The Moderating Roles of Self-Esteem and Neuroticism in the Relationship Between Group and Individual Undermining Behavior

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The authors developed and tested a multilevel interactive model of the relationship between group undermining and individual undermining behavior in 2 multiwave studies of group members. Integrating the literature on group influences on individual behavior with the individual difference literature, the authors predicted a 3-way Group Undermining × Self-Esteem × Neuroticism interaction, such that the relationship between group and individual undermining would be strongest among those simultaneously high in self-esteem and neuroticism. The 3-way interaction was supported in Study 1 (457 participants in 103 groups) and replicated in Study 2 (415 participants in 93 groups) with additional controls and alternative measures of key constructs. The authors discuss the implications of the research and identify future research directions.

Keywords: social undermining, self-esteem, neuroticism

In recent years, researchers have increased their attention to social undermining and similar forms of antisocial behavior in organizations (e.g., Andersson & Pearson, 1999; O'Leary-Kelly, Duffy, & Griffin, 2000). People engage in social-undermining behavior when they behave in ways that are intended to hinder a targeted person's ability to establish and maintain positive interpersonal relationships, achieve work-related success, and maintain a favorable reputation (Duffy, Ganster, & Pagon, 2002). Although less serious than physical aggression, social-undermining behavior has damaging consequences in terms of negative job-related attitudes and behaviors and diminished well-being (e.g., Duffy et al., 2002; Tepper, 2000). Social undermining resides on a separate and distinct continuum from positive workplace behaviors (e.g., social support); low levels of undermining refer to the absence of negative behavior rather than the presence of positive behavior (O'Leary-Kelly et al., 2000). Although researchers have made much progress in understanding the consequences of undermining behaviors, Robinson and Greenberg (1998) concluded that the literature on the determinants of such behavior is sparse and "overly narrow" (p. 22). These authors challenged researchers to develop richer antecedent models that include interactions between

persons and situations and to examine the transfer of antisocial behavior "from one individual to another within an organization" (Robinson & Greenberg, 1998, p. 23).

Accordingly, we (a) reviewed the literature and developed the hypothesis that group undermining behavior relates to individual undermining behavior at a later point in time, (b) predicted that self-esteem (SE) would moderate the group undermining → individual undermining relationship, and (c) predicted that neuroticism would further moderate this relationship. We then tested the multilevel model in two multiwave studies of group members.

This research extends and synthesizes two lines of research. The first stream has shown that work groups that exhibit aggressive behaviors like social undermining shape an individual member's undermining behavior (e.g., see Glomb & Liao, 2003; Robinson & O'Leary-Kelly, 1998). However, this research also suggests that not everyone who is exposed to group-level undermining behavior engages in the same types of behaviors; that is, individual difference variables may moderate this relationship. Moreover, existing research has failed to move beyond cross-sectional tests of the relationship; thus, researchers know little about how these dynamics unfold over time.

The second stream of research has taken initial steps to explore the relationship between individual characteristics—such as SE and neuroticism—and antisocial behavior, but these variables have typically been cast as main effects (e.g., Douglas & Martinko, 2001). General SE (e.g., Baumeister, 1997) and neuroticism (e.g., Douglas & Martinko, 2001) have often been cited as important precursors, but existing results are inconsistent. Baumeister, Smart, and Boden (1996), for example, concluded that results of studies of the relationship between SE and antisocial behavior were ambiguous, contradictory, and inconsistent. Research on neuroticism, trait negative affectivity, and trait anxiety has likewise yielded contradictory results (e.g., Baron & Richardson, 1994; Glomb & Liao, 2003).

Studies that focus on individual characteristics and antisocial behaviors are also overwhelmingly conducted at the individual level; that is, they are focused on individuals' antisocial responses to being the specific *target* of antisocial behavior (e.g., personal threats). Little, if any, research examines individual responses to general levels of antisocial or aggressive behavior in the *environment*. Cross-level research is warranted because individuals do not experience social undermining in a social vacuum, and the effects of individual difference variables depend on the environmental context (e.g., Duffy, Shaw, & Stark, 2000; LePine & Van Dyne, 1998). Moreover, there are unique theoretical justifications for the roles of SE and neuroticism in response to environments rife with undermining, as we describe later. Thus, our theoretical approach concerns the roles of SE and neuroticism, not in terms of whether an individual is personally targeted, but rather in terms of the level of undermining behavior present in the social context (Glomb & Liao, 2003).

To summarize, we explored the following question: What combinations of individual factors exacerbate or attenuate the relationship between group-level undermining and subsequent undermining behavior on the part of individuals? In the sections below, we briefly discuss the theoretical foundation for the relationship between group and individual undermining behavior. We then develop predictions concerning the moderating roles of SE and neuroticism on the group $\rightarrow$ individual undermining relationship.

Background and Predictions

Group and Individual Undermining

The relationship between group and individual aggressive behavior like social undermining is typically grounded in social learning (e.g., Bandura, 1977) or social-information processing theory (Salancik & Pfeffer, 1978). As with many social behaviors, individuals may learn to engage in undermining behaviors by having direct experience with them or by observing and then modeling these behaviors (e.g., Bandura, 1973). Social-information processing theory suggests that individuals use cues in the social environment to guide their behaviors. These cues come in the form of values, norms, and expectations, as well as in the behaviors of coworkers and supervisors. In two recent studies, these ideas were applied to the relationship between group and individual antisocial behavior. Robinson and O'Leary-Kelly (1998), in a cross-sectional field study of 35 work groups from 20 different organizations, found that a measure of group antisocial behavior (with a content domain similar to that of social undermining) related positively to a parallel measure of individual antisocial behavior. Glomb and Liao (2003), in a study of assisted-living home employees, controlled for perceptions of being the target of nonviolent aggression and found that a group climate of nonviolent aggression predicted individual nonviolent aggression. These studies show the apparent robustness of the cross-level relationship between group and individual aggressive behaviors like social undermining at work and provide substantial support for the social-learning and social-information processing perspectives. In line with these findings, we expected that group- and individual-level undermining behavior would also be positively related in this study. Thus, our Hypothesis 1 was that there would be a positive relationship between the level of undermining in the group and the level of individual undermining behavior at a later time.

The Moderating Role of SE

Researchers have often identified SE—the overall evaluation that people make about themselves—as a potential predictor of antisocial behavior. Initially, researchers assumed individuals low in SE were most likely to behave antisocially (Savin-Williams & Jaquish, 1981), perhaps because they are more critical of themselves and others (Baumeister, 1997). Yet, recent work suggests that high-SE individuals may be more likely to engage in antisocial behaviors than their low-SE counterparts (e.g., Baumeister, 1997; Kirkpatrick, Waugh, Valencia, & Webster, 2002). Thus, views and findings conflict as to whether low- or high-SE individuals are more aggressive.

Views also appear to conflict about how individuals with different levels of SE may respond to a climate of group undermining by undermining their group members at a later time. But a close examination of Brockner's (1988) plasticity theory resolves this theoretical inconsistency. According to this theory, low-SE individuals are "susceptible to influence by external and, particularly, social cues" (Brockner, 1988, p. 27) because they (a) are uncertain about the correctness of their thoughts and actions and rely on social cues to guide them, (b) have a higher need for approval from others relative to high-SE individuals, and (c) are more likely than high-SE individuals to believe that negative feedback is valid or self-diagnostic. Brockner (1988) also suggested that the work group is one of the most salient aspects of an individual's social environment. Although it would be reasonable to expect, then, that low-SE individuals are more strongly affected by high levels of group undermining and may engage in more social-undermining behavior compared with high-SE people, close examination of the theory suggests the opposite.

High SE and Esteem-Threatening Situations

Despite the general malleability of the attitudes and behaviors of low-SE individuals (e.g., the plasticity hypothesis), Brockner (1988) suggested that in certain situations, high-SE individuals are expected to be more influenced by environmental conditions than their low-SE counterparts. In particular, Brockner argued that external cues that threaten one's positive self-image—referred to as esteem-threatening situations—"somewhat paradoxically, may have a greater impact on individuals whose self-esteem is high rather than low" (1988, p. 88). Esteem-threatening situations include not only behaviors directed at a given individual (e.g., being the target of undermining), but also other environmental conditions that create uncertainty or trigger social comparisons (e.g., a high level of undermining in a group situation). Social-undermining behavior is designed to inhibit one's ability to maintain positive relationships, achieve high levels of performance, and maintain a favorable work-related reputation (Duffy et al., 2002). That is, it embodies the characteristics of an esteem-threatening situation.

Brockner (1988) also carefully outlined the types of behavioral reactions that may be expected from those with high and low SE in reaction to esteem-threatening situations. He suggested that high-SE individuals have more to lose in terms of their relative standing in a given situation, so they should be driven to behave in ways that protect their self-image. Using a resource-based analogy, Spencer, Josephs, and Steele (1993) argued that some individuals have higher levels of this important resource (esteem) and typi-

cally act in ways designed to enhance it, to increase their comparative favorability, or to succeed in general. These arguments suggest that because high-SE individuals place high importance on instrumental goals, for example, relative status, favorable social comparisons, and behavioral confirmation (Ormel, Lindenberg, Steverink, & Verbrugge, 1999), they will behave more proactively in ways that either maintain or enhance their relative favorability in group situations. Although high-SE individuals could respond in a variety of ways in esteem-threatening situations, we argue that they are more likely than their low-SE counterparts to engage in social-undermining behavior as a way to maintain their status. Antisocial behaviors, such as social undermining, have been seen as proactive or instrumental forms of aggression (e.g., Dodge, 1991), that is, attempts to get "what one wants by being aggressive" (Salmivalli, 2001, p. 386). Following Brockner's (1988) logic, it seems reasonable to expect that high-SE individuals may respond to an esteem-threatening situation by engaging in an instrumental form of aggression to get what they want—an enhancement of their self-image.

High-SE individuals are also more driven to protect their self-image in esteem-threatening situations that do not prescribe a particular or directed course of action (Brockner, 1988). Although a variety of behavioral options are possible in response to high group undermining levels, high-SE individuals should be more likely to engage in undermining because they are more confident in their opinions and less likely to fear reprisals if their undermining attempts are unsuccessful. When high-SE individuals respond to high levels of undermining in the social environment by undermining others, that act lowers others' favorability and performance levels and may effectively enable high-SE individuals to maintain their standing.

Low SE and Esteem-Threatening Situations

In contrast with high-SE individuals, low-SE individuals tend to view environmental negativity as self-diagnostic and, therefore, may not yield to group undermining influences by engaging in such behaviors themselves. By doing so, low-SE individuals are at greater risk for receiving negative evaluations, a problematic situation because they are "especially dependent upon others to provide them with positive evaluations" (Brockner, 1988, p. 29). Brockner (1988) noted that when low-SE individuals are confronted with esteem-threatening situations, they "often react by withdrawing— either psychologically or physically—from the task at hand" (1988, p. 94). In Spencer et al.'s (1993) view, low-SE individuals have lower resource levels and respond in a manner designed to protect or defend what few resources they have. Consistent with this idea, Duffy et al. (2000) reasoned that because low-SE individuals have a high need for approval and a desire to win points with other group members, they would be less likely to participate in the interpersonal bickering associated with high-conflict groups. In support of their theory, Duffy et al. reported that low-SE individuals withdrew more frequently from group work situations characterized by high levels of relationship conflict, but were also able to maintain positive peer-rated performance evaluations in these situations. Brockner's plasticity boundaries and the resource-based analogy also suggest that low-SE individuals may respond to environmental threats by taking a defensive, cau-

tious, or modest position, one that reduces the likelihood of further failure or humiliation (Baumeister, 1997).

To summarize, a theoretical corollary of plasticity theory as well as recent empirical evidence suggest that high-SE individuals are more likely than their low-SE counterparts to commit undermining behaviors when exposed to a high-undermining climate. Thus, our Hypothesis 2 was that group undermining and SE would interact to predict individual undermining behavior at a later time such that the positive relationship between group undermining and individual undermining would be stronger among high-SE individuals.

The Role of Neuroticism

Salmivalli (2001) concluded that "talking about high and low self-esteem is just not enough" (p. 389) and encouraged researchers to further explore the consequences associated with potentially unhealthy and/or unstable SE individuals. Extending her logic, there may be a *subgroup* of high-SE individuals who would be more prone to respond to group undermining by engaging in such behavior themselves. We suggest that examining neuroticism concomitantly offers an avenue for exploring this logic and enhancing the predictive power of SE in individuals' responses to group undermining.

Individuals high in neuroticism (also referred to as emotional instability) tend to exhibit poor adjustment and are prone to negative emotional states, including nervousness, anxiety, moodiness, and worry (Judge, Bono, Ilies, & Gerhardt, 2002). They also tend to interpret even neutral stimuli negatively (Hogan, 1991; Lanyon & Goodstein, 1997). Gray (1970, 1981) further argued that a neuronal system—the behavioral inhibition system—regulates behavior in the presence of punishment signals, while the behavioral activation system regulates behavior in the presence of reward systems. Individuals differ in the relative strengths of these two systems with high neuroticism indicating a strong sensitivity to punishment signals in the environment (e.g., Begley & Lee, 2005; Gray, 1970; Larsen & Ketelaar, 1991). With these theoretical descriptors of neuroticism—that is, a general level of nervousness and worry and a heightened sensitivity to punishment signals—it is possible to establish a logical foundation for a three-way Group Undermining $\times$ SE $\times$ Neuroticism interaction.

Recall that high-SE individuals are in tune with external cues that may be esteem threatening, are more likely than those with low SE to respond proactively to maintain or enhance their relative standing in the face of threats, and are less likely to fear reprisals in the form of negative evaluations from group members. When these characteristics of high-SE individuals are crossed with the descriptions of high-neuroticism individuals, a clearer picture emerges of the interactive role of group-undermining levels, SE, and neuroticism in predicting responses to group undermining. Higher levels of nervous worry and a stronger sensitivity to punishment signals, when combined with the high-SE characteristics described by Brockner (1988) and other scholars, should exacerbate the perception that undermining in the group may threaten one's relative status. Although high-SE/low-neuroticism individuals may be concerned about esteem threats in the environment, their dispositions, which desensitize them to punishment signals in the environment, should reduce the likelihood that they will interpret group undermining as an esteem threat or a potential interference in terms of achieving their instrumental goals. Undermining

behaviors (e.g., belittling comments, giving someone the silent treatment, etc.) are often artfully crafted and quite subtle. While these individuals may be concerned with esteem threats, they may be less likely to pick up on the subtle undermining behaviors of others.

In contrast, the high-SE individual who has a strong sensitivity to punishment signals in the environment, a tendency to interpret social signals negatively, and a propensity to be worried and paranoid is more likely to engage in undermining behavior in response to the instrumental antisocial actions of others. Stated differently, the impetus to respond to an environment replete with undermining by turning the tables, attempting to maintain or enhance one's relative standing, or working to achieve other goals by engaging in undermining should be stronger among high-SE/high-neuroticism individuals. High-SE/low-neuroticism individuals are calmer and less sensitive to punishment signals and should not be as inclined to engage in undermining behavior in response to undermining behavior in the environment. Although not focused on neuroticism per se, some preliminary evidence provides initial clues that this formulation may hold. Kernis (1993), for example, found higher levels of hostility and anger among unstable high-SE individuals. Salmivalli (2001) concluded that unstable-SE individuals are more vulnerable to various types of provocations in the external environment, and Kernis, Grannermann, and Barclay (1989) found that stable, high SE is associated with very low levels of aggression. Thus, our Hypothesis 3 was that there would be a significant Group Undermining × SE × Neuroticism interaction in predicting individual undermining behavior at a later time, such that the positive relationship between group undermining and individual undermining would be strongest among individuals high in SE and high in neuroticism.

Study 1

Method

Sample

Participants were 457 students enrolled in business administration courses at a large Midwestern university. Participation was voluntary and confidentiality assurances were given. Eleven classes, taught by four different instructors, were involved. In all classes, the instructor required groups to complete several projects or assignments, and groups ($N = 103$) remained intact throughout the term. The group-grade portion of the class accounted for 20% to 25% of participants' total grade in the class. Instructors graded group assignments in absolute terms (a constant standard of achievement) rather than a relative standard (curved relative to other groups in the class). This distinction is important because we were interested in isolating intragroup undermining behavior. When designing the study, we considered it important to minimize the possibility of and the motivation for intergroup undermining behavior. Data were collected at three points during the term. The Time 1 collection was during the first week of class, before groups began to interact and complete projects. Control variables, SE, and neuroticism measures were collected at Time 1. Time 2 data, including perceptions of group undermining behavior, were collected at midterm (8 weeks after Time 1). Time 3 data were collected just prior to final examinations (8 weeks after Time 2 and 16 weeks after Time 1). Individual reports of social-undermining behavior were collected at Time 3. The average group size was 4.5 members ($SD = 0.72$), and the average age of participants was 23.8 years. The sample comprised juniors (16%), seniors (51%), and graduate students (33%). Participants reported working 1.66 hr outside of class each week with their group (approximately

27 hr during the term) in addition to in-class group work. Missing data across the three data collections reduced the analysis sample to 333.

Measures (Time Period Collected)

SE (Time 1). SE was assessed with Rosenberg's (1965) 10-item scale ($\acute{\alpha} = .81$) at Time 1. Scores on these dimensions were obtained with seven Likert-type response options. A sample item is "I feel I have a number of good qualities."

Neuroticism (Time 1). Neuroticism was measured with the 12-item measure from Goldberg (1992; $\acute{\alpha} = .83$), also at Time 1. The items are in semantic differential format (e.g., *at ease–nervous, discontented–contented*) and had nine response options.

Group social undermining (Time 2). A seven-item measure adapted from Duffy et al.'s (2002) social-undermining measure was used. Because of space and time constraints, it was necessary to use an abbreviated undermining measure; it was also necessary to adapt items to the group context. The items, as a group, reflect the nature of the definition of social undermining, that is, behaviors that diminish one's ability to establish and maintain positive interpersonal relationships, work-related success, and a favorable reputation. The items were formulated as questions. Participants were asked how often group members criticized them in front of other members, intentionally ignored them, talked down to them, went back on their word, gave them the silent treatment, belittled them or their ideas, or didn't listen to them. The items had response options from 1 (*never*) to 7 (*all the time*).

Individual perceptions of undermining of group members were aggregated to the mean level in the group. Aggregation is appropriate because the referent for the items is the group's level of undermining behavior as perceived by a given group member. However, it was necessary to evaluate the appropriateness of aggregation empirically. Therefore, prior to aggregating this variable to the group level, we assessed the level of within-group agreement using the $r_{wg(j)}$ formula from James, Demaree, and Wolf (1984). These values ranged from .90 to 1.00 with an average value of .98; hence, aggregation to the group level was justified.

Individual-level social undermining (Time 3). The dependent variable in our analyses, individual social-undermining behavior, was collected at Time 3. We used a seven-item scale also from Duffy et al.'s (2002) measure of social undermining ($\acute{\alpha} = .81$). This measure focused on self-reports of one's own undermining behavior rather than reports of being the target of undermining. Sample questions are, "How often have you intentionally ignored team members?" and "How often have you intentionally given a team member the silent treatment?" The items had response options ranging from 1 (*never*) to 7 (*all the time*).

Control variables (Time 1 and Time 2). We controlled for three potential confounds—group size, grade point average (GPA), and individual reports of being the target of undermining. Group size may be related to group functioning (e.g., Duffy et al., 2000) and the incidence of undermining behaviors, and should be controlled. These data were collected from course instructors. GPA is a proxy for ability and may relate to reports of and reactions to undermining in groups. Self-reports of GPA at Time 1 were used. Following Glomb and Liao (2003), we also controlled for perceptions of being the target of undermining. The hypotheses concern the influence of the undermining environment, over and above individual reports that others targeted them for undermining. This variable was the focal individual's reports on the seven-item undermining measure at Time 2 ($\acute{\alpha} = .87$).

Results

Response Bias Checks and Measurement Issues

To address the potential for response, self-selection, and attrition biases, we compared participants in the final analysis sample ($N = 333$) with those who were eliminated because of missing data

on a study variable ($N = 124$) across a range of demographic and expectation variables collected at Time 1. The variables were age, gender, GPA, number of prior classes taken with teamwork involved, class standing, and grade expectations for the class: "What grade will you 'shoot for' in this class?" We coded analysis-sample participants as 1 and Time-1-only participants as 0, and included this dichotomy as the dependent variable in a logistic regression analysis with the predictors. None of the variables were significant in the equation. Therefore, it appeared that no systematic differences existed between retained and nonretained cases.

Some recent research suggests that neuroticism and SE may reflect a broad, latent, higher order trait, namely core self-evaluations (e.g., Judge, Locke, & Durham, 1997). The bivariate correlations between these variables in this study were only moderate in magnitude ($r = -.38$), but because we make interactive predictions involving these constructs, it was necessary to assess whether our measures could be empirically differentiated. We therefore used confirmatory factor analysis to compare a two-factor model (items from the SE and neuroticism measures loading on separate factors) with a one-factor or omnibus model that assumes the items represent a single construct. A chi-square difference test shows a significant improvement in model fit for a two-factor solution, $\Delta\chi^2(1, N = 333) = 667.64$, $p < .000$, and model fit statistics were also better for the two-factor solution ($\chi^2/df = 2.26$, AGFI = .89, CFI = .91, RMSEA = .06) than for the one-factor solution ($\chi^2/df = 6.63$, AGFI = .68, CFI = .59, RMSEA = .12).

Hypothesis Tests

The descriptive statistics and correlations among the Study 1 variables are shown in Table 1. The top of Table 2 includes the results of the hypothesis tests. Because participants were nested in groups and the undermining independent variable was assessed at the group level, we used hierarchical linear modeling (HLM) to test the hypotheses. Before estimating the full equation, we estimated a null model with no predictors to partition variance into within-team and between-team components, and we assessed the degree of between-team variance in individual undermining. This analysis shows that there was systematic between-team variation in individual undermining, $\chi^2(101, N = 102) = 147.27$, $p < .000$. Moreover, using the interclass correlation coefficient formula pro-

Table 2

Hierarchical Linear Modeling Results With Time 3 Individual Undermining Behavior as the Dependent Variable for Study 1 and Study 2

Independent variable	Individual undermining (Time 3) γ	SE
Study 1		
Controls		
GPA[a] (Time 1)	−.12	.11
Team size[b]	−.01	.07
Target of undermining[a] (Time 2)	.39**	.06
Independent variables		
Group undermining[b] (Time 2)	.81**	.26
Self-esteem[a] (Time 1)	.02	.05
Neuroticism[a] (Time 1)	.01	.05
Interactions		
Group Undermining × Self-Esteem[c]	.23	.19
Group Undermining × Neuroticism[c]	.01	.21
Self-Esteem × Neuroticism[a]	.07*	.04
Group Undermining × Self-Esteem × Neuroticism[c]	.28*	.14
Study 2		
Controls		
GPA[a] (Time 1)	.02	.04
Narcissism (Time 1)[a]	−.04	.08
Team size[b]	−.02	.01
Target of undermining[a] (Time 2)	.09	.07
Independent variables		
Group undermining[b] (Time 2)	.53**	.16
Self-esteem[a] (Time 1)	.01	.02
Neuroticism[a] (Time 1)	.04**	.01
Interactions		
Group Undermining × Self-Esteem[c]	.78**	.11
Group Undermining × Neuroticism[c]	.64**	.14
Self-Esteem × Neuroticism[a]	.03*	.01
Group Undermining × Self-Esteem × Neuroticism[c]	.36**	.11

Note. For Study 1, $N = 333$; for Study 2, $N = 291$. GPA = grade point average. [a] Level 1 predictors. [b] Level 2 predictors. [c] Cross-level interaction predictors.
* $p < .05$. ** $p < .01$.

Table 1

Descriptive Statistics and Correlations Among Study Variables for Study 1 and Study 2

Variable	Study 1 M	SD	ά	Study 2 M	SD	ά	1	2	3	4	5	6	7	8
1. GPA (Time 1)	3.32	0.41	—	3.30	0.35	—		−.06	−.09	.06	.01	.19**	−.08	.01
2. Narcissism (Time 1)	—	—	—	1.51	0.20	.77	—		.16**	.03	.03	.44**	.16**	−.04
3. Team size	4.46	0.72	—	4.41	1.07	—	−.01			.07	.12*	−.05	.04	−.05
4. Target of undermining (Time 2)	1.28	0.42	.87	1.09	0.20	.93	.12*	—	.11*		.44**	−.07	.15**	.12*
5. Group undermining (Time 2)	1.26	0.24	—	1.09	0.11	—	.17**	—	.17**	.45**		.02	.02	.20**
6. Self-esteem (Time 1)	5.85	0.81	.81	5.60	0.74	.76	−.06	—	.01	−.18**	−.03		−.33**	.07
7. Neuroticism (Time 1)	3.89	0.96	.83	3.90	0.86	.71	.00	—	.00	.11*	.01	−.38**		.14**
8. Individual undermining (Time 3)	1.31	0.43	.81	1.10	0.27	.95	.03	—	.09	.48**	.41**	−.04	.04	

Note. Study 1 correlations ($N = 333$) are below the main diagonal; Study 2 correlations ($N = 291$) are above the main diagonal. Team size was collected from course instructors following the term. Dashes indicate that the values are not applicable. GPA = grade point average.
* $p < .05$. ** $p < .01$.

vided by Hofmann, Griffin, and Gavin (2000), this analysis shows that 13.63% of the variance in individual undermining behavior resides between groups, and 86.37% resides within groups.

The test of Hypothesis 1—the main effect of group undermining at Time 2 on individual undermining at Time 3—is a means as outcomes analysis in HLM (e.g., Raudenbush & Bryk, 2002). The Level 1 model including controls, SE, neuroticism, and the Self-Esteem × Neuroticism interaction is as follows:

$$Y_{ij} \text{ (individual undermining)} = \beta_{0j} + \beta_{1j} \text{ (GPA)}$$

$$+ \beta_{2j} \text{ (target of undermining)} + \beta_{3j} \text{ (SE)}$$

$$+ \beta_{4j} \text{ (neuroticism)} + \beta_{5j} \text{ (SE} \times \text{Neuroticism)} + r_{ij}, \quad (1)$$

where Y_{ij} is the observed value of outcome Y (individual undermining) for observation i nested within group j, β_{0j} is the intercept for group j, β_{1j}–β_{5j} are regression slopes of the outcome on the five individual-level covariates within group j, and r_{ij} is a residual term. The results of the Level 1 analysis demonstrated significant between-groups variance in undermining ($\tau_{00} = .07$, $p < .01$). This result justified analyses that included the Level 2 group undermining predictor. The group undermining variable was included in a Level 2 model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} \text{ (team size)} + \gamma_{02} \text{ (group undermining)} + u_{0j}, \quad (2)$$

where γ_{00} is the fixed intercept, γ_{01} and γ_{02} are the fixed regression coefficients for the team size control and group undermining, respectively, and u_{0j} is the Level 2 residual.

The tests of the interaction hypotheses in HLM analysis involve the prediction of the slopes of the Level 1 predictor variables. To satisfy the requirement of including all possible combinations of two-way interactions, we estimated the effect of group undermining on the SE (β_{3j}) and neuroticism (β_{4j}) slopes, in addition to the effect of group undermining on the slope of the SE × Neuroticism interaction term (β_{5j}). Thus,

$$\beta_{3j} \text{ (SE slope)} = \gamma_{30} + \gamma_{31} \text{ (group undermining)} + u_{3j}; \quad (3)$$

$$\beta_{4j} \text{ (neuroticism slope)} = \gamma_{40} + \gamma_{41} \text{ (group undermining)} + u_{4j}; \quad (4)$$

$$\beta_{5j} \text{ (SE} \times \text{Neuroticism Slope)} = \gamma_{50}$$

$$+ \gamma_{51} \text{ (group undermining)} + u_{5j}. \quad (5)$$

Stated as a final or full mixed model including Level 1 main effects, Level 2 main effects, and cross-level interactions, the predicted equation is as follows:

$$Y_{ij} \text{ (individual undermining)} = \gamma_{00} + \gamma_{10} \text{ (GPA)}$$

$$+ \gamma_{01} \text{ (team size)} + \gamma_{20} \text{ (target of undermining)}$$

$$+ \gamma_{02} \text{ (group undermining)} + \gamma_{30} \text{ (SE)} + \gamma_{40} \text{ (neuroticism)}$$

$$+ \gamma_{31} \text{ (Group Undermining} \times \text{SE)}$$

$$+ \gamma_{41} \text{ (Group Undermining} \times \text{Neuroticism)}$$

$$+ \gamma_{50} \text{ (SE} \times \text{Neuroticism)}$$

$$+ \gamma_{51} \text{ (Group Undermining} \times \text{SE} \times \text{Neuroticism)}$$

$$+ u_{0j} + r_{ij}. \quad (6)$$

The simultaneous computation of the mixed-model formula (Equation 6) is shown in the top of Table 2. Among the control variables, only target of undermining (Time 2) was a significant predictor of individual undermining at Time 3 ($\gamma_{20} = .39$, $p < .01$). GPA ($\gamma_{10} = -.12$, ns) and team size ($\gamma_{01} = -.01$, ns) were not significantly related. Hypothesis 1 concerned the main effect cross-level relationship between group undermining at Time 2 and individual undermining at Time 3. This relationship was positive and significant, as predicted ($\gamma_{02} = .81$, $p < .01$). Thus, Hypothesis 1 is supported. Hypothesis 2—Group Undermining × SE interaction in predicting individual undermining—was not supported. The effect of group undermining on the slope of the SE → individual undermining relationship was not significant ($\gamma_{41} = .23$, ns).

The test of the three-way interaction prediction—the effect of group undermining on the SE × Neuroticism interaction—was significant ($\gamma_{51} = .28$, $p < .05$). To support Hypothesis 3, the plotted interaction should conform to the predicted form. Figure 1 shows the significant interaction effect. Figure 1A shows the relationship between group and individual undermining by levels of low (-1 SD) and high ($+1$ SD) SE when neuroticism is low (-1 SD). There are two virtually parallel slopes for low- and high-SE individuals across levels of group undermining under these conditions. Although the slopes are slightly positive, tests of the simple slopes revealed that neither slope is significant. Figure 1B shows the interaction of group undermining and SE under high-neuroticism ($+1$ SD) conditions. When SE is low, there is again a slightly positive but nonsignificant relationship between group undermining and individual undermining. When SE is high, there is a significant positive relationship between group undermining and individual undermining. Also of note is that the highest levels of individual undermining across all four plotted lines in Figure 1 are observed under the condition of high group undermining, high SE, and high neuroticism. Thus, Hypothesis 3 is supported.

Study 2

Method

Improvements and Extensions

The results of Study 1 show a strong positive relationship between group undermining and individual undermining only among individuals high in SE and neuroticism, as predicted, but the results can be criticized on several grounds. First, they supported the predicted three-way interaction, but power concerns, measure unreliability, and unmeasured confounds often make it difficult to replicate interactions, especially in field settings. Second, critics could argue that the combination of high SE and high neuroticism is similar to some conceptualizations of narcissistic personality. Raskin and Terry (1988) characterized narcissists as individuals given to self-aggrandizement, megalomania, denial, and projection. Conceivably, Study 1 results were obtained because the SE × Neuroticism interaction acted as a proxy for narcissism. Third, several well-validated measures of general SE levels exist, and possibly the results are operation specific with respect to Rosenberg's (1965) SE measure. In particular, Kirkpatrick et al. (2002) argued that a specific domain of global SE—self-perceived superiority—from among the broader, general domain of self-worth was the most relevant in terms of predictive aggression models. Replication of the Study 1 results using a global SE measure that focuses on self-perceived superiority should provide additional insights and evidence to support or
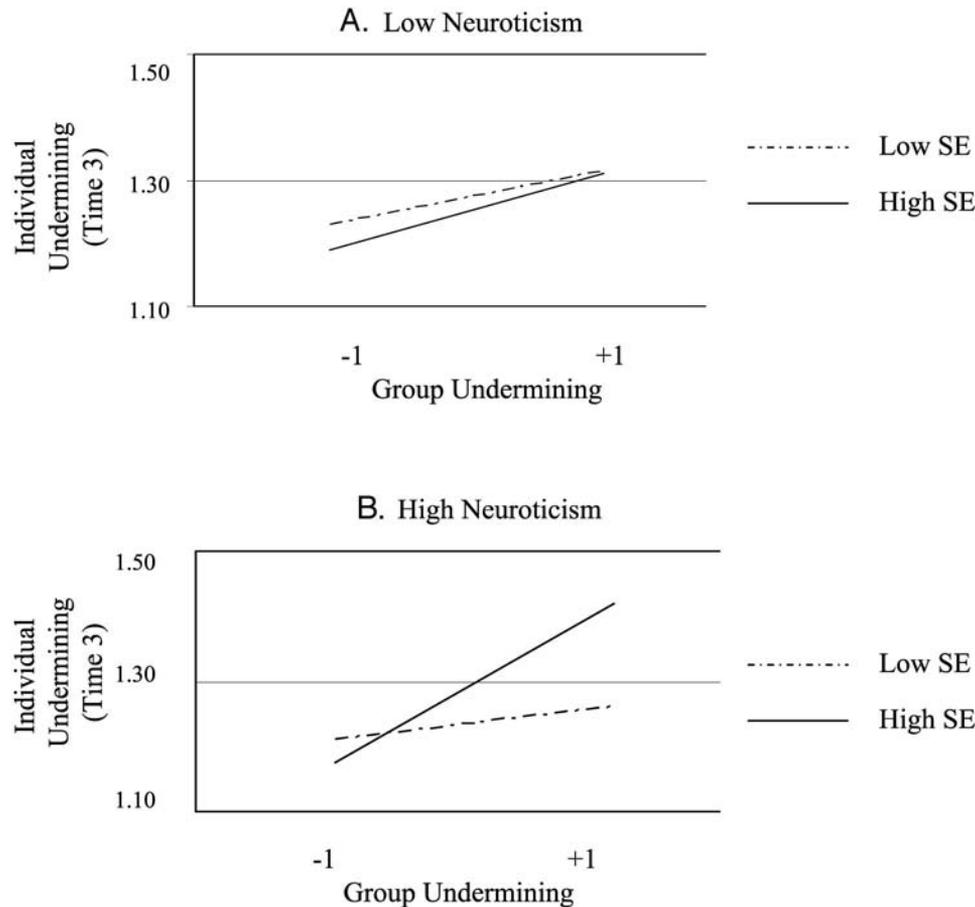
A. Low Neuroticism

B. High Neuroticism

Figure 1. Interaction among group undermining (Time 2), self-esteem (Time 1), and neuroticism (Time 1) in predicting Time 3 individual undermining in Study 1. SE = self-esteem.

refute this idea. Fourth, time constraints in Study 1 caused us to use truncated measures of the undermining variables at Times 2 and 3, raising questions about adequate coverage of the conceptual domain and highlighting validity issues in general.

To bolster confidence in the predicted and observed patterns of relationships found in Study 1, we conducted a second study that addressed these concerns. In Study 2, we (a) attempted to replicate the three-way Group Undermining × SE × Neuroticism interaction, (b) controlled for a well-validated measure of narcissism from Raskin and Terry (1988) in all analyses, (c) included a different, but well-validated, measure of global SE from Pelham and Swann (1989) that focuses on self-perceived superiority, and (d) used the full 13-item measure from Duffy et al. (2002) to assess target, group, and individual undermining. The research design and measures are outlined below.

Sample

Participants, all volunteers assured of confidentiality, were 415 undergraduates in one of 15 different business courses at a large university in the Midwestern United States. The courses were taught by five different instructors. Ninety-three groups were included: The average group size was 4.4 members ($SD = 1.07$), and the average age of participants was 21.9 years. The sample comprised sophomores (6%), juniors (44%), and seniors (50%). Participants reported working 1.59 hr outside of class each week with their group (approximately 25 hr during the term) in addition to

in-class group work. Teams remained intact during the term, and multiple projects and assignments were required in all classes. The design of the study paralleled that of Study 1; that is, data for this study were collected at three times (first week of class, midterm, and last week of class); group project grades accounted for 20%–25% of the total grade, and group assignments were graded without curves. As in Study 1, control variables, SE, and neuroticism measures were collected at Time 1; group undermining behavior was collected at midterm (8 weeks after Time 1), and individual undermining behavior was collected at Time 3. Missing data across the three data collections reduced the analysis sample to 291.

Measures (Time Period Collected)

SE (Time 1). We assessed SE with Pelham and Swann's (1989) 10-item measure ($\alpha = .76$) at Time 1. Participants rated themselves on various attributes, such as intellectual/academic ability, leadership ability, common sense, and discipline compared with other people. The responses ranged from 1 (*bottom 5%*) to 10 (*top 5%*).

Neuroticism (Time 1). Neuroticism was measured with the 12-item measure from Goldberg (1992; $\alpha = .71$), also at Time 1. The items were in semantic differential format (*at ease–nervous*, *discontented–contented*) with nine response options.

Group social undermining (Time 2). The 13-item measure from Duffy et al. (2002) was used. The items had response options from 1 (*never*) to 7 (*all the time*). As in Study 1, the items were adapted from a coworker

perspective to a group context, and mean scores were aggregated to the group level. Within-group agreement was assessed with the $r_{wg(j)}$ formula from James et al. (1984). These values ranged from .96 to 1.00 with an average value of .99.

Individual-level social undermining (Time 3). We measured individual social-undermining behavior at Time 3 with Duffy et al.'s (2002) 13-item measure ($\alpha = .95$). This measure focused on self-reports of one's own undermining behavior, rather than reports that one was the target of undermining. The item had response options from 1 (*never*) to 7 (*all the time*).

Control variables (Time 1 and Time 2). As in Study 1, we controlled for three potential confounds—group size, GPA, and individual reports of being the target of undermining. Target of undermining was assessed with the mean of the individual reports on the 13-item undermining measure at Time 2 ($\alpha = .93$). In addition, we controlled for narcissism with the 20-item measure from Raskin and Terry (1988; reliability = .77). In this measure, participants chose between 20 paired statements; for example, "I will never be satisfied until I get what I deserve," or "I will take my satisfactions as they come."

Results

Response Bias Checks and Measurement Issues

The response bias and measurement checks paralleled those used in Study 1. First, we compared those who were eliminated because of missing data ($n = 124$) with participants in the final analysis sample ($n = 291$) across a range of demographic and expectation variables collected at Time 1. The variables were age, gender, GPA, number of prior classes taken with teamwork involved, class standing, and efficacy expectations for the class; for example, "I am confident that I can do well in this class." We coded analysis-sample participants as 1 and Time 1 only participants as 0 and included this dichotomy as the dependent variable in a logistic regression analysis with the predictors. Only one variable, gender, was significant in this analysis. Male participants were more likely to have missing data on one of the study variables. As a check, we included gender as an additional control in the hypothesis tests reported below. No substantive differences were observed.

As in Study 1, we also compared one- and two-factor solutions for the SE and neuroticism items used in Study 2. A chi-square difference test showed a significant improvement in model fit for a two-factor solution, $\Delta\chi^2(1, N = 291) = 622.18, p < .000$, and model fit statistics were also superior for the two-factor solution ($\chi^2/df = 2.38$, AGFI = .88, CFI = .88, RMSEA = .06) than the one-factor solution ($\chi^2/df = 6.03$, AGFI = .73, CFI = .66, RMSEA = .12).

Hypothesis Tests

Descriptive statistics and correlations among the study variables are shown in Table 1. Narcissism is significantly related to SE ($r = .44, p < .01$) and neuroticism ($r = .16, p < .01$), but not significantly related to reports of being the target of undermining ($r = .03, ns$) or to self-reports of undermining behavior at Time 3 ($r = -.04, ns$).

For the hypothesis tests, the full mixed HLM model is identical to that reported in Equation 6, except for the addition of the narcissism control. Thus,

$$Y_{ij} \text{ (individual undermining)} = \gamma_{00} + \gamma_{10} \text{ (GPA)}$$

$$+ \gamma_{20} \text{ (narcissism)} + \gamma_{01} \text{ (team size)}$$

$$+ \gamma_{30} \text{ (target of undermining)} + \gamma_{02} \text{ (group undermining)}$$

$$+ \gamma_{40} \text{ (SE)} + \gamma_{50} \text{ (neuroticism)}$$

$$+ \gamma_{41} \text{ (Group Undermining} \times \text{SE)}$$

$$+ \gamma_{51} \text{ (Group Undermining} \times \text{Neuroticism)}$$

$$+ \gamma_{60} \text{ (SE} \times \text{Neuroticism)}$$

$$+ \gamma_{61} \text{ (Group Undermining} \times \text{SE} \times \text{Neuroticism)} + u_{0j} + r_{ij}. \quad (7)$$

Before testing the hypotheses, we again estimated a null model with no predictors, which partitions variance into within-team and between-team components and assesses the degree of between-team variance in individual undermining. This analysis shows systematic between-team variation in individual undermining, $\chi^2(65, N = 66) = 122.82, p < .01$. Eleven percent of the variance in individual undermining behavior resides between groups, and 89% resides within groups in the Study 2 data set. The bottom of Table 2 includes the results of the hypothesis tests. Hypothesis 1 is supported in Study 2—after partialing the effects of the control variables, group undermining is significantly and positively related to individual undermining behavior ($\gamma_{02} = .53, p < .01$). Hypothesis 2 is also supported. The interaction of group undermining and SE is significant ($\gamma_{41} = .78, p < .01$), and a plot of the significant relationship (not shown) reveals a strong positive relationship between group undermining and individual undermining among high-SE individuals, but a flat, nonsignificant, slope among low-SE individuals. These findings, however, should be evaluated in light of the significant three-way Group Undermining × SE × Neuroticism interaction, that is, the test of Hypothesis 3. This interaction is significant ($\gamma_{61} = .36, p < .01$), and a plot of the relationships is shown in Figure 2.

As Figure 2A shows, group undermining and individual undermining have no significant relationship when neuroticism is low. Also, neither the low- nor the high-SE lines are significant when neuroticism is low. In Figure 1B (high neuroticism), group undermining and individual undermining do not show a significant relationship when SE is low. As expected, the relationship is positive and significant when SE is high. Also consistent with expectations, the level of individual undermining behavior is highest in high group undermining, high SE, and high neuroticism conditions. Thus, Hypothesis 3 is supported.

Because of the relatively strong association between narcissism and SE ($r = .44, p < .01$) in this data set as well as strong associations in studies reported in the literature (e.g., Campbell, Rudich, & Sedikides, 2002), we conducted an additional set of HLM analyses using narcissism in the interaction tests and including SE as a control. Neither the two-way cross-level Group Undermining × Narcissism interaction nor the three-way Group Undermining × Narcissism × Neuroticism interaction significantly predicted individual undermining. Thus, the interaction effects hold only for SE.

Discussion

We explored SE and neuroticism as moderators of the relationship between undermining behavior in a group and individual undermining behavior at a later time. The addition of variables that reflect stable individual characteristics—SE and neuroticism—to
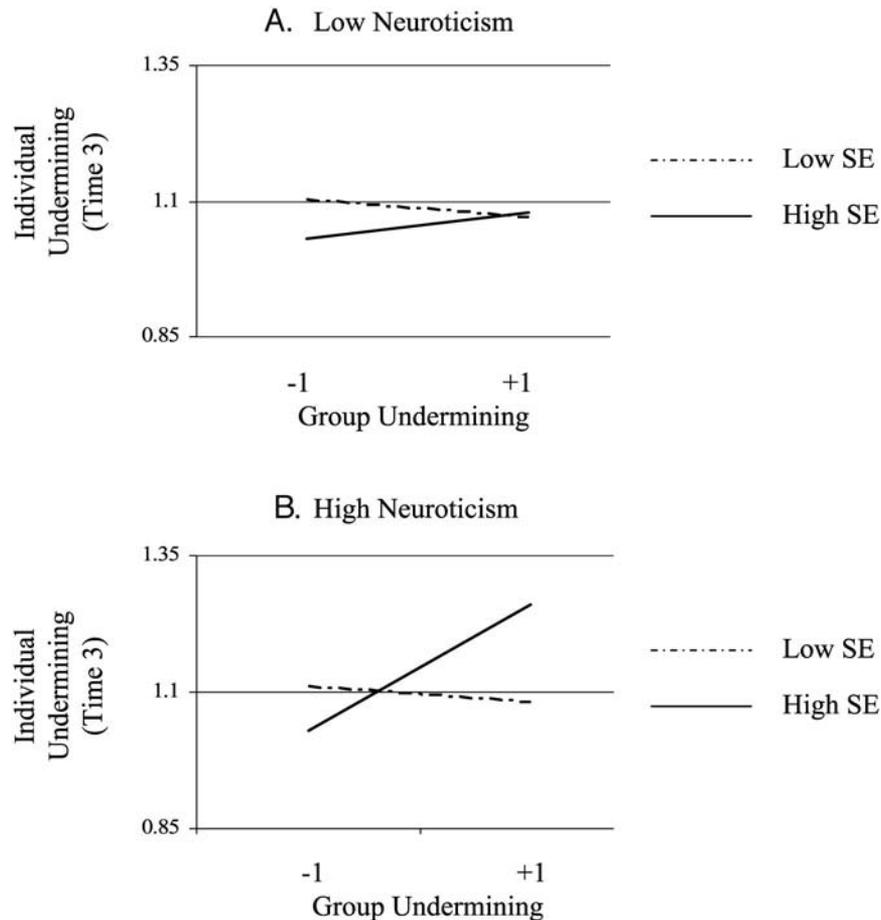
Figure 2. Interaction among group undermining (Time 2), self-esteem (Time 1), and neuroticism (Time 1) in predicting Time 3 individual undermining in Study 2. SE = self-esteem.

existing theoretical frameworks concerning the transfer or spread of transgressive behavior in group situations provides several interesting insights to the undermining and individual difference literature. In Study 1, a multiwave investigation of group members over 4 months, the relationship between group and individual undermining behaviors was generally positive, but further analyses revealed that this relationship held only among individuals simultaneously high in SE and neuroticism. In Study 2, which used a similar multiwave design, incorporated different operationalizations of key constructs, and controlled for a potential confound (narcissism), we replicated the three-way interaction findings. These findings add to the nascent literature on group influences on antisocial behavior, integrate the literature on social–environmental determinants with the individual-difference literature, and increase the level of methodological rigor currently found in the literature. These issues are discussed next.

Theoretical Implications

The predictions and supportive findings extend the social-information processing and social learning theory explanations of group → individual undermining relationships, as well as integrating this literature with the growing and controversial literature on

the relationship between SE and aggression. Prior undermining research typically focused on main effects or other structural moderators of the relationship (e.g., task interdependence), leading some to refer to this literature as narrow or myopic (Robinson & Greenberg, 1998). Our study is the first to broaden this stream of research and paint a more complex picture of how the situation and the person interact to predict social-undermining behavior in group situations. Our theory suggests that three factors—social information processing, esteem-threatening social cues, and sensitivity to punishment signals in the environment—interact to produce the conditions under which individuals engage in undermining behaviors. Effects consistent with this framework were observed after controlling for individuals' perceptions that they were the target of group undermining. This may be interpreted to mean that individual undermining behaviors are more than just acts of revenge against other group members. It also increases the likelihood that—as argued in our theoretical foundation—these behaviors were responses, directed by transferred norms and values, intended to achieve instrumental goals such as relative status. That we controlled for narcissism in Study 2 should increase confidence in our position that the results are driven by a combination of positive self-view and punishment-signal sensitivities (i.e., the SE × Neu-

roticism interaction) rather than narcissistic tendencies, such as grandiose self-importance, preoccupation with fantasies of unlimited success, or expectations of special favors without assuming reciprocal responsibilities.

The findings also contribute to the SE literature. Prior work, theoretical (e.g., Brockner, 1988; House, Shane, & Herold, 1996) and empirical (e.g., Duffy, Shaw, & Stark, 2000; LePine & Van Dyne, 1998), showed that the effects of SE vary by situation. For example, tests of Brockner's (1988) plasticity theory demonstrated that low-SE individuals are more responsive to social and environmental cues than high-SE individuals. In this study, we developed predictions based on an infrequently researched boundary condition of the plasticity hypothesis—that high-SE individuals react more intensely to esteem-threatening situations. This research is important because it contradicts conventional wisdom regarding the behavior of high- and low-SE individuals and because of its practical importance in work-related settings. As Brockner noted in his discussion of delimiting conditions of plasticity theory, events "such as those that threaten employees' self-esteem also occur with varying degrees of regularity in the workplace; if and when they do, they may elicit results at odds with the plasticity hypothesis" (p. 100).

The third aspect of our theory building concerned the role of neuroticism. In their recent study, Glomb and Liao (2003) found no relationship between negative affectivity—a close correlate of neuroticism—and nonviolent aggression. Our findings suggest that neuroticism plays an important role in undermining behavior, but as a moderating factor; specifically, undermining and SE interacted consistently to predict individual undermining only among individuals characterized by dispositional negative emotionality and sensitivity to punishment signals. These findings provide insight into the psychological world of individuals in situations characterized by a surfeit of group undermining—emotional instability appears to trigger undermining behavior among those with generally positive self-evaluations.

The findings also contribute to the recent debate concerning the discriminant validity of SE and neuroticism. Judge and colleagues (Judge et al., 1997; Judge, Erez, Bono, & Thoresen, 2002) have characterized these dimensions, together with locus of control and self-efficacy, as a general or underlying trait that they refer to as "core self-evaluations." These authors argued that because researchers often use the four variables similarly in theoretical models and because their intercorrelations are moderately strong in magnitude, they represent a single underlying trait. Correlations between SE and neuroticism tend to be strong—that cannot be challenged. The association was moderately strong in our Study 1 ($r = -.39$, $p < .01$) and Study 2 ($r = -.33$, $p < .01$), although we found better fit for a two-factor model than a one-factor model in both studies. We agree with Judge, Erez, et al. (2002) that the proliferation of overlapping variables without clear evidence of discriminant validity is counterproductive in terms of knowledge advancement. However, although researchers have not used these variables differentially, that does not suggest that it cannot be done in a meaningful way. Our study shows that SE and neuroticism can be used as distinct and interactive dimensions that further researchers' understanding of antisocial responses to group undermining.

Practical Implications

Our research has implications for management practice. Perhaps the most important implication has to do with the potential of studies like ours to form the conceptual basis for interventions that are designed to reduce undermining behavior in work organizations. Undermining and similar behaviors cost organizations significantly in terms of turnover, absenteeism, litigation, insurance, and diminished productivity (Sheehan, McCarthy, Barker, & Henderson, 2001). Consequently, there is considerable practical importance in conducting research that offers clues as to how and under what circumstances undermining behavior occurs. Our results suggest that situational interventions alone (e.g., instituting zero tolerance or enforcing severe punishments to offenders) will not be sufficient to eliminate undermining in work groups or to manage situations in which undermining behavior is normative. Managing undermining requires that decision makers understand the individual-based underpinnings of antisocial behavior. Specifically, decision makers should benefit from the knowledge that in the wake of group undermining, high-SE/high-neuroticism people will more likely engage in individual undermining behavior. Armed with such knowledge, decision makers can anticipate reactions to group undermining and arrest antisocial behaviors before they spread. Although some scholars and practitioners argue that organizations should use directed selection routines to filter out aggression-prone individuals, we agree with Glomb and Liao (2003) and Robinson and O'Leary-Kelly (1998), who argued that it may be more effective for organizations to design training programs around the issues of conflict management and the roles that individual-difference-based tendencies play in the performance of social-undermining behaviors. As Glomb and Liao pointed out, "given that the explanations for aggression are dynamic, the solutions are likely to be dynamic as well" (p. 494).

Future Research Directions

The results reported here suggest several potentially fruitful directions for future research. One promising avenue would be to disentangle, conceptually and empirically, the assumptions and mechanisms underlying theories of social-information processing, social learning, and attraction–selection–attrition, the frameworks that have been used as the basis for studies of the link between group and individual antisocial behavior (Schneider, 1987). Such research could identify the conditions under which each theory meets its assumptions and when each theory predicts behavior most accurately. From an applied perspective, tremendous value can be derived in exploring the relative predictive power of competing or complementary theories of undermining to improve on the amount of variance in undermining that can be explained.

Along those lines, another direction for future research involves focusing on group structure factors that may exacerbate or inhibit the spread of undermining from the group to individuals. Robinson and O'Leary-Kelly (1998) examined structural interactions in groups (e.g., interdependence), and it seems reasonable that this and other structural issues (e.g., how groups are formed, how often they interact, and what tasks they accomplish) may play a role in the relationship between group and individual undermining. Integrative research that explores the cross-level effects of these structural variables could potentially improve on the predictive power of models like the one tested here.

This research was conducted in contexts designed to minimize the level of intergroup competition and, by extension, the motivation for undermining members of other groups. In the absence of this motivation, our results suggest that group undermining can spread to other individuals in the group, especially when individuals are high in SE and neuroticism. Many contexts, however, provide the motivation and opportunity for cross-group undermining behaviors. Granitz and Ward (2001), for example, argued that departmental boundaries create strong within-group social ties, as well as high levels of intergroup biases. The interactive relationships of SE and neuroticism may be different in such circumstances. As one example, we argued and found that low-SE individuals would be less likely to undermine other group members in part because they are concerned with negative evaluative feedback. But undermining behaviors that target out-group members might serve to enhance the feedback one receives from in-group members, especially if those behaviors serve to denigrate the ability of other groups to perform well. By investigating intra- and inter-group undermining behaviors concurrently, future researchers may find that high-SE/high-neuroticism individuals are not more aggressive in a universal sense in response to group undermining. Rather, they may be more likely to engage in within-group undermining (as our results suggest), whereas other personality combinations may be better able to predict undermining behaviors directed at out-group members.

Along these lines, progress in these areas might be made by analyzing more complex models of how social undermining spreads in social networks (e.g., Sparrowe, Liden, Wayne, & Kraimer, 2001). In organizational contexts, the experiences and incidents of undermining behavior hinge not only on within-group dynamics, but also on broader networks of relationships. Whether an individual models undermining behaviors that other group members exhibit may be influenced by the level of power and prestige of those group members as well as the position of the group within the larger network of organizational relationships. Bandura (1986), among others, argued that modeling or transmission effects are more potent when powerful others engage in the observed behaviors.

Finally, leader behavior should be examined in the context of undermining. Previous research provides evidence of a trickle-down phenomenon vis-à-vis prosocial behavior—employees experience procedural justice (i.e., perceived fairness in terms of allocation decisions) when their supervisors perform prosocial behaviors, and justly treated employees, in turn, perform more behaviors that benefit the organization (Tepper & Taylor, 2003). It is reasonable to assume that complementary processes occur with respect to social undermining (i.e., undermining behavior trickles down from supervisors to subordinates through the experience of injustice) or that supervisor undermining moderates the relationship between group undermining and individual undermining.

Limitations and Strengths

These studies have a number of limitations and strengths. The use of student groups to simulate an actual group-based work environment could be seen as a shortcoming. Analyzing groups working in actual organizations, where organizational history and potential future interactions come into play, may produce different dynamics. Parallel data and results collected among employees in actual organizations would bolster confidence in our study. In Study 1, we also adapted undermining measures from prior research because of space and time constraints, raising questions regarding domain sampling and other validity issues. The use of the full and well-validated 13-item undermining measure in Study 2 should mitigate this concern. In terms of strengths, we collected data in two separate and distinct studies from simulated, intact work groups over a 4-month period and used information collected at three separate times. Prior research concerning the transfer of nonviolent aggression from the group to the individual (e.g., Glomb & Liao, 2003; Robinson & O'Leary-Kelly, 1998) was conducted in a cross-sectional fashion. Although these researchers assumed a causal sequence implied by theory, reverse causal and reciprocal effects could not be ruled out. Our approach has advantages in terms of design—group undermining and perceptions of being the target of undermining were collected 2 months prior to the assessment of individual undermining behavior, which reduces threats to the internal validity of our model. The unfolding nature of our design, the use of data collected from a separate source (group members), and the significant interactive effects also lessen the likelihood that common method or response sets are responsible for the results. The collection of SE and neuroticism (Time 1), group undermining (Time 2), and individual undermining (Time 3) variables were each separated by 2-month intervals. In our two-study approach, we were also able to replicate precisely a cross-level three-way interaction. Because reliability, power, and other methods-related issues typically diminish researchers' ability to detect interactions outside of laboratory settings, our replication using different operationalizations of key constructs and a stronger control set speak to the strength of the effect and, we would argue, the strength of the underlying theoretical framework. Finally, unlike much of the research in this domain, our theory and tests were cross-level; our data were analyzed using appropriate multilevel modeling techniques (e.g., Robinson & O'Leary-Kelly, 1998).

References

Andersson, L. M., & Pearson, C. M. (1999). Tit for tat? The spiraling effect of workplace incivility. *Academy of Management Review, 24,* 452–471.

Bandura, A. (1973). *Aggression: A social learning analysis.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice Hall.

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

Baron, R. A., & Richardson, D. R. (1994). *Human aggression.* New York: Plenum Press.

Baumeister, R. (1997). *Evil: Inside human cruelty and violence.* New York: Freeman.

Baumeister, R., Smart, L., & Boden, J. (1996). Relation of threatened egoism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103,* 5–33.

Begley, T., & Lee, C. (2005). The role of negative affectivity in pay-at-risk reactions: A longitudinal study. *Journal of Applied Psychology, 90,* 382–388.

Brockner, J. (1988). *Self-esteem at work.* Lexington, MA: Lexington.

Campbell, W. K., Rudich, E. A., & Sedikides, C. (2002). Narcissism, self-esteem and the positivity of self views: Two portraits of self love. *Personality and Social Psychology Bulletin, 28,* 358–368.

Dodge, K. (1991). The structure and function of reactive and proactive

aggression. In D. Pepler & K. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201–218). Hillsdale, NJ: Erlbaum.

Douglas, S. C., & Martinko, M. J. (2001). Exploring the role of individual differences in the prediction of workplace aggression. *Journal of Applied Psychology, 86,* 547–559.

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.

Glomb, T. M., & Liao, H. (2003). Interpersonal aggression in work groups: Social influence, reciprocal, and individual effects. *Academy of Management Journal, 46,* 486–496.

Goldberg, L. R. (1992). The development of markers for the Big Five factor structure. *Psychological Assessment, 4,* 26–42.

Granitz, N. A., & Ward, J. C. (2001). Actual and perceived sharing of ethical reasoning and moral intent among in-group and out-group members. *Journal of Business Ethics, 33,* 299–322.

Gray, J. A. (1970). The psychophysiological basis of introversion–extraversion. *Behavioral Research Therapy, 8,* 249–266.

Gray, J. A. (1981). A critique of Eysenck's theory of personality. In H. J. Eysenck (Ed.), *A model of personality* (pp. 246–276). New York: Springer.

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.

Hogan, R. T. (1991). Personality and personality measurement. In M. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 873–919). Palo Alto, CA: Consulting Psychologists Press.

House, R. J., Shane, S. A., & Herold, D. M. (1996). Rumors of the death of dispositional research are vastly exaggerated. *Academy of Management Review, 21,* 203–224.

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.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology, 87,* 765–780.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology, 83,* 693–710.

Judge, T. A., Locke, E. A., & Durham, C. C. (1997). The dispositional causes of job satisfaction: A dispositional approach. *Research in Organizational Behavior, 19,* 151–188.

Kernis, M. (1993). The roles of stability and level of self-esteem in psychological functioning. In R. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 167–182). New York: Plenum Press.

Kernis, M., Grannermann, B., & Barclay, L. (1989). Stability and the level of self-esteem as predictors of anger arousal and hostility. *Journal of Personality and Social Psychology, 56,* 1013–1022.

Kirkpatrick, L., Waugh, C., Valencia, A., & Webster, G. (2002). The functional domain specificity of self-esteem and the differential prediction of aggression. *Journal of Personality and Social Psychology, 82,* 756–767.

Lanyon, R. I., & Goodstein, L. D. (1997). *Personality assessment* (3rd ed.). New York: Wiley.

Larsen, R. J., & Ketelaar, T. (1991). Personality and susceptibility to positive and negative emotional states. *Journal of Personality and Social Psychology, 61,* 132–140.

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

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.

Ormel, J., Lindenberg, S., Steverink, N., & Verbrugge, L. M. (1999). Subjective well-being and social production functions. *Social Indicators Research, 46,* 61–90.

Pelham, B. W., & Swann, W. B., Jr. (1989). From self-conceptions to self-worth: The sources and structure of self-esteem. *Journal of Personality and Social Psychology, 57,* 672–680.

Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54,* 890–902.

Raudenbush, S., & Bryk, A. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Robinson, S. L., & Greenberg, J. (1998). Employees behaving badly: Dimensions, determinants, and dilemmas in the study of workplace deviance In C. L. Cooper & D. M. Rousseau (Eds.), *Trends in organizational behavior* (Vol. 5, pp. 1–30). Chichester, England: Wiley.

Robinson, S. L., & O'Leary-Kelly, A. M. (1998). Monkey see, monkey do: The influence of work groups on the antisocial behavior of employees. *Academy of Management Journal, 41,* 641–658.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23,* 224–253.

Salmivalli, C. (2001). Feeling good about oneself, being bad to others? Remarks on self-esteem, hostility, and aggressive behavior. *Aggression and Violent Behavior, 6,* 375–393.

Savin-Williams, R., & Jaquish, G. (1981). The assessment of adolescent self-esteem: A comparison of methods. *Journal of Personality, 49,* 324–336.

Schneider, B. (1987). The people make the place. *Personnel Psychology, 40,* 437–453.

Sheehan, M., McCarthy, P., Barker, M., & Henderson, M. (2001, July). *A model for assessing the impacts and costs of workplace bullying.* Paper presented at the Standing Conference on Organisational Symbolism, Trinity College, Dublin.

Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. (2001). Social networks and the performance of individuals and groups. *Academy of Management Journal, 44,* 316–325.

Spencer, S. J., Josephs, R. A., & Steele, C. M. (1993). Low self-esteem: The uphill struggle for self-integrity. In R. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 21–36). New York: Plenum Press.

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

Tepper, B. J., & Taylor, E. C. (2003). Relationships among supervisors' and subordinates' procedural justice perceptions and organizational citizenship behaviors. *Academy of Management Journal, 46,* 97–105.