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INTERPERSONAL AGGRESSION IN WORK GROUPS: SOCIAL INFLUENCE, RECIPROCAL, AND INDIVIDUAL EFFECTS

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This cross-level study of 149 employees from 25 groups demonstrates the impact of group social context on individual interpersonal aggression. Extending the work of Robinson and O'Leary-Kelly (1998), results suggest that both being the target of aggression and the mean level of aggression in a work group (absent the target individual) are predictors of employees' reports of engaging in aggression. Effects persisted when individual differences related to aggression, demographics, and situational variables were controlled. Results suggest individual, reciprocal, and group influences.

In recent years, workplace aggression has garnered increasing attention from researchers, practitioners, the media, and the general public. Although the focus of the populace has been on extreme violence and physical forms of aggression (such as homicide and physical attacks), accumulating data on incidence rates suggests that workplace aggression has crept into organizations in a variety of insidious ways. Employees frequently report being the targets of relatively mild manifestations of aggression, including forms of verbal harm such as talking behind others' backs and interrupting others when they are speaking; among the least frequently reported forms of aggression are overt acts of physical aggression such as physical assault and attack with a weapon (Baron & Neuman, **1996, 1998;** Glomb, 2002; Greenberg & Barling, 1999; Neuman & Baron, 1998; Northwestern National Life Employee Benefits Division, 1993). Available information on employees' self-reports of perpetrating aggression (see Baron, Neuman, & Geddes, 1999; Glomb, 2002) suggests consistency with the self-reports of recipients of aggression; relatively mild aggressive behaviors are enacted most often. Research on prevalence has been complemented by empirical and theoretical work examining the antecedents and outcomes of a wide array of aggressive behaviors at work (Barling, **1996;** Folger & Baron, 1996; Glomb, 2002; Neuman & Baron, 1997, 1998; O'Leary-Kelly, Griffin, & Glew, 1996; Tepper, 2000).

Although a knowledge base is accumulating, much of the work on aggressive behaviors and other forms of antisocial behavior at work has been limited by approaching these behaviors as strictly individual-level phenomena, thereby ignoring social and work group factors that may influence individual employee behavior. One exception is Robinson and O'Leary-Kelly's 1998 work suggesting the antisocial behavior of work group members influences an individual employee's antisocial behavior. The current work was an attempt to extend the theoretical and empirical work of Robinson and O'Leary-Kelly in several ways.

First, we studied a different set of behaviors, examining interpersonal workplace aggression rather than antisocial behaviors. In doing so we examined the extent to which an overlapping but distinct set of behaviors functions similarly to the antisocial behaviors investigated in the Robinson and O'Leary-Kelly work. Second, we assessed the influence of individual differences variables relevant to aggression. Individual differences antecedents were not accounted for in Robinson and O'Leary-Kelly's work; these individual differences may drive the link between individual and work group levels of aggression. Third, we posited an additional social or dyadic influence on individual employee aggression by examining social exchange or reciprocal explanations in addition to the effects posited by Robinson and O'Leary-Kelly. The origin of the positive relationship between group and individual employee aggression could be multiply determined. In this study, we posited and tested multiple individual and group influences using

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data from employees working in 25 health care homes.

THEORETICAL BACKGROUND AND HYPOTHESES

Conceptualizing Workplace Aggression

Our conceptualization of workplace aggression is similar to that of Neuman and Baron, who defined workplace aggression as "efforts by individuals to harm others with whom they work, or have worked, or the organizations in which they are presently, or were previously, employed" (1998: 395); however, we focus on interpersonal forms of aggression rather than on aggression directed at an organization. Following an approach similar to that taken by previous aggression researchers (Baron & Neuman, 1998; Folger & Baron, 1996; Neuman & Baron, 1998), we tried to capture the behavioral construct space by incorporating the assessment of low-level, less extreme aggressive behaviors (such as yelling at another person, talking behind another person's back, and withholding needed resources from another) in addition to assessment of the extreme behaviors usually associated with workplace violence (such as physical assault and threats).

There exists a degree of overlap between the behaviors in our workplace aggression construct and those in other constructs, including organizational retaliatory behaviors (Skarlicki & Folger, 1997), revenge responses (Bies, Tripp, & Kramer, 1997), workplace deviance (Robinson & Bennett, 1995), incivility (Andersson & Pearson, 1999), and emotional abuse at work (Keashly & Jagatic, 2003). Most relevant for the current study is the distinction between our conceptualization of interpersonal workplace aggression and Robinson and O'Leary-Kelly's conceptualization of antisocial behavior, which they measured using nine items, such as "damaged property belonging to my employer," "criticized people at work," "started an argument with someone at work," and "did work badly, incorrectly or slowly on purpose" (Robinson & O'Leary-Kelly, 1998: 663). Although the authors provided evidence of the construct validity of the antisocial behavior construct, the component items assess several different forms of antisocial behavior. Like Robinson and Bennett's construct of production deviance, Robinson and O'Leary-Kelly's construct includes behaviors directed at organizations. Robinson and O'Leary-Kelly's construct also includes behaviors directed at work group members. We view the second type of behaviors as more rightly defined as interpersonal workplace aggression. The two types of aggression Robinson and O'Leary-Kelly addressed have different targets and could have different correlates. Combining them may obfuscate the functioning of these relations. Our focus here is on one set of behaviors, interpersonal aggressive behaviors directed at other individuals with the intent of inflicting harm, rather than on behaviors directed at an organization or purposeful attempts to impede performance. Delineation of the determinants of interpersonal aggression is important to further researchers' understanding of the phenomenon and to guide prevention efforts. We leave investigation of aggression directed toward organizations for future research.

Potential Influences on Individual Aggression

Robinson and O'Leary-Kelly used three theoretical perspectives to explain the potential influence of groups on individual antisocial behaviors: social information processing theory (Salancik & Pfeffer, 1978), social learning theory (Bandura, 1977), and the attraction-selection-attrition perspective (ASA; Schneider, 1975). We propose two additional determinants of individual interpersonal aggression: reciprocal aggression and aggression-related individual differences variables.

Social Information Processing, Social Learning Theory, and the ASA Model

Social information processing, social learning theory, and the attraction-selection-attrition model all support the proposition that work group aggression and individual employee aggression should be positively related, although they imply slightly different mechanisms as driving the relationship. The social information processing approach (Salancik & Pfeffer, 1978) suggests that individual employees use information about values, norms, expectations, and behavior outcome contingencies gathered from others in their social environment to guide behavior. For example, employees may receive information about the outcomes of different aggressive behaviors; a heated disagreement may be tolerated, wheraas verbally abusive behavior may be grounds for discipline. Under a social learning framework (Bandura, 1977), individual behavior is influenced by role models for behavior: an individual employee acquires a repertoire of aggressive behaviors by observing others' behaviors and their consequences. According to the attraction-selection-attrition model (Schneider, 1975), individuals with characteristics similar to those of other members of a work group are attracted to, selected into, and retained by the group; individuals with aggressive

tendencies would be more likely to be attracted to, selected by, and remain in work groups with similarly aggressive members, resulting in a work group with relatively homogeneous aggressive tendencies.

We feel the same processes used to explain the group effects of antisocial behavior on individual behavior can also apply to the behavioral construct of interpersonal aggression. Thus, we propose the following hypothesis, which is analogous to a hypothesis put forth by Robinson and O'Leary-Kelly:

Hypothesis 1. The level of aggression of a focal individual in a work group will be positively related to the aggregate level of aggression of all other group members.

These group-level influences operate on individual aggression by providing shared information about behavioral norms and expectations, exposure to aggressive role models, and homogeneous aggressive tendencies within a group. Individuals aggress largely because aggression is present in their social context. A parallel idea has been discussed in the sexual harassment literature as "ambient sexual harassment" (Glomb et al., 1997), a concept based on work by Hackman (1992), in which he proposed that characteristics of a work environment may be conceived of as either *ambient* stimuli that pervade the group setting and are potentially available to all group members or *discretionary* stimuli that are transmitted to individuals differentially. The operation of work group aggression as an ambient stimulus would be largely consistent with explanations offered by Robinson and O'Leary-Kelly: work group aggression influences individuals' aggression as a function of their being members of a work group pervaded by aggression. An additional effect might result from discretionary stimuli, present for an individual in the form of being a direct target of aggression from another work group member. There is an important distinction between being in a work group where people behave aggressively (ambient) and being in a work group where people behave aggressively toward you (discretionary). These discretionary stimuli in a work group may be captured in the notion of reciprocal aggression.

Reciprocal Aggression and Social Exchange Theory

Bandura (1973) suggested that the most reliable way of eliciting aggression is by assaulting or threatening another. Researchers have long suggested that aggression is reciprocal in nature, in that if one individual engages in an aggressive behavior, he or she is likely to become the target of aggression from the person against whom he or she aggressed; a dyadic process is suggested. However, despite the notion that being the target of aggression may elicit a like or a more serious response, there is little empirical evidence accounting for the influence of reciprocal processes in research on workplace aggression. Andersson and Pearson (1999) provided a theoretical explication of the "incivility spiral" in which a tit-for-tat pattern creates an escalatory series of uncivil behaviors. Glomb's (2002) empirical examination of the patterning of aggressive behaviors within a specific incident of workplace aggression also suggests an escalatory pattern.

Ideas of reciprocal aggression have their underpinnings in social exchange theory, which suggests social exchange relationships develop between two parties through a series of mutual exchanges that yield reciprocal activities from each party (Blau, 1964); for example, an employee may reciprocate unfair or adverse treatment from work group members. A reciprocal or social exchange explanation is not proposed as an explicit influence in the Robinson and O'Leary-Kelly work, although it is not at odds with group-level explanations; aggression begets aggression among members of a work group. We explicitly tested the influence of the reciprocal explanation using the following hypothesis:

Hypothesis 2. Employees' reports of being the targets of aggression will be positively related to reports of engaging in aggression.

Individual Differences Influences

As Barling noted, "Aggression is a highly stable behavior" (1996: 34). Extensive empirical and theoretical work suggests that individual characteristics are related to the likelihood of engaging in aggression; characteristics identified as related to this likelihood include a hostile attribution bias, in which individuals perpetually attribute hostile intentions to others (Neuman & Baron, 1998); the type A behavior pattern (Baron et al., 1999; Neuman & Baron, 1998); state anger (Chen & Spector, 1992); lack of self monitoring (Neuman & Baron, 1998); and a personal history of aggression (Greenberg & Barling, 1999). This work suggests individual differences account for variance in engaging in aggression; thus, it may be that employees' aggressive characteristics drive a work group effect. Although Robinson and O'Leary-Kelly included demographic variables in their analysis, they stated the following: "Ideally we would have more directly measured and controlled for antisocial dispositions" (1998: 670). By including individual differ-

ences variables, one can determine the group and dyadic impact on aggression over and above the effects of individual differences. We propose that reactions to anger, negative affectivity, and self-monitoring are related to engaging in aggression.

Reactions to anger. Trait anger, "the disposition to perceive a wide range of situations as annoying or frustrating, and the tendency to respond to such situations with more frequent elevations in state anger" (Spielberger, *1991: 1),* is reflected in individuals' reactions to anger. We assessed these relatively stable individual differences in the manner in which individuals react to anger in general by assessing whether angry feelings are generally suppressed or outwardly expressed toward other people or toward objects.

Negative affectivity. Negative affectivity is conceptualized here as a stable, dispositional trait resulting in a tendency to view things negatively (Watson, Clark, & Tellegen, *1988).* Negative affect, as a negative emotional state, has been associated with increased aggression (Berkowitz, *1993).* If a transitory negative affective state is related to aggression, then, by extension, those who possess a more permanent negative disposition experience negative affect more often, increasing the likelihood of the individual's engaging in aggression.

Self-monitoring. Self-monitoring refers to a process of "self-observation and self-control guided by situational cues to social appropriateness" (Snyder, *1974: 526).* People who score high on measures of self-monitoring ("high self-monitors") regulate their expressive self-presentation and are responsive to social and situational cues about desired or appropriate behavior (Snyder & Gangestad, *1986).* "Low self-monitors" do not regulate their expressive self-presentation and instead base responses on internal states, attitudes, and feelings (Snyder & Gangestad, *1986).* Neuman and Baron *(1998)* suggested that low self-monitors are more likely to behave provocatively in conflict situations and more likely to misinterpret others' motives because they have low social sensitivity; empirical results have supported this proposition. We propose the following regarding the influence of individual differences:

Hypothesis 3. Individual differences will be related to employees' reports of engaging in aggression; the frequency with which angry feelings are expressed and negative affectivity will be positively related to reports of engaging in aggression, and the frequency with which angry feelings are suppressed and self-monitoring will be negatively related to reports of engaging in aggression.

Controlling for Perceptions of Job and Organizational Features

We controlled for employee perceptions of job- and organization-related factors so that we could be more confident about capturing variance accounted for by social influences over and above that accounted for by contextual factors that may result in aggression (and may be shared by group members). Guided by previous research, we included perceptions of organizational justice, stress, and work satisfaction as controls in our analyses.

Theoretical and anecdotal evidence for a relationship between organizational justice and aggression (Barling, *1996;* Folger & Baron, *1996;* Neuman & Baron, *1998)* is only somewhat supported by empirical research, which suggests mixed findings. Empirical results typically show a restricted set of relations, often suggesting links between a subset of the justice components (that is, procedural, distributive, interactional justice) and aggression or suggesting links only for particular targets of aggression (Baron et al., *1999;* Folger et al., *1998;* Greenberg & Barling, *1999).*

Research has suggested a relationship between stress and aggression (Chen & Spector, *1992;* Northwestern National Life Employee Benefits Division, *1993).* However, the causal direction of the relationship remains ambiguous; data suggest that stress can be both a cause and an outcome of aggression (Northwestern National Life Employee Benefits Division, *1993).* We used stress as a control to account for this potential influence on employees' aggressive behavior.

Like stress, job satisfaction has been proposed as both an antecedent and an outcome of workplace aggression (Chen & Spector, *1992;* Glomb, *2002;* Tepper, *2000).* Here, we controlled for an individual's attitudes about work, given the evidence that satisfaction with one's work is more closely related to overall assessments of satisfaction than are other facets of job attitudes.

Note that these job characteristics could be considered ambient stimuli that pervade a group setting and are potentially shared phenomena. However, we employed these measures at an individual level of analysis because they are perceptions of job features that are likely to exist and operate differently for different group members.

METHODS

Participants and Procedures

Two-hundred-seventeen employees of an organization that operates assisted-living group health care homes for individuals with disabilities com-

pleted paper-and-pencil surveys via on-site administration in conjunction with monthly staff meetings. (Twelve employees who were present at these staff meetings declined to participate, primarily because they were engaged in work tasks.) Participation in the study was voluntary, and participants were ensured confidentiality. Thirty-eight percent of the sample's members were employed full-time, 90 percent were Caucasian, and 77 percent were women; the average tenure was 22 months, and the average age was 24 years.

To enable work group analyses, we grouped respondents on the basis of the health care home in which they were employed. Employees within a home worked closely with one another to provide effective and coordinated care for the residents. Homes were dispersed throughout a metropolitan region and were relatively decentralized, characteristics allowing for readily identifiable work groups. Thirty participants did not provide home information and were eliminated from analyses. Eight work groups had data from fewer than three employees and were eliminated from analyses because mean work group scores could not be computed reliably. For the remaining respondents, we imputed missing values and rounded them to the nearest response option using the two-way imputation method (Bernaards & Sijtsma, 2000) applied on a scale-by-scale basis; no more than two missing values were imputed for scales with more than nine items and no more than one missing value was imputed for scales with fewer than nine items. After "listwise" deletion of individuals with incomplete information, the final sample consisted of 149 participants. Work group size ranged from 3 to 12 members, with a mean of 6. T-tests of sample means for the 149 usable cases and 68 dropped cases revealed that age was the only variable with a statistically significant difference; the dropped respondents were 3.84 years older on average ($p < .05$).

Measures

Workplace aggression. The Aggressive Experiences Scale (AES), which was developed by the first author (Glomb, 1998) assesses the frequency with which respondents engage in and are the targets of aggressive behaviors at work. Development of the scale relied on interview data, on Buss's (1961) framework classifying behavioral forms of aggression (as direct and indirect, active and passive, and verbal and physical), and on the work of Baron and his colleagues (e.g., Folger & Baron, 1996; Neuman & Baron, 1997). Scale validity evidence suggested considerable conceptual overlap and convergent validity with alternative measures of aggression (e.g., Baron & Neuman, 1996; Neuman & Baron, 1998), and factor analyses supported a unidimensional solution. The scale consists of two separate 20-item subscales, one in which a respondent indicates whether he or she has engaged in the aggressive behavior described (AES-engaged in) and one in which the respondent indicates whether he or she has been the target of the aggressive behavior (AES-target). Respondents are asked to report how often each of the 20 behaviors (for instance, yelling or raising your voice, swearing at another person, damaging another person's property, spreading rumors) occurred using a five-point scale (1, "never," to 5, "once a week or more"). In the current study, we removed three items (physical assault, sabotaging another's work, and withholding resources needed to do one's job) when scoring the scale because of a lack of variance; all employees responded they had never engaged in or been the target of these behaviors.

Scores on the AES were used in the analyses at the work group level in two ways. First, we determined an individual's work group aggression score by computing the average AES-engaged in subscale score for all employees in her or his work group, excluding the focal individual's score. This procedure provides an estimate of work group scores, uncontaminated by the problem of common method variance inherent in using self-report, single-source data. Second, individuals' AES-target scores were used to test for reciprocal or social exchange effects.

Individual differences antecedents. *Negative affectivity* was assessed via the Positive Affect Negative Affect Schedule (PANAS; Watson et al., 1988). Respondents indicate the degree to which each of a series of ten descriptors of negative emotions (such as "distressed," "hostile," and "irritable") describes how they generally feel on a five-point scale (1, "very slightly or not at all," 5, "extremely").

Self-monitoring was assessed via items from the Self-Monitoring Scale (Snyder, 1974; Snyder & Gangestad, 1986). The original 18-item scale was shortened to 9 items after consultation with the original author. Respondents indicated whether or not each of the 9 items described them ("yes" or "no"); example items are "I have trouble changing my behavior to suit different people and different situations" and "I find it hard to imitate the behavior of other people."

To assess *anger expression,* we used two eight-item scales from the State-Trait Anger Inventory (STAXI; Spielberger, 1991) to assess the frequency with which respondents generally suppressed or

expressed angry feelings toward other people or objects in the environment. The suppressing anger subscale is called *anger-in,* and the expressing anger subscale is called *anger-out.* Using a four-point scale, respondents indicated how often they engage in anger-in behaviors (such as withdrawing from people) or anger-out behaviors (such as arguing with others) when they are angry or furious (1, "almost never," to 4, "almost always").

Perceptions of job and organizational features. The Stress Diagnostic Survey (Matteson & Ivancevich, 1982) was used to assess the degree of stress respondents experienced from organizational, group-related, and job-related stressors. There were ten items on organizational stress (examples: structure, change, and leadership); nine items on group-related stress (examples: norm pressures, lack of group cohesiveness, and inadequate group support); and ten items on job stressors (examples: role conflict and ambiguity, work overload, time pressures, and working conditions). Respondents indicated the frequency with which each condition was a source of stress using a five-point scale (1, "never a source of stress," to 5, "always a source of stress").

We adapted an *organizational justice* scale from Moorman (1991) to assess general perceptions of distributive, procedural, and interpersonal justice. The ten modified items asked about the organization in general (example: "At this organization, supervisors consider employees' viewpoints") rather than about an employee's specific experience ("Your supervisor considered your viewpoint"). Response options were "yes," "?," and "no."

Work satisfaction was assessed using the work scale of the job Descriptive Index (JDI; Smith, Kendall, & Hulin [1969]; revised by Roznowski [1989]). Using item response theory parameters obtained from prior research, we shortened the 18-item scale to 9 items for the current research. Participants responded "yes," "no," or "?" to adjectives describing work characteristics.

RESULTS

Descriptive statistics, scale reliabilities, and intercorrelations are reported in Table 1. In general, the bivariate correlations reflect expected relations and provide confidence that the measures functioned properly at the individual level of analysis.

Results for the regression analysis of employee aggression are presented in Table 2. Since individuals in a group are exposed to similar stimuli, the assumption of independent observations that underlies traditional ordinary least squares (OLS) regression analysis was violated in the current sample. As a result, traditional OLS regressions generated biased estimates of the standard errors and invalid test statistics. Therefore, we estimated a variance-covariance matrix that allows interdependent error terms within groups but independence across groups, as well as accounting for heterogeneous errors across groups (Rogers, 1993). To construct this matrix, the conventional variance-covariance matrix is weighted by using contributions (to the score function) of each *group,* instead

TABLE 1
Descriptive Statistics, Alpha Coefficients, and Correlation[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Tenure[b]	21.94	26.37															
2. Gender[b]	0.77	0.43	-.16														
3. Age	23.62	7.46	.34	.00													
4. Negative affectivity	18.83	5.12	-.02	-.04	-.16	(.85)											
5. Anger-out	13.32	3.07	.00	.02	-.19	.34	(.72)										
6. Anger-in	15.28	3.85	.05	-.07	-.04	.45	.16	(.77)									
7. Self-monitoring	5.05	2.43	-.11	-.09	-.31	.17	.36	-.06	(.74)								
8. Job stress	11.65	3.81	.25	-.04	.24	.06	-.01	.05	-.07	(.79)							
9. Work group stress	9.43	3.56	.19	-.11	.22	.14	-.03	.04	-.14	.42	(.89)						
10. Organizational stress	14.54	4.94	.39	-.17	.20	.00	-.04	.03	-.17	.58	.46	(.87)					
11. Organizational injustice	15.39	4.97	.33	-.11	.07	-.05	-.03	.07	-.11	.32	.27	.60	(.88)				
12. Work satisfaction	21.38	6.29	-.08	.21	-.05	-.01	.15	.04	.01	-.08	-.35	-.26	-.26	(.85)			
13. Target of aggression	23.51	6.18	.20	-.08	.18	.02	.12	.05	.11	.40	.20	.43	.36	-.07	(.86)		
14. Work group aggression[c]	21.14	2.80	.12	-.11	.01	.04	.10	.09	.04	.04	.21	.15	.20	-.12	.19		
15. Engaging in aggression	21.36	5.25	.29	-.17	.02	.21	.32	.13	.10	.26	.20	.27	.21	-.02	.52	.36	(.80)

[a] n = 149. Alpha coefficients appear on the diagonal in parentheses. Correlations greater than .16 are (in absolute value) significant at $p < .05$; those greater than .21 are significant at $p < .01$.

[b] Tenure = months. Female = 1, male = 0.

c Significance designations do not apply to the work group aggression variable because of nonindependence in the data; the point estimate is accurate.

TABLE 2
Results of Hierarchical Regression Analysis on Individual Aggressive Behaviors[a]

Variable[b]	Step 1: Controls	Step 2: Individual Differences	Step 3: Reciprocal Effects	Step 4: Social Influences[c]	Ordinary Least Squares Results
Tenure[d]	0.04**	0.04**	0.04**	0.04***	0.04**
Gender[d]	-1.55	-1.46	-1.45	-1.28	-1.31
Age	-0.09*	-0.02	-0.08	-0.07	-0.07
Work satisfaction	0.09	0.04	0.03	0.04	0.04
Organizational injustice	0.06	0.07	-0.02	-0.06	-0.05
Job stress	0.20	0.18	0.05	0.10	0.09
Work group stress	0.16	0.11	0.12	0.04	0.06
Organizational stress	0.05	0.07	-0.04	-0.04	-0.04
Negative affectivity		0.09	0.11	0.12	0.12
Anger-out		0.47**	0.39**	0.36**	0.36**
Anger-in		0.01	-0.01	-0.04	-0.03
Self-monitoring		0.06	-0.15	-0.16	-0.16
Target of aggression			0.40**	0.36***	0.37**
Work group aggression				0.51*	0.43*
R^2	.16	.26	.41	.46	.46
ΔR^2		.09	.15	.05	.05
F	9.53**	9.09**	15.65***	81.69***	47.36***
df	8, 24	12, 24	13, 24	14, 24	14, 24

[a] $n = 149$. Entries are unstandardized regression coefficients. In all regressions, we adjusted the variance and covariance matrixes using the cluster option in STATA 6.0 to account for interdependent errors within groups and heterogeneous errors across groups. Adjusted R^2 and standardized coefficients are invalid in regressions with the cluster option; therefore, only regular R^2 and unstandardized coefficients are reported.

[b] All regressions included an intercept, which was omitted from this table.

[c] Estimated using a two-stage least-squares (2SLS) regression.

[d] Tenure = months. Female = 1, male = 0.

*p<.05
**p<.01
***p<.001
Two-tailed tests.

of each *individual.* Analyses were performed with STATA 6.0.

As a block, the control variables explained 16 percent of the variance in aggressive behaviors, and tenure and age were significantly related to engaging in aggression. Younger employees and employees with longer tenure engaged in more aggressive behavior.

Individual differences variables explained an additional 10 percent of the variance in aggressive behavior. As expected, anger-out positively predicted aggressive behavior ($b = 0.47$, $p < .01$). However, anger-in, negative affectivity, and self-monitoring were not significantly related to employee aggression. Thus, Hypothesis 3 was only partially supported.

Hypothesis 2 predicts a reciprocal effect, which was supported by the results; being the target of work group members' aggression had a positive relationship with engaging in aggressive behavior ($b = 0.40$, $p < .001$) and accounted for an additional 15 percent of the variance.

The next step in the analysis involved testing the influence of work group members' aggression on individual aggression. To justify using a group-level measure of aggression, we first conducted a one-way analysis of variance (ANOVA) to test between-group variance. Results indicate significant between-group differences for aggressive behaviors ($F_{24,124} = 2.70$, $p < .001$). We then computed within-group agreement (as r_{wg}) using a uniform null distribution (James, Demaree, & Wolf, 1984) for the aggression scale and obtained values ranging from .94 to .99, with a median of .98. Although the use of uniform distribution tends to lead to overestimation of within-group agreement (James et al., 1984), the r_{wg} values we obtained in this sample were well above the conventionally acceptable value of .70.

To test Hypothesis 1, we entered the mean level of work group members' aggression, computed excluding the focal individual, as a predictor in the regression. However, in doing so we encountered an endogeneity problem, since work group members' aggressive behavior was likely to correlate with the error terms in the regression. Unmeasured

factors (for instance, an ambient group characteristic such as a supervisor's punishment policies) associated with higher (or lower) levels of aggression for both a focal employee and members of his or her work group become included in the focal employee's error term, creating a correlation between the predictor and error term. This situation violates the OLS assumption that each explanatory variable must be independent of the error term and will result in biased and inconsistent estimates of the coefficients. Thus, we conducted two-stage least squares (2SLS) regression, a procedure that employs instrumental variables to "replace" endogenous variables where they appear as predictors (see Johnston & DiNardo, *1997).* A valid instrumental variable should be: *(1)* a good proxy for the endogenous variable (in this case, work group aggression) and (2) uncorrelated with the error term. We constructed four instrumental variables for work group aggression-work group members' average tenure, average age, average anger-out scores, and the percentage of women in the work group, which explained a significant portion of variance in work group aggression (R^2 = .30) and thus offered a reasonably good proxy for this endogenous variable. We then conducted an overidentification test (Johnston & DiNardo, *1997)* by regressing the 2SLS residuals on the four instrumental variables; results indicated they were not correlated with the error terms. Therefore, in the following step, which included work group aggression as a predictor, we conducted 2SLS analyses with cluster adjustment for within-group interdependence, using these four instrumental variables. Results estimated by traditional OLS coupled with cluster adjustment are also reported. As evident from Table 2, these alternative methods yield highly consistent results.

Consistent with Hypothesis *1,* work group aggression significantly predicted individual aggressive behavior ($b = 0.51, p < .05$), explaining *5* percent additional variance in employee aggression beyond what was accounted for by the control variables, individual differences, and by the reciprocal effect. Overall the model explained *46* percent of the variance in employee aggression.

DISCUSSION

Our study extends Robinson and O'Leary-Kelly's *(1998)* work on antisocial behavior by examining a different construct-interpersonal aggression-and by including two additional determinants of individual behavior: a reciprocal or social exchange effect and individual differences effects. Consistent with Robinson and O'Leary-Kelly's findings about antisocial behavior *(1998),* our data suggest that aggressive behavior exhibited by other members of an individual's work group is a significant predictor of the individual's interpersonal aggressive behavior.

We also account for the role of individual differences in explaining aggressive behavior. While Robinson and O'Leary-Kelly included demographic characteristics as proxies for predispositions, our results suggest the individual differences variable anger-out had a significant relation with aggression. One can have additional confidence in the group and social effects after aggression-related individual differences have been accounted for.

Our data also suggest a social exchange or reciprocal process as a determinant of individual aggression. Results suggest that being the target of aggression is related to engaging in aggression, thus providing support for a social exchange or reciprocity effect. This reciprocal effect is also consistent with the literature on injustice; employees who perceive that they have been wronged may retaliate through aggression, using it as a mechanism to restore justice (Aquino, Tripp, & Bies, 2001; Bies et al., *1997;* Skarlicki & Folger, *1997).* Although the reciprocal process may be considered to be "revenge," we did not restrict the behaviors to those having a retaliatory intent (Bies & Tripp, *1996;* Bies et al., *1997;* Tripp & Bies, *1997).* Had we the ability to identify targets and aggressors in our data, we might have been able go beyond speculating that our reciprocal process is akin to that at work in retaliation and revenge. However, our data are limited, showing only the correlational relationship between being the target of and engaging in aggression.

Overall, our model explained a large amount *(46* percent) of the variance in individual aggression and suggests that individual aggression is multiply determined.

Managerial Implications

Our results underscore the importance of reducing aggression in organizations, given the evidence that aggression may be "contagious," a view echoed by Robinson and O'Leary-Kelly *(1998).* The mechanisms through which a group influences individual behavior are multifold, suggesting the value of a multipronged approach to preventing and reducing aggression. Managers may take preventative action by altering the social information disseminated by communicating strong behavior-outcome contingencies (for instance, having and enforcing a zero-tolerance approach, and communicating serious consequences for aggressive employees), eliminating aggressive role models, and intervening when

aggressive behavior is likely to be reciprocated or to escalate. Results suggesting the influence of individual differences provide an additional aggression reduction strategy, namely, selection processes whereby aggression-prone individuals could be identified and screened out. However, selection efforts may have problems (including faking, adverse impact, and negative applicant reactions) and target only one category of precursors of aggression, a category that may address a small amount of variance (10 percent in this study). Training in conflict management techniques and self-management strategies may prove beneficial in their own right and also as a signal; allocating resources to training provides social information signaling the importance of aggression prevention. Given that the explanations for aggression are dynamic, the solutions are likely to be dynamic as well and will work collectively over time to reduce aggression.

Limitations and Future Directions

Our analyses were based on a sample of health care workers present at staff meetings, a characteristic that limits the generalizability of results. However, one could argue that this sample produced attenuated results since health care workers are expected to be caring and empathetic to those they care for and, perhaps by extension, to one another. Additionally, consistency with Robinson and O'Leary-Kelly's study and previous research provides confidence that the current results are not sample-specific.

The cross-sectional design makes causal inferences impossible. Future research should examine how these dynamic effects unfold over time via longitudinal designs. Many of the effects are by their nature dynamic and require longitudinal methods to assess the operation of the role modeling, reciprocity, and attraction-selection-attrition processes.

These data are not immune to the possibility of common method bias-always a concern when single-source, self-report data are used. However, a key predictor of work group aggression did not include information from the focal individual. In addition, the differential relations are counter to what might be generated by common method bias. Further, many of the relationships are consistent with prior empirical and theoretical work on aggression.

Exploration of work group effects is limited by the accuracy with which one can define work groups. In this study, groups were defined by the homes in which employees worked, making them better defined than groups in organizations in which relationships are more fluid and different teams, departments, and so forth may intermingle. However, such factors as fluctuations in schedules, roles and tasks assigned within the homes, and the level of care required by residents may be sources of variability in the amounts of exposure the members of a work group had with one another. Future research might use alternative methodologies, in particular network analysis, to determine the pattern of interactions within a work group.

In the current study, we were unable to determine the sources and targets of aggression; we did not know who was aggressing against whom. Additional consideration of the dynamics of workplace aggression in a work group may reveal that the experience of aggression may be unduly dispersed to specific individuals, as in instances of workplace bullying (Keashly & Jagatic, 2003). Consideration of workplace bullying may inform the relationship between work group and individual aggression; if bullying occurs, we might expect to see group members more likely to engage in aggression toward easy targets. Future research might illuminate this potential work group effect.

Conclusion

This study demonstrates that even after individual predispositions are accounted for, dyadic and workgroup factors influence individual member behaviors. To the best of our knowledge, this was the first study to combine individual and social characteristics in explaining interpersonal aggressive behavior. Research on workplace aggression should acknowledge the importance of individual differences and social and group factors on individual behavior.

REFERENCES

Andersson, L. M., & Pearson, C. M. 1999. Tit for tat? The spiraling effect of incivility in the workplace. *Academy of Management Review,* 24: 452-471.

Aquino, K., Tripp, T. M., & Bies, R. J. 2001. How employees respond to personal offense: The effects of blame attribution, victim status, and offender status on revenge and reconciliation in the workplace. *Journal of Applied Psychology,* 86: 52-59.

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

Barling, J. 1996. The prediction, experience, and consequences of workplace violence. In E. Q. Bulatao & G. R. VandenBos (Eds.), *Violence on the job: Identifying risks and developing solutions:* 29-49. Washington, DC: American Psychological Association.

Baron, R. A., & Neuman, J. H. 1996. Workplace violence

and workplace aggression: Evidence on their relative frequency and potential causes. ***Aggressive Behavior,*** 22: 161-173.

Baron, R. A., & Neuman, J. H. 1998. Workplace aggression-The iceberg beneath the tip of workplace violence: Evidence on its forms, frequency, and targets. ***Public Administration Quarterly,*** 21: 446-464.

Baron, R. A., Neuman, J. H., & Geddes, D. 1999. Social and personal determinants of workplace aggression: Evidence of the impact of perceived injustice and the Type A behavior pattern. ***Aggressive Behavior,*** 25: 281-296.

Berkowitz, L. 1993. ***Aggression: Its causes, consequences, and control.*** Philadelphia: Temple University Press.

Bernaards, C. A., & Sijtsma, K. 2000. Influence of imputation and EM methods on factor analysis when item nonresponse in questionnaire data is nonignorable. ***Multivariate Behavioral Research,*** 35: 321-364.

Bies, R. J., Tripp, T. M., & Kramer, R. M. 1997. At the breaking point: Cognitive and social dynamics of revenge in organizations. In R. A. Giacalone & J. Greenberg (Eds.), ***Antisocial behavior in organizations:*** 18-36. Thousand Oaks, CA: Sage.

Blau, P. M. 1964. ***Exchange and power in social life.*** New York: Wiley.

Buss, A. H. 1961. ***The psychology of aggression.*** New York: Wiley.

Chen, P. Y., & Spector, P. E. 1992. Relationships of work stressors with aggression, withdrawal, theft and substance use: An exploratory study. ***Journal of Occupational & Organizational*** *Psychology,* 65: 177-184.

Folger, R., & Baron, R. A. 1996. Violence and hostility at work: A model of reactions to perceived injustice. In E. Q. Bulatao & G. R. VandenBos (Eds.), ***Violence on the job: Identifying risks and developing solutions:*** 51-85. Washington, DC: American Psychological Association.

Folger, R., Robinson, S. L., Dietz, J., McLean Parks, J., & Baron, R. A. 1998. When colleagues become violent: Employee threats and assaults as a function of societal violence and organizational justice. *Academy of* ***Management Best Papers Proceedings:*** OB, A1-A7.

Glomb, T. M. 2002. Workplace anger and aggression: Informing conceptual models with data from specific encounters. ***Journal of Occupational Health Psychology,*** 7: 20-36.

Glomb, T. M. 1998. ***Workplace aggression: Antecedents, Behavioral components, and consequences.*** Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.

Glomb, T. M., Richman, W. L., Hulin, C. L., Drasgow, F., Schneider, K. T., & Fitzgerald, L. F. 1997. Ambient sexual harassment: An integrated model of antecedents and consequences. ***Organizational Behavior and Human Decision Processes,*** 71: 309-328.

Greenberg, L., & Barling, J. 1999. Predicting employee aggression against coworkers, subordinates and supervisors: The roles of person behaviors and perceived workplace factors. ***Journal of Organizational Behavior,*** 20: 897-913.

Hackman, J. R. 1992. Group influences on individuals in organizations. In M. D. Dunnette & L. M. Hough (Eds.), ***Handbook of industrial and organizational psychology.*** Palo Alto, CA: Consulting Psychologists Press.

James, L. R., Demaree, R. G., & Wolf, G. 1993. R_{wg}: an assessment of within-group interrater agreement. ***Journal of Applied Psychology,*** 78: 306-309.

Johnston, J., & DiNardo, J. 1997. ***Econometric methods.*** New York: McGraw-Hill.

Keashly, L., & Jagatic, K. 2003. By any other name: American perspectives on workplace bullying. In S. Einarsen, H. Hoel, D. Zapf, & C. Cooper (Eds.), ***Bullying and emotional abuse in the workplace: International research and practice perspectives:*** 31-61. London: Taylor & Francis.

Matteson, M. T., & Ivancevich, J. M. 1982. ***Managing job stress and health.*** New York: Macmillan.

Moorman, R. H. 1991. Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? ***Journal of Applied Psychology,*** 76: 845-855.

Neuman, J. H., & Baron, R. A. 1997. Aggression in the workplace. In R. A. Giacalone & J. Greenberg (Eds.), ***Antisocial behavior in organizations:*** 37-67. Thousand Oaks, CA: Sage.

Neuman, J. H., & Baron, R. A. 1998. Workplace violence and workplace aggression: Evidence concerning specific forms, potential causes, and preferred targets. ***Journal of Management,*** 24: 391-419.

Northwestern National Life Employee Benefits Division. 1993. ***Fear and violence in the workplace: A survey documenting the experience of American workers.*** Minneapolis: Northwestern National Life Employee Benefits Division.

O'Leary-Kelly, A. M., Griffin, R. W., & Glew, D. J. 1996. Organization-motivated aggression: A research framework. ***Academy of Management Review,*** 21: 225-253.

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

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: 658-672.

Rogers, W. H. 1993. sg17: Regression standard errors in clustered samples. **Stata *Technical* Bulletin,** 13: 19-23.

Roznowski, M. 1989. An examination of the measurement properties of the job Descriptive Index with experimental items. ***Journal of Applied Psychology,*** *74: 805-814.*

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

Schneider, B. 1975. Organizational climates: An essay. ***Personnel Psychology,*** *40: 437-454.*

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

Smith, P. C., Kendall, L., & Hulin, C. L. 1969. ***The measurement of satisfaction in work and retirement.*** Chicago: Rand McNally.

Snyder, M. 1974. Self-monitoring of expressive behavior. ***Journal of Personality and Social Psychology,*** *30: 526-537.*

Snyder, M., & Gangestad, S. 1986. On the nature of self-monitoring: Matters of assessment, matters of validity. ***Journal of Personality and Social Psychology,*** *51:125-139.*

Spielberger, C. D. 1991. ***State-Trait Anger Expression Inventory*** (professional manual). Odessa, FL: Psychological Assessment Resources.

Tepper, B. J. 2000. Consequences of abusive supervision. ***Academy of Management journal,*** *43:178-190.*

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: 1063-1070.*

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