

RUNNING HEAD: Power and revenge

## **Power and Revenge**

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### Abstract

We took an individual difference approach to explain revenge tendencies in powerholders. Across four experimental studies, chronically powerless individuals sought more revenge than chronically powerful individuals following a high power episode (Studies 1 and 2), when striking a powerful pose (Study 3), and when making a powerful hand gesture (Study 4). This relationship vanished when participants were not exposed to incidental power. A meta-analysis revealed that, relative to a lack of power or a neutral context, exposure to incidental power *increased* vengeance amongst the chronically powerless and *reduced* vengeance amongst the chronically powerful. These findings add to previous research on relations between power and aggression, and underscore the role of individual differences as a determinant of powerholders' destructive responses.

*Keywords:* power, dominance, revenge, body posture, gesture

## Power and Revenge

Revenge is a common theme in accounts of human behavior and frequently implicated in interpersonal violence (e.g., McCullough, 2008; Pfefferbaum & Wood, 1994). It is typically defined as “the action of inflicting hurt or harm on someone for an injury or wrong suffered at their hands” (Oxford Dictionary of English, 2010). Thus, revenge is a special case of aggression, insofar as it is not only a response *designed* to hurt (not all aggressive acts are deliberately hurtful), but most importantly, it is perhaps best distinguished by an emotional and behavioural intensity that seems disproportionate to the initial transgression (see Stillwell, Baumeister, & Del Priore, 2008). Revenge is also a justice-related response, although it tends to be the preserve of the individual (whereas justice is a societal response). As such, it is motivated by justice-related goals such as, for example, deterrence (Pinker, 1997), comparative suffering (e.g., Frijda, 1994), equity restoration (Stillwell et al., 2008), or teaching moral lessons (e.g., Gollwitzer & Denzler, 2009). Beyond justice, revenge may restore other valued psychological states, including individuals’ esteem and control (e.g., Heider, 1958; Kipnis, 1976). In this article we ask, who seeks revenge and when from the perspective of power.

Others have examined this question from the perspective of vengeance-seeking as an individual difference variable (Stuckless & Goranson, 1992); a value-driven response (McKee & Feather, 2008); goal fulfilment (Gollwitzer & Denzler, 2009); or have explored the cognitive, situational, and personal antecedents of revenge (e.g., McCullough et al., 1998). Curiously, power has received theoretical (e.g., Heider, 1958; Raven & Kruglanski, 1970) but only limited empirical attention in the context of revenge. While some studies found that the relative power that people have over their offender can foster vengeful responses (e.g., Kim, Smith, & Brigham, 1998), others have observed a negative relationship between vengeance-seeking and long-term hierarchical rank (Aquino, Tripp, & Bies, 2006).

How do we make sense of these contrasting findings? As we will see shortly, discriminating between different facets of power is crucial for a more complete understanding of how power operates and relates to revenge.

Power is defined as relative control over one's own and others' resources or outcomes (see Fiske & Berdahl, 2007, for a review). Power emerges from structural properties of relationships (e.g., Emerson, 1962; Ng, 1980), and is frequently operationalized in *incidental* (situational) terms through role assignments (e.g., Overbeck & Park, 2001) or priming (e.g., Galinsky, Gruenfeld, & Magee, 2003). At the same time, power can also be construed as a personal attribute (e.g., Anderson, John, & Keltner, 2012). People differ in the extent to which they experience high or low power in their everyday relationships, be it through their attachment history (e.g., Bugental, Lewis, Lin, Lyon, & Kopeikin, 1999), group membership (e.g., Major & O'Brien, 2004), economic status (e.g., Zhou, Vohs, & Baumeister, 2009), or physiological factors (e.g., Josephs, Newman, Brown, & Beer, 2003). The exposure to different levels of power leads to the formation of enduring representations and response repertoires (e.g., Anderson & Galinsky, 2006). Such individual differences in what we term *chronic* power have almost exclusively been studied in isolation and very little is known about the joint effects of chronic and incidental power (see Chen, Langner, & Mendoza-Denton, 2009; Josephs, Sellers, Newman, & Mehta, 2006, for a few exceptions). The present research contributes to rectify this neglect and explores, for the first time, the relationship between chronic and incidental power in promoting vengeful responding.

### **Power and Revenge**

Exposure to power frees people from constraints and encourages the expression of dispositions (Guinote, Judd, & Brauer, 2002) and inner states (Weick & Guinote, 2008), for better or for worse. For example, pro-socially oriented individuals act more in accordance with their communal goals and are better at judging the emotions of other people when

experiencing power (Chen, Lee-Chai, & Bargh, 2001; Côté et al., 2011). Individuals with a weak moral identity, on the other hand, become self-indulgent (DeCelles, DeRue, Margolis, & Ceranic, 2012), and men prone to sexual harassment are drawn towards women when exposed to power (Bargh, Raymond, Pryor, & Strack, 1995). We argue that a similar disparity exists in the context of revenge, where chronic manifestations of power determine how people in power respond to transgressions.

People who are devoid of control and chronically anxious pay more attention to power-relevant situations (Fiske, Morling, & Stevens, 1996) and the power implications of relationships (Bugental, 1993). Accordingly, the chronically powerless are more sensitive to threats to the psychological self than the chronically powerful. For example, members of low socioeconomic status groups are more insecure about their social worth than members of high status groups (for a brief review see Henry, 2009). To defend against perceived threats, the chronically powerless compensate by responding negatively—more so than higher status groups whose sense of social esteem is stronger (e.g., Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002; Schwartz, Dodge, & Coie, 1993). The chronically powerless are also more likely than the chronically powerful to respond negatively when they perceive they can get away with it (cf. Azzam, Beaulieu, & Bugental, 2007). Other related work indicates that individuals with low confidence (Goodstadt & Hjelle, 1973) or low self-perceived competency (Fast & Chen, 2009) tend to display more aggression when in power than self-secure powerholders.

Thus, experiencing power could afford more vengeful responses on behalf of the chronically powerless compared to the chronically powerful as the former are more vulnerable to the ego-threats posed by transgressions. Furthermore, because the chronically powerless are frequently exposed to derogatory behaviours of others (e.g., Aquino et al., 2006; Heider, 1958), and because they are more sensitive to the power implications of others'

actions, they are more likely than the chronically powerful to develop an association between power and retaliatory goals. High incidental power can trigger the fulfilment of those goals in response to a transgression (cf. Chen, Lee-Chai, & Bargh, 2001).

Conversely, for chronically powerful individuals, situational power denotes the status quo and is perhaps more unequivocally linked to optimism (Anderson & Galinsky, 2006), action (Galinsky et al., 2003), and self-sufficiency (Brinol et al., 2007) than for the chronically powerless. Nonhuman primate studies show that secure high ranking primates are more accepting of transgressions by lower ranking animals than non-secure high ranking primates—a tendency that correlates with an increased concentration of serotonin in the central nervous system (e.g., Raleigh, McGuire, Brammer, & Yuwiler, 1984). Similarly, humans with higher power in relationships are more likely to forgive transgressing partners because they are able to look past the hurt and attend to the longer-term goal of relationship maintenance (Karremans & Smith, 2010). Consequently, the chronically powerful should be less likely to indulge in defensive behaviour than the chronically powerless, and be less inclined to view revenge as a necessary or appropriate response.

Our analysis is consistent with previous work showing that relative to those who have a generalized sense of power, the chronically powerless prefer to use threats, punishment (Goodstadt & Hjelle, 1973), and autocratic tactics (Kipnis, 1976) to maintain control over lower status partners. Other studies indicate that self-perceived powerless parents tend to use more physical coercion to deal with ‘problematic’ children than parents who feel in control (Bugental et al., 1999), and self-perceived powerless men are more likely to physically and emotionally abuse female partners (Sagrestano, Heavey, & Christiansen, 1999). In short, we hypothesize that the chronically powerless are more vengeful than the chronically powerful when experiencing incidental power.

Conversely, in the absence of incidental power, chronic manifestations of power do not afford retaliation because repercussions may ensue. Although the chronically powerful and powerless may experience similar inclinations to retaliate, being the target of transgressions is perhaps more consistent with the self-concept of the chronically powerless than the chronically powerful, who are less accustomed to derogative or abusive behaviours of others. This could foster a stronger inclination to retaliate amongst the chronically powerful than the chronically powerless. However, given that exposure to power magnifies individual differences (e.g., Guinote et al., 2002), it seems reasonable to expect less of a divergence in the revenge tendencies of the chronically powerful and the chronically powerless in the absence of incidental power.

### **Overview of studies**

We report four studies in which participants read scenarios involving transgressions, and then indicated to what extent they would seek revenge against the perpetrator using a well-validated measure of situation-specific revenge (for a brief review see Bono, McCullough, & Root, 2008). To examine differences in participants' perceptions of chronic power, we assessed individuals' generalised sense of power (Studies 1, 3 and 4) and relevant dispositions (Study 2). To manipulate incidental power, Studies 1 and 2 utilised an episodic priming procedure that has been validated in numerous studies (e.g., Galinsky et al., 2003; Anderson & Galinsky, 2006; Weick & Guinote, 2008). Studies 3 and 4 capitalised on the bodily grounding of power (e.g., Carney, Cuddy, & Yap, 2010; Huang, Galinsky, Gruenfeld, & Guillory, 2011; Tiedens & Fragale, 2003) and manipulated incidental power through body postures (Study 3) and hand gestures (Study 4). Notably, by manipulating power independently of the transgression context, we also ruled out differences in structural aspects of the victim-perpetrator relationship as potential confounds (e.g., status).

### **Study 1**

## Method

*Participants and Design.* Fifty-six students (29 women; 27 men; paid \$10) from a large Australian university were randomly assigned to one of two incidental power conditions (high vs. low).

*Procedure and Materials.* Participants were approached on campus and invited to take part in two allegedly separate studies focusing on perceptions of real life events and social judgments. In the 'first' study incidental power was primed with participants writing a short narrative of a past situation in which they were in a position of power, or a situation in which they were lacking power. Next they completed a manipulation check, indicating how much in charge they were in the situation described in the narrative (1 = *not at all*, 9 = *very much*). In the 'second' study, participants read a scenario in which a friend offers to post a job application on behalf of the participant but does not. As a result, the application fails to reach the potential employer in time, and the participant misses an opportunity to interview for the job (adapted from Berry, Worthington, Parrott, O'Connor, & Wade, 2001). Participants indicated their likely responses on the five-item revenge subscale (e.g., *I would get even*) of the Transgression-Related Interpersonal Motivations (TRIM) inventory (McCullough et al., 1998) (1 = *strongly disagree*, 5 = *strongly agree*;  $\alpha = .81$ ). They then provided information on their personal background, including an eight-item measure of generalised sense of power in their everyday relationships (Anderson, John, & Keltner, 2012) (e.g., *In my relationship with others I can get people to listen to what I say*; 1 = *strongly disagree*, 7 = *strongly agree*;  $\alpha = .78$ ).<sup>1</sup>

## Results and Discussion

Following standard protocols (e.g., Cohen, Cohen, West, & Aiken, 2003), all data were inspected for violations of assumptions and outliers. The initial pre-screening revealed one



multivariate outlier ( $\chi^2(3, N=56) = 13.81, p = .003$ ), which was removed from subsequent analyses.<sup>2</sup>

*Manipulation Check.* After centering the chronic power score, we regressed the manipulation check ('How much in charge were you in the situation you described?') on the measure of chronic power, a dummy variable reflecting the experimental conditions (0 = low power; 1 = high power), as well as the interaction between the two variables (see Cohen et al., 2003). The analysis revealed the predicted main effect of the experimental power manipulation ( $\beta = .77, t(51) = 8.68, p < .001, f^2 = 1.48$ ), and no other effects approached significance,  $t_s < 1$ . These results indicate that the experimental manipulation of power was successful, and further suggest that individuals high and low in chronic power were equally affected.

*Responses to Transgression.* We entered the centered chronic power score, a dummy variable reflecting the experimental conditions, as well as the interaction between the two variables, as predictors of revenge in multiple regression. The analysis yielded the predicted interaction between chronic and incidental power,  $\beta = -.47, t(51) = -2.64, p = .011, f^2 = .14$  (see Figure 1). An examination of simple slopes confirmed that in the high incidental power condition chronic power was inversely related to revenge ( $\beta = -.37, t(51) = -2.05, p = .046, f^2 = .08$ ). As expected, following the priming of high power, self-perceived chronically powerless participants sought more revenge than self-perceived chronically powerful participants. In contrast, when primed with low power, chronic power was unrelated to revenge ( $\beta = .31, t(51) = 1.63, p = .109, f^2 = .05$ ). Turning back to the omnibus test, neither of the main effects were significant,  $t_s < 1$ . The interaction between chronic and incidental power accounted for 11.9% of the variance in revenge,  $F(1, 51) = 6.92, p = .011$ . The variance explained by the main effects (1.2%) was not significant,  $F < 1$ .

The results of Study 1 support the hypothesis that the chronically powerless are more inclined to seek vengeance for a transgression than the chronically powerful, but only when exposed to high incidental power. Notably, these effects emerged when power was extraneous to the victim-perpetrator relationship.

## Study 2

In Study 2 we employed a different operationalization of chronic power: Trait dominance, the tendency for individuals to behave assertively, forcefully, and with self-assuredness across time and context (Anderson & Berdahl, 2002). Trait dominance predicts stable power differences in human and primate hierarchies (e.g., Ellyson & Dovidio, 1985), and thus frequently serves as a proxy for chronic power (e.g., Anderson & Berdahl, 2002; Goodwin, Operario, & Fiske, 1998; Weick & Guinote, 2008). We also employed a larger number of scenarios (i.e., four in total), tapping into various forms of transgressions, and varying the relationship between the transgressor and the victim. Finally, we substituted the low incidental power priming with a neutral baseline condition to further suggest that it is exposure to high power that fosters differential responses amongst more and less dominant individuals.

## Method

*Participants and Design.* Forty-two UK university students (27 females; 15 males) participated for course credits, randomly assigned to one of two incidental power conditions (high vs. neutral).

*Procedure and Materials.* The procedure and materials were identical to Study 1 with the following exceptions. Participants in the neutral power condition described their activities during a day in the last week. Following the recall of a past episode, all participants imagined themselves in four different scenarios involving transgressions such as plagiarism, negligence, gossiping, and a drunken violent offence (adapted from Berry et al., 2001). The

transgressors were described as a close friend, an acquaintance, a distant cousin, or a former classmate, depending on the scenario. Participants again indicated their likely responses on the same scales employed in Study 1, this time using a four-item measure of revenge ( $\alpha = .81$ ).<sup>3</sup> Next participants performed a series of unrelated computerised tasks, which lasted for more than half an hour. Last, participants completed a personal background questionnaire, including an eight-adjective measure of trait dominance (Wiggins, Trapnell, & Phillips, 1988) embedded among filler items. Participants rated how accurately the adjectives described them (e.g., ‘firm’, ‘assertive’, ‘domineering’; 1=*extremely inaccurate*, 8=*extremely accurate*;  $\alpha = .78$ ) (see Footnote 1).

## Results and Discussion

Initial data inspection revealed one multivariate outlier ( $\chi^2(3, N=42) = 15.44, p = .002$ ), which was removed from subsequent analyses.

*Manipulation Check.* We repeated the analytic procedure described in Study 1. Participants’ responses to the manipulation check differed reliably between the two experimental conditions ( $\beta = .54, t(57) = 3.85, p < .001, f^2 = .26$ ), and no other significant effects emerged,  $t_s \leq 1.27, p_s \geq .211$ . The manipulation of power was, therefore, successful.

*Responses to Transgressions.* We regressed the revenge composite on the centered dominance scores, a dummy variable reflecting the experimental conditions (0 = neutral; 1 = high power), and the interaction of the two variables. The analysis yielded the predicted interaction between dominance and the experimental power manipulation,  $\beta = -.44, t(37) = -2.17, p = .036, f^2 = .13$  (see Figure 2). Simple slopes showed that dominance was inversely related to revenge in the high power condition ( $\beta = -.43, t(37) = -2.06, p = .047, f^2 = .11$ ). Paralleling the findings obtained in Study 1, individuals with low levels of chronic power sought more revenge than individuals with high levels of chronic power when they were primed with a high power incident. This tendency vanished when they were primed with an

unrelated incident ( $\beta = .25, t < 1.1$ ). The main effects of chronic and incidental power were not significant,  $ts < 1$ . The interaction between chronic and incidental power accounted for 11.3% of the variance in revenge,  $F(1, 37) = 4.72, p = .036$ , while the variance explained by the main effects was negligible (0.1%),  $F < 1$ . These findings replicate and extend Study 1, showing the effects generalize across different contexts and when using a different operationalization of chronic power.

### Study 3

In Study 3 we wished to rule out inadvertent priming effects of the experimental manipulation on the individual difference measures by measuring chronic power first. Furthermore, it is conceivable that in the first two studies the situations recalled by participants were influenced by their levels of chronic power. In Study 3 we circumvented this problem, using a content-free manipulation of power: body posture (see Carney, Cuddy, & Yap, 2010; Huang, Gulinsky, Gruenfeld, & Guillory, 2011; Tiedens & Fragale, 2003).

#### Method

*Participants and Design.* Ninety four UK university students participated for course credits or monetary incentive (~\$10). They were randomly assigned to one of two embodied power conditions (low vs. high). Nine participants who did not maintain the body posture were excluded (final  $N = 85$ ; 50 females, 35 males).

*Procedure and Materials.* Participants were invited to take part in what was described as a series of studies on social perception, cognition, and action. Following several unrelated tasks, participants completed the generalised sense of power scale described in Study 1 ( $\alpha = .88$ ). The scale was embedded among filler items. Participants were then informed that they would perform a short exercise, allegedly as part of a separate project that examines people's bodily experiences. Participants who struck a powerful posture were asked to stand on either side of a box (W/L/H: 22/31/26.5 cm) with their back and heels against a wall, their shoulders

touching the wall, and their head straight and facing forward. Their hands and arms were pointed to the floor, slightly expanded from the body. Participants who struck a powerless posture were asked to sit on a box (W/L/H: 31/22/26.5 cm) with their knees bent and touching one another. They were asked to place their heels against the box, have their arms crossed, and their hands grasping their shoulders. The upper body was leaning forward, resting on the legs. Participants were asked to remain in their respective positions. There was no mention of power or power-related concepts in either condition. The experimenter left the room and returned after two minutes.

All participants were then seated in front of a computer to complete a questionnaire, which, among other unrelated items, contained the same measure of revenge described in Study 2 ( $\alpha = .81$ ). Participants also rated how they experienced the body posture on a series of scales measuring body expansion (1=*close, small, weak*; 7=*open, large, strong*;  $\alpha = .92$ ) and comfort (1=*uncomfortable, difficult, painful*; 7=*comfortable, easy, painless*;  $\alpha = .82$ ). At the end, a funnel debriefing probed participants for suspicion. Participants also indicated whether they had maintained the body posture throughout the two minutes period. None of the participants correctly guessed the hypothesis of the study.

## **Results and Discussion**

Initial data inspection revealed two multivariate outliers ( $\chi^2(3, N=85) \geq 10.94, p \leq .012$ ), which were removed from subsequent analyses.

*Manipulation Check.* We repeated the same data analytic procedure described in the previous studies, separately for the body expansion and comfort indices. The powerful posture was rated higher in expansion than the powerless posture,  $\beta = .69, t(79) = 8.50, p < .001, f^2 = .91$ , but there were no differences in perceived comfort,  $\beta = .06, t < 1$ . No other significant effect emerged,  $t_s \leq 1.09, p_s \geq .279$ . The manipulation of embodied power (via physical expansion) was, therefore, deemed successful.

*Responses to Transgressions.* We regressed revenge on the centered chronic power scores, a dummy variable denoting the experimental conditions (0 = low power; 1 = high power), and the interaction of the two variables. The analysis yielded the predicted interaction between chronic and incidental power,  $\beta = -.36$ ,  $t(79) = -2.21$ ,  $p = .03$ ,  $f^2 = .06$  (see Figure 3). Simple slopes showed that when participants struck a powerful posture chronically powerless participants were more inclined to retaliate than chronically powerful participants ( $\beta = -.32$ ,  $t(79) = -2.11$ ,  $p = .039$ ,  $f^2 = .06$ ). Again, this tendency vanished when participants struck a powerless posture ( $\beta = .18$ ,  $t < 1.2$ ). The main effects of chronic and incidental power were not significant,  $t < 1.1$ . The interaction between chronic and incidental power accounted for 5.8% of the variance in revenge,  $F(1, 79) = 4.89$ ,  $p = .03$ . The variance explained by the main effects (1.9%) was not significant,  $F < 1$ .

These findings replicate and expand the results of the previous studies, showing that the bodily experience of power fosters stronger revenge tendencies amongst the chronically powerless than amongst the chronically powerful. The results are noteworthy because they demonstrate, as far as we know for the first time, that body posture modulates the expression of chronic dispositions.

#### Study 4

While our previous studies support the hypothesis that chronic and incidental manifestations of power interact to affect revenge tendencies, the studies are inconclusive as to whether these tendencies encompass merely the *desire* to retaliate, or actual *intentions* to exact revenge and punish a perpetrator (or indeed both). Our studies employed the Transgression-Related Interpersonal Motivations (TRIM) inventory (McCullough et al., 1998) as a measure of revenge, which in its original formulation does not allow for such a distinction. Yet, separating mere desire from actual intentions is important because the latter is a stronger and more proximate predictor of people's behaviours (e.g., Ajzen & Fishbein,

2005). Applying our theoretical framework outlined above, we expect that the pattern of results observed in our previous studies also holds in the realm of behavioural intentions.

To differentiate the desire to seek revenge from behavioural intentions, the present study drew on conversational inferences that guide participants' answers to survey questions (e.g., Schwarz, Groves, & Schuman, 1998). In particular, people are inclined to differentiate their answers to two consecutive questions when maxims of conversations encourage them to do so (e.g., Hilton, 1995; Strack, Schwarz, & Wänke, 1991). We sought to capitalise on this "given-new contract" (Clark & Aviland, 1977) and asked participants within the same conversational exchange how much they would yearn for revenge and whether they would also take action against the transgressor, thus encouraging participants to differentiate between the two types of responses.

Another aim of the present study was to differentiate the effects of chronic powerlessness from those of perceived incompetence or inefficacy (Fast & Chen, 2009). To accomplish this, people indicated the extent to which they felt they were inefficacious. In a related vein, because lacking power has frequently been linked to negative affect (e.g., Keltner et al., 2003; Price, Sloman, Gardner, Gilbert, & Rohde, 1994), we also included measures of mood to rule out negative affect as an alternative explanation for our findings (see Carlsmith, Wilson, & Gilbert, 2008). The present study again employed an embodied manipulation of incidental power, this time utilising hand gestures (e.g., Fischer, Fischer, English, Ayden, & Frey, 2011).

## **Method**

*Participants and Design.* A sample of 306 students and employees participated voluntarily, and most participants received course credits for participation (82%). The study was conducted online and we only considered responses from participants who completed all parts of the survey. Two-hundred and fifty participants were recruited from a European

university, and fifty-six participants in Australia via social networks. Twelve participants indicated that they did not maintain the hand gesture throughout the study, thus leaving a total sample of 294 participants (228 females and 66 males). Participants were randomly assigned to one of two embodied power conditions (low vs. high).

*Procedure and Materials.* Participants took part in what was described as a study on social perception. After providing basic demographic information, participants filled in the generalised sense of power scale employed in Studies 1 and 3 ( $\alpha = .84$ ) and also indicated whether they considered themselves to be inefficacious (*unauthoritative, meek, forceless*; 1=*extremely inaccurate*; 8=*extremely accurate*;  $\alpha = .73$ ). They also rated their current mood (time 1) on four seven-point scales (-3=*very bad; very sad; very discontent; very tense*; 3=*very good; very happy, very content; very relaxed*;  $\alpha = .90$ ). Moving on to the next part of the survey, participants were told that they were going to read through a number of scenarios, whilst maintaining a gesture with their non-dominant hand. Participants in the high power condition were instructed to make a fist, rolling their fingers inward and keeping their hand tightly clenched together. Participants in the low power condition were told to make an open palm, spreading their hand and extending their fingers firmly to form an even plane with the palm pointing upwards. Clipart images were provided to illustrate the gestures. All participants were reminded of the importance of maintaining the gesture for the next few minutes. Participants then read the transgression scenarios employed in Studies 2 and 3. After each scenario, participants responded to the same measures described in Studies 2 and 3 (1=*definitely would not*; 5=*definitely would*), indicating whether they would *wish* to retaliate ( $\alpha = .79$ ), and whether they would also *take concrete steps* to punish the transgressor ( $\alpha = .82$ ). Participants again rated their current mood (time 2;  $\alpha = .90$ ), how strong and powerful they felt when making the hand gesture (1=*insecure, timid, forceless, shy*; 7=*self-assured, self-confident, forceful, assertive*;  $\alpha = .89$ ), and the level of comfort of the hand gesture



(1=*discomfort, difficulty, painfulness*; 7=*comfort, ease, painlessness*;  $\alpha = .79$ ). Finally, participants described what they thought were the hypotheses that were being tested (none correctly guessed). Participants indicated whether they were still maintaining the hand gesture at various points throughout the study.

## Results and Discussion

The larger and more diverse sample enabled us to also examine differences in age and gender. Both variables impacted participants' revenge tendencies (see below) but did not moderate the effects of power. Consequently, we included gender and age as covariates in the subsequent analysis.

Initial data-screening revealed two univariate outliers ( $>3SD$ ), which we dealt with by assigning the deviant scores the next highest value in the distribution (see Tabachnick & Fidell, 2001). We also identified six multivariate outliers ( $\chi^2(5, N=294) \geq 21.26, p < .001$ ), using standard (parametric) detection tools (see Footnote 2). Given the sample size, the large number of multivariate outliers is worrisome and may indicate the presence of a “swamping” effect (e.g., Barnett & Lewis, 1994). These and other problems (“masking”) can occur when estimates of the multivariate arithmetic mean and the sample covariance matrix become distorted, which is a widely researched issue in statistics (see Rocke & Woodruff, 1996; Rousseeuw & Leroy, 1987). To deal with this problem and to avoid removing all the cases from our sample, we conducted a robust regression analysis using an M-estimator model that is more resistant to outliers than the ordinary least square counterpart (Rousseeuw & Leroy, 1987).<sup>4</sup>

*Manipulation Check.* We repeated the same analysis as in the previous studies. Making a fist made participants feel stronger and more powerful than making an open palm,  $\beta = .63$ ,  $t(288) = 5.61, p < .001, f^2 = .11$ . There was also a main effect of chronic power, suggesting that chronically powerful participants felt stronger and more powerful than chronically

powerless participants, irrespective of the type of gesture they made,  $\beta = .18$ ,  $t(288) = 2.31$ ,  $p = .022$ ,  $f^2 = .02$ . Importantly, hand gesture and chronic power did not interact,  $t < 1$ . Thus, making a fist (vs. an open palm) affected chronically powerful and chronically powerless participants equally. Perhaps unsurprisingly, making a fist induced greater discomfort,  $\beta = -.26$ ,  $t(288) = -2.18$ ,  $p = .031$ ,  $f^2 = .02$ , independent from participants' level of chronic power,  $t_s < 1$ . Taken together, the manipulation of embodied power (i.e., perceived strength and power while making a fist) had its intended effect.

*Responses to Transgressions.* Not surprisingly, desires and intentions for revenge were correlated highly,  $r(292) = .64$ ,  $p < .001$ . However, people did not simply yield to their desires; they were considerably less inclined to take actions to punish a perpetrator than they were wishing for revenge,  $t(293) = 22.86$ ,  $p < .001$ ,  $d = 2.67$ . These results are encouraging and suggest that participants differentiated between desires and behavioural intentions.

We subsequently conducted two separate regression analyses, entering the standardised chronic power scores, a dummy variable reflecting the experimental conditions (0 = low; 1 = high power), and the interaction of both variables as predictors of the desire and behavioural intentions to seek revenge, respectively. We also controlled for differences in age and gender. The results showed that chronic and incidental power interacted to affect participants' desire for vengeance,  $\beta = -.30$ ,  $t(288) = -2.52$ ,  $p = .012$ ,  $f^2 = .02$ , and their intentions to retaliate,  $\beta = -.22$ ,  $t(288) = -1.87$ ,  $p = .062$ ,  $f^2 = .01$ . Simple slopes analyses confirmed that a powerful gesture triggered stronger revenge tendencies in chronically powerless individuals as compared to chronically powerful individuals (*desire*:  $\beta = -.23$ ,  $t(288) = -2.59$ ,  $p = .010$ ,  $f^2 = .02$ ; *intent*:  $\beta = -.20$ ,  $t(288) = -2.17$ ,  $p = .031$ ,  $f^2 = .02$ ). In the absence of incidental power this association disappeared,  $t_s < 1$ . As in our previous studies, neither manifestation of power exerted a main effect on any of the outcome variables,  $t_s < 1$ . There was a main effect of age, indicating that older participants were, overall less vengeful than younger participants

(*desire*:  $\beta = -.29$ ,  $t(288) = -4.74$ ,  $p < .001$ ,  $f^2 = .08$ ; *intent*:  $\beta = -.23$ ,  $t(288) = -3.71$ ,  $p < .001$ ,  $f^2 = .05$ ). Finally, men and women harboured the same desire for vengeance ( $t < 1.1$ ), but men were more inclined to take action against transgressors than were women,  $\beta = .42$ ,  $t(288) = 2.91$ ,  $p < .004$ ,  $f^2 = .03$ .

In a final step, we sought to determine the contributions of perceived inefficacy and affect to our findings. As expected, sense of power was negatively related to perceived inefficacy and positively related to mood, all  $ps \leq .003$  (see Table 1), thus opening up the possibility that these variables might mediate the effects of chronic power. However, further analyses showed that neither perceived inefficacy nor affect covaried with scores on the revenge items, and they also did not interact with incidental power (gesture), all  $ts < 1.1$ . Furthermore, inclusion of perceived inefficacy or affect in the aforementioned analyses did not alter the combined effects of chronic and incidental power (*desire*:  $\beta_s \geq -.31$ ,  $t(288) \geq -2.31$ ,  $p \leq .022$ ,  $f^2 \geq .02$ ; *intent*:  $\beta_s \geq -.24$ ,  $t(288) \geq -1.74$ ,  $p \leq .082$ ,  $f^2 \geq .01$ ). These results indicate that chronic and incidental power affected revenge independently of perceived inefficacy and affect.

Study 4 further underscores the hypothesis that differences in chronic power can explain differences in vengeance amongst people exposed to power. Interestingly, while our previous studies invoked incidental power through an experiential priming (Studies 1 and 2) and a powerful pose (Study 3), the present study demonstrated that merely making a fist—a gesture that signals strength and power—can affect the expression of chronic dispositions. The chronically powerless were more vengeful than the chronically powerful when making a fist. However, no difference was apparent when people made a gesture that did not convey power.

Importantly, Study 4 demonstrated that the here reported differences between chronically powerful and chronically powerless individuals manifest themselves not only in the longing for revenge, but also in people's intentions to exact revenge. With intentions being a

proximate cause of actual behaviours, these findings may contribute to explain variations in overt aggression in powerholders. We also explored the contributions of mood and perceived inefficacy to the present findings, but no support was found for a causal role of these variables. Notably, the same pattern of results that was obtained in the laboratory (Studies 1 to 3) replicated in a much more diverse sample and across different environments and settings.

### **Meta-analysis**

Across studies we focused on the comparison between the chronically powerful and the chronically powerless in different contexts (high vs. low or neutral incidental power). We consistently found that in instances of high incidental power the chronically powerless are more inclined to respond vengefully than the chronically powerful. In the absence of incidental power this discrepancy disappeared. However, we did not compare the effects of high (vs. low or neutral) incidental power separately for the chronically powerful and the chronically powerless. The relevant comparisons were somewhat inconsistent and our research was more strongly guided by the desire to uncover systematic variations in the revenge tendencies of those exposed to (incidental) power. To address this limitation we conducted a meta-analysis to provide a comprehensive overview of our findings, and to uncover patterns that generalise across studies. For the purpose of the meta-analysis, we created a composite of the two dependent measures employed in Study 4 (*desire* and *intent*).

As can be seen in Table 2, across studies chronically powerless individuals responded more negatively when exposed to high as opposed to low or neutral incidental power. A different picture emerged for chronically powerful individuals: Exposure to high as opposed to low or neutral incidental power lowered revenge tendencies. Thus, consistent with predictions, exposure to incidental power affected both the chronically powerful and the chronically powerless to a similar extent, but in contrasting ways.

Another way of looking at these results is that a mismatch between situational circumstances and chronic dispositions triggers greater revenge tendencies. This interpretation has appeal (cf. Josephs et al., 2006) but needs to be treated with caution as the effects of chronic power do not compare across contexts: in the presence of incidental power chronic power exerts a moderate but consistent effect; in the absence of incidental power the effects are small and inconsistent. Thus, although there is evidence for a matching effect, it also appears that inter-individual differences are more pronounced in the presence of incidental power—a pattern that has already been observed in other domains (e.g., Guinote et al., 2002).

### **General Discussion**

Four studies found support for the prediction that people exposed to high incidental power respond more or less vengefully depending on their level of chronic power. In particular, the chronic powerless are more inclined to retaliate than the chronically powerful when in power. No such tendency was observed when participants were exposed to a low power (Studies 1, 3 and 4) or neutral (Study 2) context. These results extend previous work in several ways.

We are the first to examine revenge as a response to transgressions in the context of *both* incidental and chronic power as they relate to interpersonal relationships. This is noteworthy considering the relevance of power and revenge in many real-life contexts. Our findings demonstrate a nontrivial relationship between individual attributes and situational factors as determinants of vengeful responses. We believe this to be of relevance for previous work that has produced somewhat divergent results, finding that some facets of power can increase vengeance (e.g., Kim et al., 1998) while other facets can reduce vengeance (Aquino et al., 2006). Other previous work has often implied but not directly measured individuals' chronic sense of power. For example, self-perceived incompetence (Fast & Chen, 2009), external locus of control (Goodstadt & Hjelle, 1973), negative attributional style (Sagrestano et al.,

1999), low socioeconomic status (Azzam et al., 2007), and self-perceived low parental authority (Bugental et al., 1999) have all been linked to aggressive responses. The present work complements those various streams of enquiry, demonstrating that perceptions of chronic powerlessness can promote aversive responses among powerholders. Conversely, chronic power can have the opposite effect and negate vengeance. We believe this is the case because high situational power enhances an already powerful person's approach orientation (Keltner, Gruenfeld, & Anderson, 2003) and further dampens the likelihood they would perceive transgressions as a threat. It is interesting to note parallels with primate studies (e.g., Raleigh et al., 1984).

Notably, there were no main effects for chronic or incidental power. These results are consistent with theorizing. In the absence of incidental power, neither chronically powerless individuals nor chronically powerful individuals may perceive they have the opportunity or the resources to respond vengefully and therefore refrain from vengeful actions. Incidental power is, in itself, also unlikely to trigger revenge (see Fast & Chen, 2009, for a similar argument in relation to aggression). Instead, it appears that revenge and other acts of aggression are more likely to be enacted by powerholders who are vulnerable to threats relative to self-assured powerholders. This applies not only to people who feel inadequate in certain spheres—for example, role demands (Fast & Chen, 2009), parenting (Bugental et al., 1999), and intimate relationships (Segrestano et al., 1999)—but more generally to individuals who perceive themselves to be devoid of control.

Our research design, in particular the use of hypothetical scenarios and priming manipulations of incidental power, has followed common approaches in the reference literature. It also allowed us to rule out many aspects of the transgression context as potential confounds, while at the same time reducing problems associated with role-demands that beleaguer many manipulations of actual power. Notably, the same pattern of results emerges

regardless of whether incidental power is primed via recall of a personal experience, or simulated via motor representations. What is more, not only individuals' desire for revenge, but also their intentions to retaliate are affected. Taken together, we believe our results provide a firm indication of the relationship between chronic and incidental power and revenge. There is now a need for future research to examine different transgression contexts (e.g., trust games; see Haselhuhn, Schweitzer, & Wood, 2010) and using other measures of revenge to corroborate those findings.

Future research may also examine conditions in which the chronically powerful respond more vengefully than the chronically powerless when primed with low power. This effect was weak at a meta-level and inconsistent across all four studies, suggesting that there may be moderating factors that can trigger greater vengeance in individuals devoid of their chronic power or superiority. Inflated egotism could be one such factor (e.g., Baumeister, Smart, & Boden, 1996).

Our findings illuminate factors that can explain when and why powerholders resort to destructive behaviours. They also add to a burgeoning literature which demonstrates the complexity of power in human relations. Early studies focussed on abuse of power (e.g., Kipnis, 1976). However, more recent research suggests that the extent to which incidental power corrupts is dependent on *who* is using the power. On one hand, as mentioned earlier, when people are motivated towards communal goals, high incidental power encourages prosocial behaviour (e.g., Chen et al., 2001; see also Howard, Gardner, & Thompson, 2007). On the other hand, in the case of our results, when individuals perceive themselves to be chronically powerless, the experience of high incidental power encourages negative, vengeful responding.

From an applied perspective, these findings may also hold relevance for our understanding of the formation and maintenance of social hierarchies. Dominant individuals are more likely

to emerge in high power positions, and this could be linked not only to the competence-signalling cues of dominance (e.g., Anderson & Kilduff, 2009), but also reflect the fact that individuals or communities are, at some level, sensitive to the drawbacks of having non-dominant individuals advance into powerful roles. Once hierarchies have formed, different factors such as, for example, ideological beliefs, institutional discrimination, or social influence can render them remarkably stable (see Magee & Galinsky, 2008; Sidanius & Pratto, 1999, for reviews). The present findings point out potential ramifications of changes to power structures as yet another factor that may contribute to the maintenance of social hierarchies and prevent the chronically powerless from acquiring influential positions.



## References

- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173–221). Mahwah, NJ: Erlbaum.
- Anderson, C., & Berdahl, J. L. (2002). The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology*, *83*, 1362–1377.
- Anderson, C., & Galinsky, A. D. (2006). Power, optimism, and risk-taking. *European Journal of Social Psychology*, *36*, 511-536.
- Anderson, C., John, O. P., & Keltner, D. (2012). The personal sense of power. *Journal of Personality*, *80*, 313-344.
- Anderson, C., & Kilduff, G. J. (2009). Why do dominant personalities attain influence in face-to-face groups? The competence-signaling effects of trait dominance. *Journal of Personality and Social Psychology*, *96*, 491-503.
- Aquino, K., Tripp, T. M., & Bies, R. J. (2006). Getting even or moving on? Power, procedural justice, and types of offense as predictors of revenge, forgiveness, reconciliation, and avoidance in organisations. *Journal of Applied Psychology*, *91*, 653-668.
- Azzam, T. I., Beaulieu, D. A., & Bugental, D. B. (2007). Anxiety and hostility to an “outsider”, as moderated by low perceived power. *Emotion*, *7*, 660-667.
- Bargh, J. A., Raymond, P., Pryor, J. B., & Strack, F. (1995). Attractiveness of the underling: An automatic power --> sex association and its consequences for sexual harassment and aggression. *Journal of Personality and Social Psychology*, *68*, 768–781.
- Barnett, V., & Lewis, T. (1994). *Outliers in statistical data*. John Wiley.
- Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to

violence and aggression: The dark side of high self-esteem. *Psychological Review*, *103*, 5–33.

- Berry, J. W., Worthington, E. L., Jr., Parrot, L., III, O'Connor, L. E., & Wade, N. G. (2001). Dispositional forgiveness: Development and construct validity of the Transgression Narrative Test of Forgiveness (TNTF). *Personality and Social Psychology Bulletin*, *27*, 1277-1290.
- Bono, G., McCullough, M. E., & Root, L. M. (2008). Forgiveness, feeling connected to others, and well-being: Two longitudinal studies. *Personality and Social Psychology Bulletin*, *34*, 182-195.
- Bugental, D. B. (1993). Communication in abusive relationships: Cognitive constructions of interpersonal power. *American Behavioral Scientist*, *36*, 288-308.
- Bugental, D. B., Lewis, J. C., Lin, E., Lyon, J., & Kopeikin, H. (1999). In charge but not in control: The management of teaching relationships by adults with low perceived power. *Developmental Psychology*, *35*, 1367-1378.
- Carlsmith, K. M., Wilson, T. D., & Gilbert, D. T. (2008). The paradoxical consequences of revenge. *Journal of Personality and Social Psychology*, *95*, 1316–1324.
- Carney, D. R., Cuddy, A. J. C., & Yap, A. J. (2010). Power posing: Brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychological Science*, *21*, 1363–1368.
- Chen, S., Lee-Chai, A. Y., & Bargh, J. A. (2001). Relationship orientation as a moderator of the effects of social power. *Journal of Social Psychology*, *80*, 173-187.
- Chen, S., Langner, C. A., & Mendoza-Denton, R. (2009). When dispositional and role power fit: Implications for self-expression and self-other congruence. *Journal of Personality and Social Psychology*, *96*, 710-727.

- Clark, H. H., & Haviland, S. E. (1977). Comprehension and the given-new contract. In R. O. Freedle (Ed.), *Discourse production and comprehension* (pp. 1–40). Norwood: Ablex.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed). Hillsdale: Erlbaum.
- Côté, S., Kraus, M. W., Cheng, B. H., Oveis, C., Van der Löwe, I., Lian, H., & Keltner, D. (2011). Social power facilitates the effect of prosocial orientation on empathic accuracy. *Journal of Personality and Social Psychology, 101*, 217–232.
- DeCelles, K. A., DeRue, D. S., Margolis, J. D., & Ceranic, T. L. (2012). Does power corrupt or enable? When and why power facilitates self-interested behavior. *The Journal of Applied Psychology, 97*, 681–689.
- Ellyson, S. L., & Dovidio, J. F. (1985). *Power, dominance, and nonverbal behavior*. New York: Springer-Verlag.
- Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review, 27*, 31-41.
- Fast, N. J., & Chen, S. (2009). When the boss feels inadequate: Power, incompetence, and aggression. *Psychological Science, 20*, 1406-1413.
- Fischer, J., Fischer, P., English, B., Aydin, N., & Frey, D. (2011). Empower my decisions: The effects of power gestures on confirmatory information processing. *Journal of Experimental Social Psychology, 47*, 1146-1154.
- Fiske, S., & Berdahl, J. (2007). Social Power. In A. W. Kruglanski & E. T Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 678-692). New York: Guilford Press.

- Fiske, S. T., Morling, B., Stevens, L. E. (1996). Controlling self and others: A theory of anxiety, mental control, and social control. *Personality and Social Psychology Bulletin*, 22, 115-123.
- Friedrich, R. J. (1982). In defense of multiplicative terms in multiple regression equations. *American Journal of Political Science*, 26, 797-833.
- Frijda, N. H. (1994). The lex talionis: On vengeance. In S. H. M. van Goozen, N. E. Van de Poll, & J. A. Sergeant (Eds.), *Emotions: Essays on emotion theory* (pp. 263-289). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From power to action. *Journal of Personality and Social Psychology*, 85, 453-466.
- Gollwitzer, M., & Denzler, M. (2009). What makes revenge sweet: Seeing the offender suffer or delivering a message? *Journal of Experimental Social Psychology*, 45, 840-844.
- Goodstadt, B. E., & Hjelle, L. A. (1973). Power to the powerless: Locus of control and the use of power. *Journal of Personality and Social Psychology*, 27, 190-196.
- Goodwin, S. A., Operario, D., & Fiske, S. T. (1998). Situational power and interpersonal dominance facilitate bias and inequality. *Journal of Social Issues*, 54, 677-698.
- Guinote, A., Judd, C. M., & Brauer, M. (2002). Effects of power on perceived and objective group variability: Evidence that more powerful groups are more variable. *Journal of Personality and Social Psychology*, 82, 708-721.
- Guinote, A. (2008). Power and affordances: When the situation has more power over powerful than powerless individuals. *Journal of Personality and Social Psychology*, 95, 237-252.
- Haselhuhn, M. P., Schweitzer, M. E., & Wood, A. M. (2010). How implicit beliefs influence trust recovery. *Psychological Science*, 21, 645-648.

- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Henry, P. J. (2009). Low-status compensation: A theory for understanding the role of status in cultures of honor. *Journal of Personality and Social Psychology*, *97*, 451-466.
- Hilton, D. (1995). The social context of reasoning: Conversational inference and rational judgment. *Psychological Bulletin*, *118*, 248-271.
- Howard, E. S., Gardner, W. L., & Thompson, L. (2007). The role of the self concept and the social context in determining the behaviour of powerholders: Self-construal in intergroup versus dyadic dispute resolution negotiations. *Journal of Personality and Social Psychology*, *93*, 614-631.
- Huang, L., Galinsky, A. D., Gruenfeld, D. H., & Guillory, L. E. (2011). Powerful postures versus powerful roles: Which is the proximate correlate of thought and behaviour? *Psychological Science*, *22*, 95-102.
- Josephs, R. A., Newman, M. L., Brown, R. P., & Beer, J. M. (2003). Status, testosterone, and human intellectual performance: Stereotype threat as status concern. *Psychological Science*, *14*, 158-163.
- Josephs, R. A., Sellers, J. G., Newman, M. L., & Mehta, P. H. (2006). The mismatch effect: When testosterone and status are at odds. *Journal of Personality and Social Psychology*, *90*, 999-1013.
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, *110*, 265-284.
- Kim, S. H., Smith, R. H., & Brigham, N. L. (1998). Effects of power imbalance and the presence of third parties on reactions to harm: Upward and downward revenge. *Personality and Social Psychology Bulletin*, *24*, 353-361.
- Kipnis, D. (1976). *The powerholders*. Chicago: University of Chicago Press.
- Magee, J. C. & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of

- power and status. *Academy of Management Annals*, 2, 351-398.
- Major, B., & O'Brien, L. T. (2004). The Social Psychology of stigma. *Annual Review of Psychology*, 56, 393-421.
- McClelland, G. H. (2000). Nasty, ill-mannered observations can ruin your analysis. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 393–411). Cambridge, England: Cambridge University Press.
- McCullough, M. E. (2008). *Beyond revenge: The evolution of the forgiveness instinct*. San Francisco: Jossey-Bass.
- McCullough, M. E., Rachal, K. C., Sandage, S. J., Worthington, E. L., Wade Brown, S., & Hight, T. L. (1998). Interpersonal forgiving in close relationships: II. Theoretical elaboration and measurement. *Journal of Personality and Social Psychology*, 75, 1586-1603.
- McKee, I. R., & Feather, N. T. (2008). Revenge, retribution, and values: Social attitudes and punitive sentencing. *Social Justice Research*, 21, 138-163.
- Mendoza-Denton, R., Downey, G., Purdie, V. J., Davis, A., & Pietzrak, J. (2002). Sensitivity to status-based rejection: Implications for African American students' college experience. *Journal of Personality and Social Psychology*, 83, 896-918.
- Ng, S. H. (1980). *The social psychology of power*. New York: Academic Press.
- Overbeck, J. R., & Park, B. (2001). When power does not corrupt: Superior individuation processes among powerful perceivers. *Journal of Personality and Social Psychology*, 81, 549-565.
- Oxford Dictionary of English* (3<sup>rd</sup> edition) (2010). Oxford, UK: Oxford University Press.
- Pinker, S. (1997). *How the mind works*. New York: W. W. Norton & Co.
- Pfefferbaum, B., & Wood, P. B. (1994). Self-report study of impulsive and delinquent behavior in college students. *Journal of Adolescent Health*, 15, 295-302.

- Price, J., Sloman, L., Gardner, R., Gilbert, P., & Rohde, P. (1994). The social competition hypothesis of depression. *British Journal of Psychiatry*, *164*, 309–315.
- Raleigh, M. J., McGuire, M. T., Brammer, G. L., & Yuwiler, A. (1984). Social and Environmental Influences on Blood Serotonin Concentrations in Monkeys. *Archives of General Psychiatry*, *41*, 405-410.
- Raven, B., H., & Kruglanski, A. W. (1970). Conflict and power. In P. Swingle (Ed.), *The structure of conflict* (pp. 69-109). New York: Academic Press.
- Rocke, D. M., Woodruff, D. L. (1996). Identification of outliers in multivariate data. *Journal of the American Statistical Association*, *91*, 1047-1061.
- Rousseeuw, P. J., & Leroy, A. M. (1987). *Robust regression and outlier detection*. New York: Wiley.
- Sagrestano, L. M., Heavey, C. L., & Christensen, A. (1999). Perceived power and physical violence in marital conflict. *Social influence and social power: Using theory for understanding social issues* [Special issue]. *Journal of Social Issues*, *55*, 65-79.
- Schwartz, D., Dodge, K. A., & Coie, J. D. (1993). The emergence of chronic peer victimization in boys' play groups. *Child Development*, *64*, 1755-1772.
- Schwarz, N., Groves, R. M., & Schuman, H. (1998). Survey methods. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 143 - 179). New York: Oxford University Press.
- Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. New York: Cambridge University Press.
- Stillwell, A. M., Baumeister, R. F., & Del Priore, R. E. (2008). We're all victims here: Toward a psychology of revenge. *Basic and Applied Social Psychology*, *30*, 253-263.
- Strack, F., Schwarz, N., & Wänke, M. (1991). Semantic and pragmatic aspects of context effects in social and psychological research. *Social Cognition*, *9*, 111–125

- Stuckless, N., & Goranson, R. (1992). The Vengeance Scale: Development of a measure of attitudes toward revenge. *Journal of Social Behavior & Personality, 7*, 25-42.
- Tabachnick, B. G., & Fidell, L. S. (2001). Using multivariate statistics (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Tiedens, L. Z., & Fragale, A. R. (2003). Power moves: Complementarity in dominant and submissive nonverbal Behavior. *Journal of Personality and Social Psychology, 84*, 558–568.
- Weick, M., & Guinote, A. (2008). When subjective experiences matter: Power increases reliance on the ease of retrieval. *Journal of Personality and Social Psychology, 94*, 956-970.
- Wiggins, J. S., Trappnell, P., & Phillips, N. (1988). Psychometric properties and geometric characteristics of the Revised Interpersonal Adjective Scales (IAS-R). *Multivariate Behavioral Research, 23*, 517–530.
- Zhou, X., Vohs, K. D., & Baumeister, R. F. (2009). The symbolic power of money: Reminders of money alter social distress and physical pain. *Psychological Science, 20*, 700-706.



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### Footnotes

1 Measures of chronic power were taken at the end, so as not to sensitize participants about their chronic power levels, and thus providing a more stringent test of our hypothesis. In Study 1, the experimental manipulation of power had a carry-over effect on the measure of chronic power ( $M_s = 5.13$  vs.  $4.57$ ),  $t(53) = 2.64$ ,  $p = .011$ . This association could have weakened the main effects of the two predictor variables. In Study 2, we circumvented this limitation by administering the measure of chronic power after a longer delay and following a series of distraction tasks. Here, the measure of chronic power was left unaffected,  $t(39) = 1.15$ ,  $p = .258$ . In Studies 3 and 4, the measure of chronic power preceded the manipulation of incidental power.

2 Significance values for Mahalanobis distances are reported. We employed a conservative approach whereby cases also had to exceed standard critical values for Cook's distances ( $4/N$ ) or Centered Leverage Values ( $3k/N$ ) in order to qualify as multivariate outliers, thus using a combined criterion of *discrepancy* and *influence*. Multivariate outliers derive from a *combination* of scores that deviate from the remainder of the sample. Consequently, substitutions or transformations prove difficult and the relevant cases are usually deleted (Tabachnick & Fidell, 2001).

3 The measure was shortened for pragmatic reasons. The items were selected based on the results of a factor analysis carried out on participants' Study 1 responses. We omitted the item with the lowest factor loadings ( $\lambda = .58$ ).

4 For consistency and easier comparison, we standardised all continuous variables ( $X_i$  and  $Y$ ) prior to the analysis in order to obtain standardised coefficients (see Friedrich, 1982). Effect sizes are derived from the conversion of  $t$ -values.

Table 1

Zero-order correlations between individual difference measures (Study 4)

	Perceived Inefficacy	Mood (t1)	Mood (t2)
Sense of Power	-.50 <sup>***</sup>	.23 <sup>***</sup>	.18 <sup>**</sup>
Perceived Inefficacy		-.18 <sup>**</sup>	-.14 <sup>*</sup>
Mood (t1)			.63 <sup>***</sup>

*Note.* \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .  $N = 294$  for all analyses.

Table 2

Study-level and meta-level analysis of simple main effects

N	Simple Effects			
	Within low & neutral incidental power: effect of chronic power	Within high incidental power: effect of chronic power	Within low chronic power: effect of incidental power	Within high chronic power: effect of incidental power
	<i>Study 1</i>			
55	$\beta = .31$ $p = .109$ effect size (r) = .31 $t = 1.63$	$\beta = -.37$ $p = .046$ effect size (r) = -.37 $t = -2.05$	$\beta = .51$ $p = .016$ effect size (r) = .33 $t = 2.49$	$\beta = -.24$ $p = .215$ effect size (r) = -.17 $t = -1.26$
	<i>Study 2</i>			
41	$\beta = .25$ $p = .290$ effect size (r) = .25 $t = 1.07$	$\beta = -.43$ $p = .047$ effect size (r) = -.43 $t = -2.06$	$\beta = .34$ $p = .131$ effect size (r) = .25 $t = 1.55$	$\beta = -.36$ $p = .122$ effect size (r) = -.25 $t = -1.58$
	<i>Study 3</i>			
83	$\beta = .18$ $p = .263$ effect size (r) = .18 $t = 1.13$	$\beta = -.32$ $p = .039$ effect size (r) = -.32 $t = -2.11$	$\beta = .13$ $p = .412$ effect size (r) = .09 $t = 0.83$	$\beta = -.36$ $p = .023$ effect size (r) = -.25 $t = -2.21$
	<i>Study 4</i>			
294	$\beta = .04$ $p = .626$ effect size (r) = .03 $t = 0.45$	$\beta = -.21$ $p = .014$ effect size (r) = .14 $t = -2.48$	$\beta = .35$ $p = .029$ effect size (r) = .13 $t = 2.20$	$\beta = -.26$ $p < .001$ effect size (r) = -.25 $t = -4.41$
Meta- Level	$Z_{\text{Fisher}} = .11$ $r = .11$ $p = .018$	$Z_{\text{Fisher}} = -.23$ $r = -.23$ $p < .001$	$Z_{\text{Fisher}} = .16$ $r = .16$ $p < .001$	$Z_{\text{Fisher}} = -.25$ $r = -.25$ $p < .001$

*Note:* Studies 1-3 were conducted in the laboratory and Study 4 was conducted online.

Revenge was assessed based on responses to a single (Study 1) or multiple transgression scenarios (Studies 2-4). Effect sizes are derived from r-to-z transformations and weighted by sample size.

Figure Captions

*Figure 1.* Relationship between revenge and sense of power (top panel) and trait dominance (bottom panel) as a function of incidental power (priming) (Studies 1 and 2). Higher scores indicate greater revenge tendencies.

*Figure 2.* Relationship between revenge and sense of power as a function of incidental power (body posture) (Study 3). Higher scores indicate greater revenge tendencies.

*Figure 3.* Relationship between revenge and sense of power as a function of incidental power (hand gesture) (Study 4). Top panel: higher scores indicate a stronger desire for revenge; bottom panel: higher scores indicate stronger intentions to exact revenge.





