Predicting and Preventing Supervisory Workplace Aggression

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The authors examined factors that lead to and prevent aggression toward supervisors at work using two samples: doctoral students and correctional service guards. The results supported that perceived interpersonal injustice mediates the relationship between perceptions of supervisory control over work performance and psychological aggression directed at supervisors, and further that psychological aggression toward supervisors is positively associated with physical acts of aggression directed at supervisors, supporting the notion of an escalation of aggressive workplace behaviors. Moreover, employees' perceptions of organizational sanctions (i.e., negative consequences for disobeying organizational policies) against aggression appear to play an important role in the prevention of workplace aggression by moderating the relationship between injustice and aggression targeting supervisors.

Over the past decade, a large body of research on workplace aggression has resulted in increased awareness of its frequency, severity, and relevance to organizational functioning (e.g., Barling, 1996; Leather, Beale, Lawrence, Brady, & Cox, 1999). In recent years researchers have focused a substantial amount of research attention on the various forms of aggression at work (e.g., Greenberg & Barling, 1999; LeBlanc & Kelloway, 2002), and, in opposition to the impression typically fostered by the media, research shows that the most frequent acts are not overt, but less dramatic, psychologically aggressive acts (Baron, Neuman, & Geddes, 1999; Greenberg & Barling, 1999; Neuman & Baron, 1998). All forms of workplace aggression can be extremely damaging and can have a negative effect on individual health and well-being, as well as organizational functioning (e.g., Barling, Rogers, & Kelloway, 2001; O'Leary-Kelly, Griffin, & Glew, 1996; Schat & Kelloway, 2000).

Despite expanding research and awareness on the topic of workplace aggression, significant gaps remain in the knowledge of this phenomenon. Of particular relevance to this study is the fact that there is little empirical research that examines what predicts and prevents workplace aggression in specific organizational situations. Workplace aggression is defined as any behavior intended to harm an individual within an organization or an organization itself (Baron & Neuman, 1996; Neuman & Baron, 1998). In this study, we focus on insider-initiated aggression, or aggression initiated by an employee of an organization. Our conceptual framework for understanding workplace aggression assumes that it is instrumental in nature (Anderson & Bushman, 2002), suggesting that focusing on the specific motive and target of acts of aggression is important for its subsequent understanding. Jackman (2002), in her review of "violence in social life," emphasizes that "detailed attention to specific types" of aggression is invaluable to the accumulation of information about this topic (p. 408). Inness, Barling, and Turner (2005) provide evidence of the contextual nature of workplace aggression through their finding that individuals' experiences at one job do not affect workplace aggression in another job. Moreover, empirical evidence demonstrates the importance of the specific source and target of aggression when attempting to predict its occurrence. In their study

of employee aggression against coworkers, subordinates, and supervisors, Greenberg and Barling (1999) found that different factors are related to actions against different groups of individuals. In this study, we focus explicitly on insider-initiated workplace aggression perpetrated by subordinates toward their supervisors (LeBlanc & Barling, 2004).

Interpersonal relationships are an important part of individuals' lives and can have both a positive and negative effect on well-being (e.g., Berscheid & Reis, 1998). Many studies have explored how supervisors interact with their subordinates, as well as the consequences of this interaction (Bass, 1990; Yukl, 1998). For the most part, this research focuses on what makes supervisors effective. However, researchers have found evidence that the outcomes associated with supervisor-employee interaction can be dysfunctional for organizations (e.g., Folger & Baron, 1996; O'Leary-Kelly et al., 1996), including poor employee performance, a reduction in organizational citizenship behavior, and retaliation (e.g., Townsend, Phillips, & Elkins, 2000).

Various researchers have pointed out that employees' behaviors are influenced by the power that supervisors hold over them (see, e.g., Jawahar, 2002). Some data indicate that perpetrators may refrain from directing aggression toward higher-ranking coworkers because they fear the consequences, especially if the individual is powerful and in a high status position (e.g., Aquino, Tripp, & Bies, 2001; Baron & Richardson, 1994; Bies, Tripp, & Kramer, 1997; Fitness, 2000). Other research indicates this is not always the case, with employees at times being more likely to engage in aggression directed at immediate supervisors than subordinates (e.g., Baron et al., 1999). Regardless of the findings of particular studies with regards to aggression and status differentials, a relatively large percentage of employees report directing aggression at workplace supervisors (see Greenberg & Barling, 1999). It is interesting that this form of aggression continues to persist despite the possibility of such negative repercussions (see also Huesmann & Eron, 1989; Joireman, Anderson, & Strathman, 2003), and research is needed to better understand this specific type of aggression.

The Prediction of Workplace Aggression Directed at Supervisors

Research on adult work experiences has identified characteristics of employees' interpersonal treatment by their supervisors that predict subsequent acts of aggression directed at workplace supervisors (e.g., Inness et al., 2005). Anderson and Bushman (2002) suggest that interpersonal provocation is likely the most important cause of human aggression. Moreover, aggressive behavior tends to have a purpose and be goal-directed (Tedeschi & Felson, 1994). In this study, our focus is on employees' perceptions of their supervisors' behaviors (see also Inness et al., 2005). It is possible that employees act in ways that encourage a particular form of interpersonal treatment by supervisors. However, we focus on aggression directed at supervisors by employees in order to examine the perceptions that may be related to this type of aggression.

Neuman and Baron (1998) pointed out that workplace aggression is human aggression occurring in a specific situation. Although some forms of workplace aggression are unique, many of the factors that have been shown to influence aggression in other contexts may also play a role in the prediction of workplace aggression. For this reason, Neuman and Baron suggested that researchers build "conceptual and empirical bridges" between research on workplace aggression and the existing literature on aggression in other contexts (p. 413). In our examination of the prediction of aggression directed at workplace supervisors, we draw on a variety of findings, including findings from the well-established research domain of marital aggression. Although there are undoubtedly differences between the relationship with one's supervisor and with one's partner in an intimate relationship, there is commonality in the sense that it is a salient interpersonal relationship between two people in which one depends on the other.

Research demonstrates the importance of a number of perceived factors in the prediction of aggression (e.g., Ehrensaft, Langhinrichsen-Rohling, Heyman, O'Leary, & Lawrence, 1999; Folger & Skarlicki, 1998; Inness et al., in press; Robinson & O'Leary-Kelly, 1998), and in this study we focus specifically on two such predictors, namely, perceptions of supervisory control over work performance and perceptions of interpersonal injustice.

Supervisory Control Over Work Performance

Control has long been recognized as an important variable related to employees in organizations (Dupré, Barling, & LeBlanc, 2004). Previous work has examined the relationship between control and work-related stress and strain (see Barling & Kelloway, 1996; Karasek, 1979; Tetrick & LaRocco, 1987).

This research demonstrates that a perception of control at work is associated with a range of positive personal and work-related outcomes (e.g., Adams & Jex, 1999; Karasek, Russell, & Theorell, 1982; Parker, Chmiel, & Wall, 1997; Van Yperen & Hagedoorn, 2003), whereas a lack of control is associated with negative consequences (e.g., Amick et al., 2002; Bishop et al., 2003; Schat & Kelloway, 2000; Spector, 1986).

Research that has focused on interpersonal control in family relationships has found that individuals who feel in control behave in ways that promote the development of positive relationships (Martini, Grusec, & Bernadini, 2001). In the developmental psychology domain it has been shown that those who see themselves as having the least power may be the most aggressive (e.g., Raven & Kruglanski, 1970). Furthermore, adults who perceive low control within their relationship with their children are more likely to use coercive or abusive force in their interactions with children (Bugental, Blue, & Cruzcosa, 1989). Similarly, a lack of perceived control predicts aggression in marriage (O'Leary, 1988; Riggs & O'Leary, 1996).

Ehrensaft et al. (1999) identified the role of feeling overcontrolled by a partner and subsequent aggression within intimate relationships. In their study, feeling overcontrolled was defined as behaviors that spouses perceived to be aimed at directing or constraining their actions, thoughts, or emotions. Ehrensaft et al. found that spouses in happy marriages reported feeling significantly less controlled than spouses in both distressed nonaggressive and distressed aggressive marriages, whereas spouses in distressed aggressive marriages felt significantly more controlled than spouses in distressed nonaggressive marriages. Given potential similarities in the nature of aggression within dyadic relationships across different contexts, factors that predict aggression in interpersonal familial relationships may also predict aggression directed at workplace supervisors.

Many supervisors can be controlling, such as when they monitor their subordinates' work behaviors too closely. Although a certain level of supervisory control is often appropriate, too much control over employees' work performance may have a destructive influence on employees (Dupré et al., 2004; Shirom, Melamed, & Nir-Dotan, 2000). Thus, when employees feel highly controlled while conducting their work, in the sense that they perceive their supervisors to be engaging in behaviors that direct or constrain their work performance, they may be motivated to seek retribution, and one way of accomplishing this could be to strike back at a controlling supervisor.

Interpersonal Injustice

Organizational injustice has received significant research attention, and various aspects of perceived injustice have been linked with workplace aggression (e.g., Greenberg & Barling, 1999; Neuman & Baron, 1998). In general, the greater the perceived injustice, the greater the tendency to engage in aggression (Baron et al., 1999). Earlier work on organizational injustice focused heavily on distributive (see Deutsch, 1985) and procedural (see Lind & Tyler, 1988) forms of organizational injustice (Colquitt, Conlon, Wesson, Porter & Ng, 2001; Cohen-Charash & Spector, 2001), whereas more recently, the role of social-interactional factors has been emphasized (e.g., Miller, 2001; Vidmar, 2001). The important role that the social-interactional context plays in predicting aggression may at least partially explain why the procedural justice climate does not predict the amount of workplace aggression across organizations (Dietz, Robinson, Folger, Baron, & Schulz, 2003).

Because research on aggression identifies the importance of interpersonal provocation (e.g., Anderson & Bushman, 2002), we argue that interpersonal injustice is the most appropriate construct among the various dimensions of organizational injustice to investigate in the context of workplace aggression directed at a supervisor by an employee (see also Glomb, Steel, & Arvey, 2002; Inness et al., 2005). Those who first identified the importance of this form of justice referred to it as interactional justice (Bies & Moag, 1986) and emphasized the important role of superior interpersonal treatment during the implementation of procedures. More recently, this form of justice is understood to comprise two types of interpersonal treatment: interpersonal and informational (Colquitt et al., 2001). Given the importance of interpersonal interactions in individuals' lives and the fact that informational justice focuses exclusively on the explanations provided to people pertaining to specific procedures or outcomes (e.g., Bies, Shapiro, & Cummings, 1988), in this study we focus solely on interpersonal injustice.

Interpersonal injustice refers to employees' perceptions of the degree to which they are treated with a lack of respect, dignity, sensitivity, and courtesy by those who are responsible for executing procedures (Colquitt et al., 2001; Donovan, Drasgow & Munson,

1998). Because the pursuit of justice is argued to be a fundamental aspect of life (e.g., Miller, 2001), it is not surprising that in the face of injustice, people may not only respond with a number of negative emotions (Folger, 1993) but may also be motivated to reestablish a sense of justice (Cropanzano & Folger, 1989; Homans, 1961) through reparation (e.g., Bies et al., 1988; Greenberg, 1990) or "firing back" (see, e.g., Jawahar, 2002). One possible way of achieving this is by retaliating against the source of the injustice (Fox & Levin, 1994; Skarlicki & Folger, 1997; Townsend et al., 2000). Because supervisors are typically responsible for decisions and their implementation in the workplace, their behavior and interaction with those who are affected by the decisions and procedures is an important form of organizational justice (Bies & Moag, 1986; Tyler & Bies, 1990).

Mediating Role of Interpersonal Injustice

We suggest that control and interpersonal injustice do not affect workplace aggression independently. We expect that employees who perceive that their work performance is highly controlled by their supervisors will, as a result, feel that their supervisors' interpersonal treatment is unfair. In situations where individuals are subject to controlling supervision over work performance that they feel is inappropriate, a perception of injustice is likely to occur. The experience of being controlled probably causes individuals to feel that there is a lack of respect, dignity, sensitivity, and/or courtesy on the part of the supervisor and thus will feel that they have been treated inequitably. Lind (2000) argues that strong feelings of injustice are necessary for people to feel that it is acceptable to be aggressive toward someone else.

In their longitudinal panel study on marital distress, Grote and Clark (2001) found that perceptions of interpartner conflict precede perceptions of injustice. Other research indicates that employees often direct covert aggression, such as sabotage, at a supervisor in an attempt to restore a perceived inequitable situation (Baron et al., 1999; Bies & Tripp, 1998; Sheppard, Lewicki, & Minton, 1992; Skarlicki & Folger, 1997). The experience of being controlled likely causes one to focus on the relationship between oneself and the controlling agent, and feelings of inequitable treatment likely emerge (see Grote & Clark, 2001).

The Progression of Aggression

Attention to workplace aggression has focused primarily on the most serious but least frequent acts (i.e., physical assaults) rather than on the potentially less severe but more frequent acts (e.g., verbal and psychological aggression) (Braverman, 1999; as demonstrated in research by Baron et al., 1999; Dupré, Inness, Connelly, Barling, & Hoption, in press; Neuman & Baron, 1998; U.S. Postal Service Commission, 2000). This may be problematic for a couple of reasons. First, less severe acts may be at least as damaging psychologically: the victims of psychological aggression often judge this form of aggression to be worse than physical aggression (see Follingstad, Rutledge, Berg, Hause, & Polek, 1990; O'Leary & Jouriles, 1994). Second, understanding all forms of aggression at work are critical because of the "spiral of violence," insofar as less severe acts of workplace aggression may serve as the initial step in an upward spiral that culminates in ever-increasing levels of aggression (Andersson & Pearson, 1999; Barling, 1996; Neuman & Baron, 1998).

Although research focusing on workplace aggression has not specifically looked at the relationship between less and more severe forms of aggression, Glomb (2002) suggested that there is an escalatory pattern of behavior within particular incidents of workplace aggression. In her work, Glomb examined the escalation hypothesis in which it is assumed "that behaviors are ordered in terms of severity and that within one incident" of aggression, behaviors will evolve from less to more severe (p. 31). She examined the proportion of individuals engaging in behaviors more or less severe than one particular act of aggression. She found that individuals are more likely to have engaged in behaviors less severe, rather than to have engaged in behaviors more severe, than that one particular act of aggression. In research on marital violence, Murphy and O'Leary (1989) showed that aggression directed at a specific target escalates over time: among couples with no prior experience of physical aggression, psychological aggression predicted the first instance of physical aggression both 6 and 12 months later. In this study we aim to further the understanding of the escalation of workplace aggression between an employee and a supervisor by considering the relationship among perceptions of supervisory treatment toward employees, psychological aggression targeted at a workplace supervisor, and physical aggression directed at a workplace supervisor.

Preventing Workplace Aggression

In addition to examining the role of control and interpersonal injustice in the prediction of aggression directed at supervisors, we also wanted to address the issue of the prevention in this study. Although there has been much discussion in practitioner publications about how to reduce aggression in the workplace (e.g., "How can workplace violence be deterred?," Doherty, 2002; "Bulletproof practices," Grossman, 2002) and evidence of certain dispositional characteristics moderating the relationship between various predictors and aggression—for example, anger, history of aggression (e.g., Douglas & Martinko, 2001)—there is a paucity of research that looks at which organizational variables prevent workplace aggression. However, findings in a study by Dekker and Barling (1998) suggest that perceptions of organizational sanctions may explain why employees choose not to behave aggressively. Dekker and Barling found that perceptions of organizational sanctions against sexual harassment played a significant role in the prediction of sexual harassment. Males who believed that the organization would take action against the perpetrators were significantly less likely to engage in gender and sexual harassment. Based on these findings, we expect that perceptions of organizational sanctions against workplace aggression will moderate the relationship between perceived organizational injustice and workplace aggression.

With this background, and consistent with existing research, we propose the following hypotheses:

> *Hypothesis 1.* The relationship between perceptions of supervisory control over work performance and supervisor-targeted aggression will be mediated by interpersonal injustice.

> *Hypothesis 2.* The relationship between perceptions of interpersonal injustice and physical workplace aggression directed at supervisors will be mediated by psychological workplace aggression directed at supervisors. We expect that perceptions of interpersonal injustice will be positively associated with psychological workplace aggression and that psychological workplace aggression will be positively associated with physical workplace aggression.

> *Hypothesis 3.* Perceptions of organizational sanctions against workplace aggression will moderate the relationship between perceived organizational injustice and workplace aggression.

We expect that employees who perceive that they are being treated unjustly but believe there are organizational sanctions against aggression in their workplace will be less likely to engage in aggression than employees who perceive that they are treated unjustly but do not perceive such organizational sanctions against aggression.

We test these hypotheses with two samples. The first consists of doctoral students in a variety of disciplines at one academic institution, and the second consists of correctional service guards in a penitentiary.

The supervisor–doctoral student relationship is an appropriate analogy to organizational settings given the hierarchical nature of this relationship, with power held by one party over the current working life and future prospects (e.g., through reference letters) of the other. Furthermore, studying workplace aggression between doctoral students and their supervisors is appropriate considering the challenging and stressful nature of this relationship. Momentous incidents of aggression between doctoral students and their supervisors in university settings have not been infrequent in recent years (e.g., Gabrielson, 2002; Nadis, 1998; Parker, 2000). Moreover, Goodyear, Crego, and Johnston (1992) discussed the fact that a very real and important issue in the supervision of student research is the treatment of students by supervisors.

Although we chose to focus on graduate students and their supervisors because of their similarity to work settings, and because this relationship is an issue of importance in its own right (Nadis, 1998), the nature of the sample is such that the ability to generalize it to more traditional organizational settings may be limited. Therefore, we conducted a replication study for reasons of ecological and external validity. First, it is possible that the variables leading to the prediction and prevention of aggression directed at supervisors by doctoral students differs from the prediction and prevention of aggression directed at supervisors by employees in more traditional organizational settings. Second, finding that the prediction and prevention of workplace aggression directed at supervisors by doctoral students generalizes to a different organizational context would enhance the ability to take a broad view of these findings. Thus, we also elected to examine the relationship between correctional service officers and their workplace supervisors.

Method

Participants and Procedure: Doctoral Student Sample

Participants in this study were doctoral students enrolled in a Canadian university. Surveys were sent through the internal mail system to 664 students in research-intensive disciplines; 17 were returned because the students were no longer at those addresses. To ensure that individual participants could not be identified, (a) surveys were not sent to students older than 49 years of age, and (b) data on age were collected in deciles to protect participants' anonymity (e.g., knowing that a respondent was a female aged 53 years could make it quite possible to identify her). Of the 647 surveys that reached potential participants, 196 (113 females, 83 males) were returned (response rate = 30%). Of these, 106 were 20 to 29 years old, 74 were 30 to 39, and 16 were 40 to 49; 63 had been graduate students at the current institution 1 to 2 years, the remaining 133 for 3 or more years. On average, graduate students had worked with their current supervisor for 3 years (SD = 1.6; range = 0.5 to 10 years).

Materials: Doctoral Student Sample

Demographics. Participants were asked a series of demographic questions, including age, sex, education, and organizational tenure, to covary demographic variables that previous research has determined to be related to workplace aggression. Sex is an important covariate because of consistent findings showing a relationship between this variable and workplace aggression (see Geen, 1990). Males tend to be more aggressive than females (Feshbach, 1997; Geen, 1990). Interestingly, however, Bettencourt and Miller (1996) found that although males are more likely than females to react aggressively in unprovoked situations, this difference is largely reduced by provocation. Nevertheless, because studies suggest that overall sex is related to aggressive behavior, it is included. Research suggests that age and education is related to the incidence of workplace aggression (Geen, 1990; Rotenberg, 1985). As people grow older and attain greater education, they are better at understanding and controlling aggressive feelings and behaviors. We also control for relationship length between an employee and supervisor given the possibility of an escalation of aggression over time.

Supervisory Control Over Work Performance. Previous measures of various forms of control typically assess the degree of control that individuals have over themselves or some aspect of their environment. In the current case, we wanted to assess employees' perceptions of supervisory control over employees' work performance. Eight items were created for the current scale by applying the same focus of control to employees' work (i.e., behaviors that constrain or limit) as Ehrensaft et al. (1999) did to partners in intimate relationships (e.g., "My supervisor does not give me the freedom to do things that I want to do in my work," "My supervisor pressures me to work at a certain pace"). Participants were asked to rate on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*) the extent to which they agreed or disagreed with each statement. An exploratory factor analysis with varimax rotation identified the underlying factor structure of the control items (see Table 1). These eight items had an internal consistency reliability (α) of .81.

Interpersonal Injustice. Perceptions of interpersonal injustice was assessed using the scale developed by Donovan et al. (1998) to assess interpersonal treatment at work. Thirteen of these 18 items were included in the current study. Participants were instructed to think about their academic supervisors, and items on the Perceptions of Fair Interpersonal Treatment Scale were reworded to accurately reflect the current context (e.g., "At the organization I work for complaints are dealt with effectively by my supervisor" was reworded to "My complaints are dealt with effectively by my supervisor"; reverse coded, "At the organization I work for my suggestions are ignored by my supervisor" was reworded to "My suggestions are ignored by my supervisor"). Although originally a 3-point response scale, we used a 7-point scale (1 = s*trongly disagree*; 7 = *strongly agree*) to gain greater variance.

Workplace Aggression. Aggression toward supervisors was assessed using Greenberg and Barling's (1999) scale, which requires participants to indicate the number of times they have engaged in a series of aggressive acts over the

Table 1

Standardized Parameter Estimates for Exploratory Factor Analysis of Supervisory Control Over Work Performance Items

Item no.	Item	Factor loading
1.	I have to consult my supervisor about how I spend my time doing my work	.85
2.	My supervisor does not give me the freedom to do things that I want to do in my work	.83
3.	My supervisor places constraints on when I take breaks from my work	.80
4.	My supervisor tries to exert influence over decisions regarding my work	.70
5.	My supervisor closely monitors my performance for errors	.66
6.	My supervisor pressures me to work at a certain pace	.63
7.	I am closely monitored by my supervisor at work	.56
8.	My supervisor is aware of what I do on a daily basis in my work	.46
% variance		48.70
Eigenvalues		4.38

past year (0 = *never*, 1 = *once*, 2 = *twice*, 3 = *3–5 times*, 4 = *6–10 times*, 5 = *11–20 times*, 6 = *more than 20 times*). Greenberg and Barling's scale was developed based on Straus's (1979) Conflict Tactics Scales and consisted of 22 items. We added an additional 3 items to this scale to provide greater coverage of the range of aggression behaviors at work. Ten items measured workplace aggression of a psychological nature (e.g., "Over the last year, I transmitted damaging information about my supervisor"; "Over the last year, I said something to spite my supervisor"), and 15 items measured workplace aggression of a physical nature (e.g., "'Over the last year, I threw something at my supervisor"; "Over the last year, I shoved my supervisor"). Although all items on this scale are typically combined to provide an overall level of workplace aggression, it was our intention to assess psychological and physical aggression separately. Other research has also separated physical from nonphysical aggression (e.g., LeBlanc & Kelloway, 2002).

Perceptions of Organizational Sanctions Against Workplace Aggression. To assess perceptions of organizational sanctions against workplace aggression Dekker and Barling's (1998) scale was used, with appropriate modifications to reflect workplace aggression rather than sexual harassment (e.g., "This institution takes aggression very seriously," "This institution has been known to discipline graduate students for aggression"). Responses to all 8 items are on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Participants and Procedure: Correctional Service Guard Sample

Surveys were distributed to 89 employees via one manager in a penitentiary in Canada, and 53 (45 males) chose to respond (response rate = 60%). The average age of these employees was 39 years (*SD* = 10.7). They had worked for their current organization for an average of 13 years (*SD* = 5.2) and for their current supervisor for an average of 8.5 years (*SD* = 6.4). Surveys were returned anonymously to the manager who distributed them.

Materials: Correctional Service Guard Sample

We used the measure of perceived supervisory control over work performance developed with the sample of doctoral students, and the same measure of perceived interpersonal injustice and perceptions of organizational sanctions as was used with the sample of doctoral students. Where appropriate, however, the items were modified to be applicable to the current organizational context (e.g., supervisor control over work performance: "I have to consult my supervisor about how I spend my time conducting my academic work" to "I have to consult my supervisor about how I spend my time conducting my work"). All the predictor variables were measured on a 7-point Likert scale (1 = *strongly agree*, 7 = *strongly disagree*). Additionally, the scale used to assess psychological and physical workplace aggression with doctoral students was again administered in this context.

Results

Doctoral Student Sample

Descriptive statistics, intercorrelations, and reliability data are presented in Table 2. A number of assumptions must be fulfilled in order to conduct ordinary least squares regression analyses (Keppel & Zedeck, 1989). The relationships between independent and dependent variables should be linear and the variables normally distributed with equal variances.

From visual inspection of the scatterplots, it was concluded that the assumption of linearity was adequately met. Although the aggression variables were positively skewed, and the variances between vari-

Table 2

Descriptive Statistics and Correlations Among Variables in Sample 1

Variables	M	SD	1	2	3	4	5	6	7	8	9
Age	—	—									
Sex	—	—	−.01	—							
Years graduate student	—	—	.00	.10	—						
Years worked with supervisor	3.00	1.60	.11	.13	.57**	—					
Control over work performance	3.44	1.44	.05	.09	−.07	.07	(.81)				
Interpersonal injustice	2.86	1.46	.10	−.09	−.07	.07	.55**	(.96)			
Organizational sanctions	3.25	0.54	−.11	−.10	.07	−.09	−.18*	−.28**	(.76)		
Psychological aggression[a]	0.21	0.41	.03	.14*	.04	.16*	.47**	.55**	−.35**		
Physical aggression	0.01	0.04	.03	.16*	.09	.11	.33**	.39**	−.29**	.45**	—

Note. N = 196.
Reliabilities (Cronbach's alpha) are in parentheses along the diagonal.
[a] Internal measures of consistency such as Cronbach's alpha are inappropriate for the aggression measures included in this study and are thus not included (see, for example, Bollen & Lennox, 1991; and MacCallum & Browne, 1993).
* p < .05. ** p < .01.

Table 3

Regression Analyses Testing the Mediation Relationship of Supervisory Control Over Work Performance on Psychological Workplace Aggression Through Interpersonal Injustice

Variable	Interpersonal injustice		Psychological aggression		Psychological aggression (controlling for interpersonal injustice)	
	β	R^2	β	R^2	β	R^2
Age	.07	.04	−.00	.05	−.03	.35**
Sex	−.13*		.09		.15*	
Years graduate student	−.05		.00		.02	
Years worked with supervisor	.06		.11		.09	
Control over work performance	.55**	.33**	.46**	.25**	.21*	.38*
Perceived interpersonal injustice					.45**	

Notes. $N = 196$.
* $p < .05$.   ** $p < .001$.

ables were not homogeneous; with one exception analyses were carried out on these data given the robustness of the regression technique and for reasons of ecological validity (i.e., the data are a reflection of the phenomena in question).[1] Because the distribution of the physical aggression variable was extremely positively skewed (as compared to the psychological aggression variable), it was transformed into a binary variable (physical aggression, no physical aggression), and an ordinal regression was computed for analyses involving physical aggression.

Multiple regression analyses were computed to test Baron and Kenny's (1986) criteria to examine whether interpersonal injustice mediated the relationship between supervisory control over work performance and psychological aggression (see also Frazier, Tix, & Barron, 2004). After covarying the effects of age, sex, time in graduate school, and duration of the supervisor-student relationship, supervisory control over work performance predicts interpersonal injustice ($\beta = .55$, $p < .001$). After again covarying the effects of the control variables, supervisory control over work performance predicted psychological aggression ($\beta = .46$, $p < .001$). The effect of supervisory control over work performance on psychological aggression supported partial mediation by interpersonal injustice, as the significant effect of this predictor is reduced when interpersonal injustice is controlled ($\beta = .21$, $p < .05$). The complete results of these analyses are presented in Table 3. Similar results are found when the control variables are not included in the mediation analyses.

To examine whether psychological aggression me-

diated the relationship between interpersonal injustice and physical aggression, regression analyses were computed. After covarying the effects of the control variables, interpersonal injustice predicted psychological aggression ($\beta = .57$, $p < .001$). After again covarying the effects of the control variables, interpersonal injustice predicted physical aggression (*Wald* $= 18.26$, $p < .001$). The effect of interpersonal injustice on physical aggression supported partial mediation by psychological aggression, as the significant effect of this predictor is reduced substantially (*Wald* $= 5.30$, $p < .05$) when psychological workplace aggression is controlled. The complete results of these analyses are presented in Table 4. Similar results are found when the control variables are not included in the mediation analyses.

To determine if perceptions of organizational sanctions against workplace aggression prevented students from engaging in aggression toward their supervisors, a moderated multiple regression analysis

[1] A lack of normality arises because the behaviors constituting physical aggression are relatively rare. Although transforming positively skewed data is often recommended, transforming the data in this case is not useful because no transformation can normalize such an extreme distribution. Nonetheless, even with this type of dependent variable, residuals can be fairly normally distributed given that the assumptions regarding the distribution of the error term only affect the computation of the standard error. Linear regression does assume that the dependent variable is continuous; thus with extreme behavioral outcomes where most cases sit at a lower bound (e.g., physical aggression), logistic regression can be used to reduce the chance of obtaining meaningless parameter estimates.

Table 4

Regression Analyses Testing the Mediation Relationship of Interpersonal Injustice on Physical Workplace Aggression Through Psychological Workplace Aggression

Variable	Psychological aggression		Physical aggression		Physical aggression (controlling for psychological)	
	β	R^2	SE	Wald	SE	Wald
Age	−.03	.05	.52	.17	.55	.35
Sex	.18*		.73	3.52	.80	1.90
Years graduate student	.01		.99	.30	1.08	.38
Years worked with supervisor	.10		.25	1.25	.29	.37
Perceived interpersonal injustice	.57**	.35**	.25	18.26**	.30	5.30*
Psychological workplace aggression					.72	5.56*
				$R^2 = .44^a$		$R^2 = .50^a$

Note. $N = 196$.
[a] Because the outcome variable (physical aggression) is ordinal, traditional R^2 values do not apply. Therefore, we report the Nagelkerke pseudo R^2 (Nagelkerke, 1991) as a measure of effect size.
* $p < .05$. ** $p < .01$.

was conducted (see Table 5). The predictor and outcome variables were centered prior to testing for interaction effects. The interaction terms were then computed by cross-multiplying the standardized predictors. After covarying the effects of age, sex, years spent working with the supervisor, and years spent as a graduate student, perceived organizational sanctions moderated the effects of interpersonal injustice on workplace aggression: $\Delta R^2 = .06$, $p < .001$. As a result, the slopes for the relationship between the

predictor and workplace aggression were examined at one standard deviation above and one standard deviation below the mean of perceived organizational sanctions. Interpersonal injustice was strongly associated with psychological aggression when perceived organizational sanctions against aggression were low ($\beta = .62$, $p < .001$), but the strength of this relationship was reduced when perceived organizational sanctions were high ($\beta = .20$, *ns*; see Figure 1).

Correctional Service Guard Sample

Descriptive statistics, correlations and reliability data are presented in Table 6. Because there were

Table 5

Hierarchical Regression Analyses for the Moderating Effects of Perceived Organizational Sanctions on Psychological Workplace Aggression

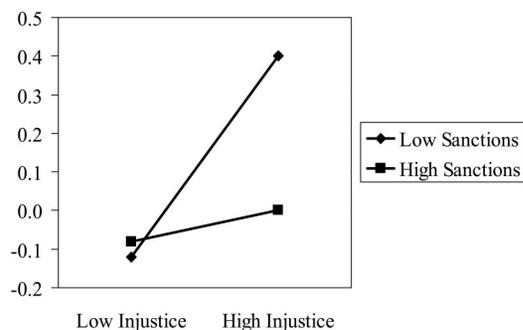| Step	Variable	β	R^2	ΔR^2
1	Sex	.11	.05	.05
	Age	−.07		
	Years working with supervisor	.08		
	Years graduate student	−.01		
2	Perceived interpersonal injustice	.35**	.38**	.34**
	Perceived organizational sanctions	−.21**		
3	Perceived interpersonal injustice X perceived organizational sanctions	−.29**	.44**	.06**

Note. $N = 196$.
* $p < .05$. ** $p < .01$.

Figure 1. The moderating effect of perceptions of organizational sanctions against aggression on the relationship between interpersonal injustice and psychological workplace aggression.

Table 6
Descriptive Statistics and Correlations Among Study Variables for Sample 2

Variable	M	SD	1	2	3	4
Time worked with supervisor	8.50	6.35	—			
Supervisory control over work performance	4.03	0.73	.21	(.71)		
Perceived interpersonal injustice	2.99	0.96	.24	.40**	(.84)	
Organizational sanctions	2.89	0.57	.21	.07	.19	(.75)
Psychological workplace aggression	2.06	1.32	.31*	.39**	.31*	−.37**

Note. $N = 45$.
Reliabilities (Cronbach's alpha) are in parentheses along the diagonal.
* $p < .05$.   ** $p < .01$.

significant sex differences within this sample and because women constituted a very small percentage of the entire sample ($n = 8$), they were excluded from further analyses. No physical aggression emerged in this sample. Because the sample was small, we elected to only consider the correlations of this data and not conduct further analyses in order to preserve validity and reliability in our analyses. Psychological aggression was significantly and positively correlated with time worked with supervisor, supervisory control over work performance, and interpersonal injustice but significantly and negatively correlated with organizational sanctions against aggression. Interpersonal injustice and supervisory control over work performance were significantly positively correlated.

Discussion

In general, these findings contribute to the understanding of the prediction and prevention of workplace aggression. The findings suggest that interpersonal injustice partially mediates the relationship between supervisory control over work performance and psychological workplace aggression. Additionally, the findings suggest that psychological workplace aggression partially mediates the relationship between interpersonal injustice and physical workplace aggression, supporting the notion of a "progression of aggression" from less serious to more extreme acts. The results also indicate that perceived organizational sanctions against workplace aggression moderate the relationship between interpersonal injustice and workplace aggression.

This pattern of findings among supervisory control over work performance, interpersonal injustice, and psychological aggression offers one explanation of the relationship among these variables. Moreover these findings demonstrate that although perceived injustice predicts workplace aggression, these rela-

tionships are minimized when individuals believe that the organization will take action against workplace aggression. Practically speaking, the role of perceived organizational sanctions is important for the prevention of aggression at work. It would be worthwhile for organizations and managers to ensure the existence, awareness, and use of such policies by all members of the organization. One interesting avenue for future research would be to examine how such organizational sanctions are implemented, in light of the implications such implementation would have for perceived injustice. Additionally, because supervisory control over work performance and injustice were positively related to aggression, a reduction of these factors in the workplace should also contribute to a decrease in workplace aggression.

Although the correctional service guard sample was not large enough to replicate the analyses conducted with the doctoral student sample, a strength of the current research is the replication of the correlations among supervisory control over work performance, interpersonal injustice, organizational sanctions, and workplace aggression across very different work contexts. There are important differences between the contexts in which doctoral students and correctional service guards find themselves that enhance the value of this replication, increasing the external and ecological validity of this research. Specifically, the initial expectations of graduate students probably emphasize notions of autonomy and participation in decision making. In contrast, guards in a penitentiary probably start their careers with few illusions of autonomy and participation in decision making and therefore might be less affected by control and injustice even though it is perceived as present in the workplace. Related to this, the research culture is probably perceived as being most productive under a commitment-oriented framework (Walton, 1985), whereby a supervisor is strongly dedi-

cated to the individual development and success of his or her graduate student(s). In contrast, safety and security in a penitentiary are probably seen as most assured when individual autonomy is kept to a minimum, with guards closely following prespecified routines and complying with regulations.

Several suggestions for further research can be offered. First, the psychological aggression and physical aggression relationship is consistent with the notions that those who were physically aggressive in this study were also psychologically aggressive and that psychological aggression is a precursor to physical aggression. Future research must examine this proposition in an organizational context using longitudinal data. In addition, factors that predict an escalation from psychological aggression to physical aggression should be addressed, and a search for variables that interrupt the progression of aggression should be encouraged. Second, even though this research supports the notion that control plays a role in the prediction of workplace aggression, it should be noted that that too little supervisory control over work performance could also be problematic. Research indicates that a lack of control at work has detrimental consequences for employees (e.g., Griffin, Fuhrer, Stansfeld, & Marmot, 2002). Future research should further examine the role of control in the prediction of workplace aggression and might consider the possibility of curvilinear effects in its prediction of aggression at work.

Because researchers have suggested that a number of organizational factors relate to insider-initiated aggression, in comparison to other types of workplace aggression, this is one over which organizations appear to have a fair degree of control. A better understanding of insider-initiated workplace aggression then has significant practical consequences. It is necessary that organizations ensure that all employees be as safe at work as possible, and in this respect, organizations should work toward preventing workplace aggression. If organizational variables largely contribute to the occurrence of aggression at work, it offers organizations the opportunity to enact policies and practices that contribute to a reduction in the occurrence of aggression at work. It is important to emphasize that in this work we measure individuals' perceptions of workplace factors relating to supervisory behavior. It is possible, and realistic to expect, that individuals' perceptions will vary. Moreover, perceptions are not necessarily accurate. Future research should address these points, and researchers should be cognizant of the fact that this may play an

important role in findings related to workplace aggression.

There are limitations to this research that deserve mention. Because the design of this research was cross-sectional, it was not possible to assess causality. Longitudinal research in this area would assist in the resolution of this limitation. For example, supervisors may begin to act controlling after a subordinate becomes aggressive toward him or her. It is possible that the self-reported nature of the data could inflate the magnitude of the relationships between predictor and dependent variables. Nonetheless, the relatively low correlation between some of the measured variables (Lindell & Whitney, 2001), along with the presence of significant interactions (Aiken & West, 1991), minimizes the likelihood that common method variance is a threat. Conducting a study like this in one workplace creates limitations because all participants may have similar perceptions. Although we studied the prediction of aggression in two different samples, supporting the ability to generalize across samples and organizations, using samples from diverse organizations is a strategy that would benefit future research. Finally, we do not know whether individuals had the same supervisors; our access to the organization did not allow us to collect such data. We acknowledge that it is possible that some employees were referring to the same supervisor, and thus the independence of our data is to some extent threatened.

In conclusion, the results obtained across the two studies further the understanding of workplace aggression in several ways and should be considered in practice and in subsequent research related to workplace aggression. When there is little else to do in a conflictive and unjust relationship, individuals may choose aggression as a means of gaining some control over the situation. This suggestion is similar to what has been suggested in the marital aggression domain, whereby those who engage in aggression report doing so to gain control over the target of the aggression (e.g., Ehrensaft et al., 1999). It is possible to conclude that workplace injustice is strongly related to workplace aggression, and that feelings of interpersonal injustice are positively associated with supervisory control over employee work performance, which also positively relates to workplace aggression. Moreover, the notion that perceptions of organizational sanctions against aggression play a role in the prevention of workplace aggression is supported.

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