^2 = 3.67$, $df = 3$, n.s.). For the supervisor-rated undermining equations, the reduction in deviance from the

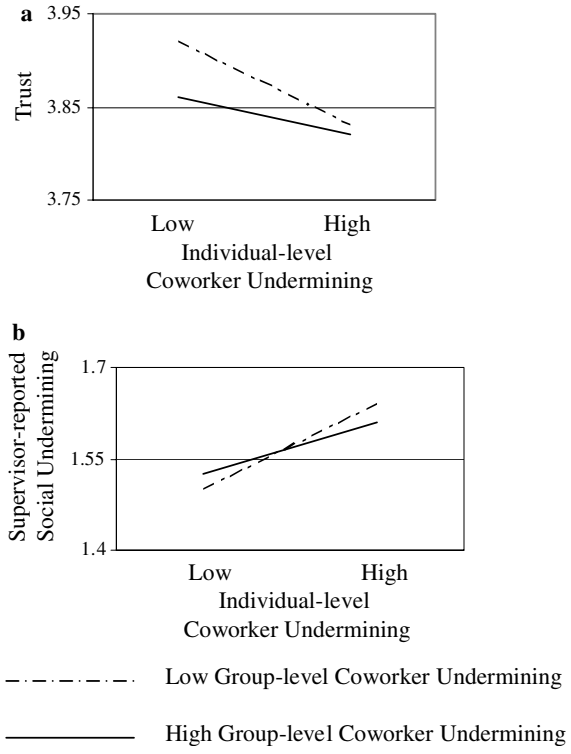


Fig. 6. Study 4 interaction between individual- and group-level coworker undermining in predicting trust (a) and supervisor-reported social undermining (b)

restricted (3333.65) to the model including the three second-stage moderators (3326.98) was not significant ($\chi^2 = 6.67$, $df = 2$, n.s.). These supplemental analyses provide additional support for the hypothesized model in the trust and supervisor-rated undermining equations.

Discussion

Human judgments are relative to the frame of reference in which they are made. The comparative standing of others in the individual's domain is one possible context for attitudinal and behavioral judgments and well-being (Parducci, 1995). In keeping with this perspective, our research focused on how people's reactions to undermining might differ depending on the level of undermining others in their work group were experiencing. We found strong support for a "singled out" hypothesis such that the level of undermining in the group (the amount of supervisor or coworker undermining experienced by all group members) moderated the relationship between individual perceptions of undermining and outcomes. We detected a specific form of interaction; i.e., the relationship between individual perceptions of undermining and outcomes was more pronounced when one's coworkers did not perceive themselves to be targets of undermining. We consistently observed this effect (in six of eight equations) with

Table 10
Study 4 hierarchical linear modeling analyses—analysis of simple effects

	P_{M1X}	P_{M2X}	P_{M3X}	P_{YM1}	P_{YM2}	P_{YM3}	P_{YX}	$P_{YM1} * P_{M1X}$	$P_{YM2} * P_{M2X}$	$P_{YM3} * P_{M3X}$	$P_{YX} + P_{YM1} * P_{M1X} + P_{YM2} * P_{M2X} + P_{YM3} * P_{M3X}$
Job satisfaction											
Low group-level undermining	**−.03****	**−.02****	**−.03****	.08**	.28**	.33**	−.01	.00	−.01*	−.01*	**−.03****
High group-level undermining	**−.01****	**−.01****	**−.01****	.05**	.30**	.31**	−.01	.00	.00	.00	**−.01****
Trust											
Low group-level undermining	**−.03****	**−.02****	**−.03****	.48**	.11**	**.28****	**−.02****	**−.01****	.00	**−.01****	**−.05****
High group-level undermining	**−.01****	**−.01****	**−.01****	.45**	.15**	**.24****	**−.01****	**.00**	.00	**.00**	**−.01****
Depression											
Low group-level undermining	**−.03****	**−.02****	**−.03****	−.06**	−.02	−.06**	.00	.00	.00	.00	.00
High group-level undermining	**−.01****	**−.01****	**−.01****	−.06**	−.01	−.04**	.00	.00	.00	.00	.00
Supervisor-rated undermining											
Low group-level undermining	**−.03****	**−.02****	**−.03****	−.07**	−.17**	**.00**	**.02****	.00	.00	.00	**.04****
High group-level undermining	**−.01****	**−.01****	**−.01****	−.09**	−.12**	**−.07***	**.01****	.00	.00	.00	**.02****

Notes: Lambda coefficients. Coefficients in bold are significantly different across group-level undermining levels. For subscripts, $_Y$ = outcomes (trust or supervisor-rated undermining), $_X$=individual-level social undermining, $_{M1}$ = interactional justice − individual, $_{M2}$ = interactional justice − organizational, $_{M3}$ = procedural justice.

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

supervisor and coworker undermining in a study of national police officers in Slovenia and found some replication evidence for the supervisor undermining results when job involvement was the dependent variable in a study of US National Guard soldiers. We then examined this prediction in a very different context—students working in teams over a four-month period—and focused on the consequences of being singled out for undermining among group members. The results again supported the predicted interaction form; i.e., the relationship between being the target of undermining and individual outcomes was stronger when group-level undermining was low in three of four equations. Finally, we conducted a fourth study in a restaurant context and examined a more complete mediation model derived from fairness theory (Folger & Cropanzano, 1998). In two of four cases (trust and supervisor-rated undermining), individual justice perceptions mediated the relationship between the singled out interaction and important individual outcomes. In a third case (job satisfaction), some support was found for the hypothesis in terms of greater total effects of individual-level undermining in the singled out condition.

Taken together, these studies extend the literature by demonstrating that it is important to explicitly consider the social context when investigating the effects of negative interactions in the workplace. By doing so, we synthesized and integrated the organizational literature on social undermining and support with a conceptual framework—fairness theory—that allows us to consider the social context in which undermining occurs. These findings show that fairness theory can be applied to organizational situations and help integrate work on fairness, justice, and counterfactual theory (cf., Folger & Kass, 2000; Olson et al., 2000).

Because fairness theory implies that certain cognitive processes occur in "singled-out" situations and because we did not measure these processes directly in our studies, it is possible that other theoretical approaches could be used to predict or explain the same pattern of findings. One possibility here is social comparison theory, which provides direct explanations for how individuals react to the social environment (e.g., Festinger, 1954). It is useful and interesting, therefore, to compare the fairness theory approach with the pattern of results we would predict from a social comparison theory perspective. Using social comparison theory, we could also argue that individuals use group undermining levels as a standard for evaluating and reacting to their experienced levels of individual undermining. In line with fairness theory, social comparison theory suggests that when levels of group undermining are low, reactions to high levels of individual undermining should be quite negative. In contrast with fairness theory, however, social comparison theory suggests that when levels of group undermining are high, reactions to low levels of individual undermining should be quite positive because the individual fares well in the social comparison.

Social comparison theory suggests further that reactions should be muted or neutral (neither negative nor positive) when one's experiences are in line with the experiences of others in the social context. That is, social comparison theory predicts positive reactions when one's undermining experiences compare favorably to others' experiences in the social context, negative reactions when one's undermining experiences compare unfavorably to other's experiences in the social context, and more neutral reactions when treatment is consistent between the individual and the group. In essence, a social comparison theory derivation does not imply a multiplicative interaction between individual- and group-level undermining, but rather two additive or main effects of opposite signs. Using job satisfaction as an example outcome, social comparison theory would predict that individual-level undermining would be negatively related to job satisfaction whereas group-level undermining would be positively related. This pattern is clearly not supported in our data sets.

Thus, a fairness theory derivation (that the relationship between individual undermining and outcomes will be stronger when undermining in the group is low), differs markedly from a social comparison theory derivation (two additive or main effects with opposite signs). Although we encourage researchers to include the theoretical mechanisms from fairness theory, i.e., counterfactual thoughts, in future studies, the pattern of results here is consistent with those derived from fairness theory's counterfactual approach and inconsistent with a social comparison theory explanation.

In terms of future research, the results also provide theoretical implications that can be used to derive more precise and explanatory predictions concerning social comparisons that elicit varying degrees of injustice perceptions and ultimate attitudinal and behavioral reactions. For example, Folger and Cropanzano (1998) highlight the issue of accountability, namely the role of discretionary conduct, in determining the potency of social comparisons. While intentionality is explicitly incorporated into the construct of undermining, individual reactions to undermining in context may be exacerbated or attenuated by whether or not individuals perceive that their colleagues (supervisors and coworkers) were influenced by forces outside their control. For example, upper management or other situational constraints might play a role in the behavior of supervisors, and employees may "hold hostile responses in check when they perceive that the supervisor had no choice" (Folger & Cropanzano, 1998: p. 183). One implication is that mutable counterfactuals might result in responses that are not directed at the individuals responsible for the behavior (e.g., an undermining behavior from a supervisor) that generated the

counterfactuals. Using a fairness perspective also begs the question: Do individual differences predict who is more likely to make social comparisons eliciting counterfactuals? If we develop more explicit theoretical models based on fairness theory and incorporate discretionary influences and individual difference variables, we may get more informative and comprehensive models.

Another potentially fruitful avenue for extending these findings may lie in more complex models of how social undermining spreads in social networks (e.g., Sparrowe, Liden, Wayne, & Kraimer, 1999). In Study 4, we examined the interaction of individual- and group-level undermining with the size of one's undermining network (the number of persons an individual nominated as being perpetrators), but the experiences and incidents of undermining and support in a group context could also hinge on one's social network. Whether employees are likely to be the target of undermining or recipients of support may depend on their position within the network. Conversely, the activities and behaviors modeled by those who possess positions of power and prestige may be more likely to influence behavior that spreads through the network, while the behavior of those of lesser power will have less impact (Bandura, 1986). In addition as an anonymous reviewer pointed out, an open theoretical and empirical issue is whether reactions to average levels of undermining in the group context vary as a function of the level and dispersion of undermining. A given level could be produced by one or two chronic underminers or by a low to moderate amount of undermining across the entire group. Our findings with average levels demonstrate that reactions to individual undermining are muted as the average level in the group increases, but a consideration of the dispersion of the average level may increase explanatory power. We encourage researchers to take steps in these directions in the future.

These studies should be evaluated in light of their limitations, one of which is the reliance on cross-sectional data. Although our predictions assume a certain causal sequence, we cannot rule out other causal explanations. For example, counterproductive behaviors might elicit undermining behaviors from supervisors or coworkers. This alternative hypothesis is in keeping with the "victim-precipitation" model of aggression that assumes that victims of aggression intentionally or unintentionally instigate some negative acts such as undermining (Aquino, Grover, Bradfield, & Allen, 1999). Researchers who observe the group context over different time periods might overcome this limitation.

Because individual undermining perceptions and the dependent variables in Studies 1 and 2 were collected from a single source, common method variance might inflate estimates of their relationship. Common method variance provides no viable alternative explanation, however, for the finding that the relationship varied over the level of a third variable (group-level undermining) that was collected from a separate source (other group members) (Spector, 2006). Moreover, we found identical results with separate-source dependent variables in Studies 3 (performance) and 4 (supervisor-reported undermining). Although we found consistent support for our cross-level interaction prediction across studies, some of the interactions were not strongly significant, and estimates of explained variance for the level 2 slope model differed considerably across outcomes and studies. Interaction results for certain outcome variables (e.g., job satisfaction and depression) were significant in Study 1, but not in Study 4. Although substantive explanations for these inconsistencies can be generated (e.g., low power and/or unreliability), the generalizability of the singled-out interaction across settings and across outcome variables is still an open question. The interested reader should interpret our results with these caveats in mind. The measures of social undermining were based on participants' perceptions, and in each case participants made judgments about the intentionality of the behavior. In addition to other sources of measurement error, it is possible that intentionality perceptions were not accurate. We would encourage future research that includes measures of undermining from multiple sources (actors, targets, observers, etc.) as well as studies that examine the relative predictive ability of intentional and unintentional (e.g., incivility, rudeness) antisocial behaviors.

We assessed the experience of being singled out for undermining by examining the interaction of individual- and group-level undermining. This approach leaves open the possibility that individuals who were singled out did not hold that perception. Although the results consistently support a pattern indicative of being singled out, comparisons of this approach with a direct perceptual measure of being singled out for undermining would have been useful. We also used the PFIT measure from Donovan et al. (1998) to assess individual perceptions of interactional justice in Study 4. As an anonymous reviewer pointed out, the reference in the items is not the individual but employees in general. Thus, although the measure was validated as an individual justice measure, it is possible that participants responded based partially or solely on the experience of others, not themselves. The low reliabilities of some of the outcome measures (individual interactional justice and depression in Study 4 exhibited reliabilities below .67 and 69, respectively) might also have attenuated our effect sizes. Finally, although we grounded our hypotheses in the logic of fairness theory, which assumes that the social context of undermining behavior determines the potency of counterfactual thoughts, we did not operationalize these processes. Our concern is ameliorated by the facts that the findings are consistent with predictions derived from the theory and that alternative

explanations for the findings are not easily generated. Consistent with fairness theory we found that the interaction was mediated by justice perceptions in Study 4, but this is counterbalanced by the fact that data limitations prohibited us from conducting mediation tests across all four studies. Further, prior research clearly demonstrates that social comparisons and counterfactual thinking prevail in reactions to negative events; this increases our confidence in the presumed causal sequence. Future researchers should tackle the challenge of operationalizing actual counterfactual thoughts in a naturalistic research. Despite the limitations of our research, we believe that these studies clearly highlight the importance of the group and social context in which abusive behavior takes place.

To summarize, we predicted that the experience of being targeted for social undermining behavior would be more strongly related to attitudes and behaviors when one is being singled out. We found generally consistent support for this idea across four distinct contexts, a variety of attitudinal and behavioral outcomes, and two types of undermining (coworker and supervisor). Organizations that understand the social context of undermining may more effectively assess and control factors in the environment to discourage these behaviors. Clearly, finding ways to eliminate undermining behavior should be a goal, but our results suggest that the effectiveness of zero-tolerance policies may be enhanced with an understanding of the social context in which the antisocial behaviors occur. Managers and coworkers will be well served to understand the impacts of consistent or inconsistent treatment as well as to be aware of the reactions that targets may exhibit under these conditions. We hope that these studies encourage researchers and theorists to devote more attention to the contexts in which negative social interactions occur.

References

American Heritage Dictionary. (1983). New York: Houfton Mifflin.

Aquino, K., Grover, S., Bradfield, M., & Allen, D. (1999). The effects of negative affectivity, hierarchical status, and self-determination on workplace victimization. *Academy of Management Journal, 42*, 260–273.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Upper Saddle River, NJ: Prentice Hall.

Camman, C., Fichman, M., Jenkins, G. D., & Klesh, J. R. (1983). Assessing the attitudes and perceptions of organizational members. In S. S. Seashore, E. E. Lawler, P. H. Mirvis, & C. Cammann (Eds.), *Assessing organizational change. A guide to methods, measures, practices* (pp. 71–138). New York: Wiley.

Colquitt, J. A., Conlon, D. E., Wesson, W. J., Porter, C., & Ng, K. Y. (2003). Justice at the millennium: a meta-analytic review of 25 years of justice research. *Journal of Applied Psychology, 86*, 425–445.

Donovan, M. A., Drasgow, F., & Munson, L. J. (1998). The perceptions of fair interpersonal treatment scale: development and validation of a measure of interpersonal treatment in the workplace. *Journal of Applied Psychology, 83*, 683–692.

Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of Management Journal, 45*, 331–352.

Duffy, M. K., Shaw, J. D., & Stark, E. M. (2000). Performance and satisfaction in conflicted, interdependent groups: When and how does self-esteem make a difference?. *Academy of Management Journal 43*, 772–784.

Dunning, D., & Maddey, S. (1995). Comparison process in counterfactual thought. In N. Roese & J. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 103–132). Hillsdale, NJ: Lawrence Erlbaum.

Edwards, J. R., & Lambert, L. S. (2004). *Methods for integrating moderation and mediation: an analytical framework using moderated path analysis.* Paper presented at the Annual Meetings of the Society for Industrial and Organizational Psychology, Chicago, IL

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140.

Folger, R. (1993). Reactions to mistreatment at work. In J. K. Murnighan (Ed.), *Social psychology in organizations Advances in theory and research* (pp. 161–183). Englewood Cliffs, NJ: Prentice Hall.

Folger, R., & Cropanzano, R. (1998). *Organizational justice and human resource management*. London: Sage.

Folger, R., & Cropanzano, R. (2001). Fairness theory: justice as accountability. In J. Greenberg & R. Copanzano (Eds.), *Advances in organizational justice* (pp. 1–55). Palo Alto, CA: Stanford University Press.

Folger, R., & Kass, E. (2000). Social comparison and fairness: a counterfactual simulations perspective. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 423–433). New York: Kluwer Academic.

Folger, R., & Konovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. *Academy of Management Journal, 32*, 115–130.

James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69*, 85–98.

Jehn, K. A., & Mannix, E. (2001). The dynamic nature of conflict: a longitudinal study of intragroup conflict and group performance. *Academy of Management Journal, 44*, 238–251.

Hofmann, D. A., Griffin, M. A., & Gavin, M. B. (2000). The application of hierarchical linear modeling to organizational research. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 467–511). San Francisco: Jossey-Bass.

Kasimatis, M., & Wells, G. (1995). Individual differences in counterfactual thinking. In N. Roese & J. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 81–102). New York: Lawrence Erlbaum.

Lakey, B., & Cassady, P. B. (1990). Cognitive processes in perceived social support. *Journal of Personality and Social Psychology, 59*, 337–343.

LePine, J. A., & Van Dyne, L. (1998). Predicting voice behavior in work groups. *Journal of Applied Psychology, 83*, 853–868.

Leung, K., & Tong, K. (2003). Toward a normative model of justice. In S. W. Gilliland, D. D. Steiner, & D. P. Skarlicki (Eds.), *Research on social issues in management (emerging perspectives on values in organizations)* (pp. 97–120). Greenwich, CT: Information Age Publishing.

Lind, E. A. (2001). Fairness heuristic theory: justice judgments as pivotal cognitions in organizational relations. In J. Greenberg & R. Cropanzano (Eds.), *Advances in organizational justice* (pp. 56–88). Palo Alto, CA: Stanford University Press.

Lind, E. A., & Tyler, T. (1988). *The social psychology of procedural justice*. New York: Plenum.

O'Leary-Kelly, A. M., Duffy, M. K., & Griffin, R. W. (2000). Construct confusion in the study of antisocial behavior at work.

Research in Personnel and Human Resources Management, 18, 275–303.

Olson, J., Buhrmann, O., & Roese, N. (2000). Comparing comparisons: an integrative perspective on social comparison and counterfactual thinking. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 379–421). New York: Kluwer.

Parducci, A. (1995). *Happiness, pleasure, and judgment: The contextual theory and its applications*. Mahwah, NJ: Lawrence Erlbaum.

Radloff, L. S. (1977). The CES-D: a self-report depression scale for research in the general population. *Journal of Applied Psychological Measurement, 1*, 385–401.

Raelin, J. A. (1994). Three scales of professional deviance within organizations. *Journal of Organizational Behavior, 15*, 483–501.

Raudenbush, S., & Bryk, A. (2002). *Hierarchical linear models: Applications and data analysis methods* (second ed.). Thousand Oaks, CA: Sage.

Raudenbush, S., Bryk, A., Cheong, Y. F., & Congdon, R. (2004). *HLM6: Hierarchical linear and nonlinear modeling.* Lincolnwood, IL: Scientific Software International, Inc.

Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: a multidimensional scaling study. *Academy of Management Journal, 38*, 555–572.

Roese, N. J. (1994). The functional basis of counterfactual thinking. *Journal of Personality and Social Psychology Research, 21*, 620–628.

Roese, N. J., & Olson, J. M. (1995). Counterfactual thinking: a critical overview. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 1–55). Hillsdale, NJ: Lawrence Erlbaum.

Rook, K. S. (1984). The negative side of social interaction: Impact on psychological well-being. *Journal of Applied Social Psychology, 46*, 1097–1108.

Ruehlman, L. S., & Karoly, P. (1991). With a little flak from my friends: development and preliminary validation of the test of negative social exchange (TENSE). *Journal of Consulting and Clinical Psychology, 97*, 104–111.

Shaw, J. D., Duffy, M. K., & Stark, E. M. (2000). Interdependence and preference for group work: Main and congruence effects on the satisfaction and performance of group members. *Journal of Management, 26*, 259–279.

Shaw, J. C., Wild, R. E., & Colquitt, J. A. (2003). To justify or excuse? A meta-analysis of the effects of explanations. *Journal of Applied Psychology, 88*, 444–458.

Sherman, S., & McConnell, A. (1995). Dysfunctional implications of counterfactual thinking: When alternatives to reality fail us? In N. Roese & J. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 199–232). New York: Lawrence Erlbaum.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological Methods, 7*, 422–445.

Skarlicki, D., & Folger, R. (1997). Retaliation in the workplace: the roles of distributive, procedural, and interactional justice. *Journal of Applied Psychology, 82*, 434–443.

Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. (1999). Social networks and the performance of individuals and groups. *Academy of Management Journal, 44*, 316–325.

Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods, 9*, 221–232.

Survey Research Center. (1977). *Effectiveness in work roles: Employee responses to work environments.* Springfield, VA: National Technical Information Service.

Taylor, S. (1991). Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin, 110*, 67–85.

Tepper, B. J. (2000). Consequences of abusive supervision. *Academy of Management Journal, 43*, 178–190.

Tepper, B. J. (2001). Health consequences of organizational injustice: tests of main and interactive effects. *Organizational Behavior and Human Decision Processes, 86*, 197–207.

Tyler, T. R., & Lind, E. A. (1992). A relational model of authority in groups. *Advances in Experimental Social Psychology, 25*, 115–191.

Vinokur, A. D., Price, R., & Caplan, R. (1996). Hard times and hurtful partners: How financial strain affects depression and relationship satisfaction of unemployed persons and their spouses. *Journal of Personality and Social Psychology, 71*, 166–179.

Vinokur, A. D., & van Ryn, M. (1993). Social support and undermining in close relationships: their independent effect on mental health in unemployed persons. *Journal of Personality and Social Psychology, 65*, 350–359.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1107.