



Perceived transgressor agreeableness decreases cortisol response and increases forgiveness following recent interpersonal transgressions[☆]

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ABSTRACT

Stress associated with interpersonal conflict can adversely impact mental and physical health—especially when it causes activation of the hypothalamic–pituitary–adrenal axis. Among victims of interpersonal transgressions, certain personality characteristics (viz., neuroticism and agreeableness) have been associated in some studies with successful conflict resolution and decreased physiological activity. How victims' perceptions of their transgressors' personalities affect conflict resolution and physiological reactivity, however, has not been examined. Here, we examined the relationships of (a) victims' agreeableness and neuroticism, and (b) victims' perceptions of their transgressors' agreeableness and neuroticism with plasma cortisol responses in women and (in a larger sample of men and women) forgiveness over time. Victims who perceived their transgressors as highly agreeable had (a) lower cortisol responses following a simulated speech to the transgressor, and (b) higher self-reported forgiveness, even after controlling for initial levels of forgiveness. Participants' own agreeableness and neuroticism had negligible associations with cortisol response and forgiveness over time.

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1. Introduction

Interpersonal conflict can cause psychological distress (Bolger et al., 1989; Suls et al., 1998b), and unsuccessful conflict resolution has negative physical health consequences (Witvliet et al., 2001). Certain personality traits apparently can mitigate, or exacerbate, this post-conflict distress (Gunthert et al., 1999; Jensen-Campbell et al., 2003). Most notably, the “Big Five” (John, 1990) or “Five-Factor” (McCrae and Costa, 1987) personality dimension of agreeableness, which measures a generalized positive (vs. negative) orientation toward others (Costa and McCrae, 1985), has been identified as a personality trait that moderates some of the negative interpersonal, psychological, and physiological consequences of interpersonal conflict (Jensen-Campbell and Graziano, 2001; Jensen-Campbell et al., 1996; McCullough and Hoyt, 2002; Meier et al., 2006; Ode et al., 2007). The apparently beneficial effects of agreeableness during conflict negotiation (Jensen-Campbell and Graziano, 2001), and the effects of agreeableness on the regulation of anger and aggression (Meier et al., 2006; Ode et al., 2007), suggest

that in the context of real-life interpersonal conflict, agreeableness may contribute to a reduced HPA-axis response.

However, research involving cortisol reactivity to psychosocial stressors has found mixed evidence for an association between agreeableness and cortisol response, including some evidence for a positive association (Tops et al., 2006; Vickers et al., 1995), some evidence for a negative association (Decker, 2000; Tops et al., 2006), and some evidence for no association at all (Miller et al., 1999; Oswald et al., 2006). Although the link between agreeableness and cortisol secretion appears inconclusive, it is important to note that many studies have involved basal measurements of cortisol (e.g., Decker, 2000) or cortisol reactivity in response to laboratory-based psychosocial stressors that do not involve interpersonal conflict or aggression (e.g., Tops et al., 2006).

Neuroticism—a personality-based tendency to experience negative affect and emotions (Costa and McCrae, 1985; Suls et al., 1998b)—is another personality trait that appears to influence responses to conflict. Following conflict, neurotic people's increased reactivity to stressful events (Suls et al., 1998a) becomes even more problematic: they are more likely to form negative appraisals and to use forms of coping that aggravate conflict, such as reacting with hostility (Gunthert et al., 1999) and less forgiveness (Hoyt et al., 2005; McCullough and Hoyt, 2002). Because personality traits contribute to the ways in which people interpret stressful events (Graziano et al., 1996), and people's psychological interpretations of stressors greatly impact their physiological responses to those stressors (Dickerson and Kemeny, 2004), high levels of

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neuroticism may hinder positive psychophysiological responses to interpersonal conflict specifically.

As is the case for research on the links of agreeableness with cortisol, the results of efforts to elucidate the relationship between cortisol secretion and neuroticism have also yielded mixed results, including some evidence for negative association between neuroticism and cortisol (Miller et al., 1999; Phillips et al., 2005), some evidence for a positive association (Fox et al., 2010; Nater et al., 2010; Portella et al., 2005), and some evidence for no relationship at all (Roy et al., 2001), or gender-specific effects (e.g., Oswald et al., 2006).

1.1. Do victims' perceptions of their transgressors' personalities matter?

In comparison to the amount of previous effort devoted to examining how the personality traits of people who have been the targets of conflict are associated with their interpersonal, psychological, and physiological responses, very little research has examined how the perceived personality traits of their antagonists—that is, the people who are perceived as the transgressors—influence victims' responses. This lacuna seems like an important oversight because a variety of factors related to interpersonal perception influence the resolution of interpersonal conflict (e.g., Exline et al., 2008; Koutsos et al., 2008; Struthers et al., 2008), so victims' perceptions of their transgressors' personalities and the effects of those perceptions on physiological and interpersonal responses to interpersonal transgressions deserve more consideration in their own right.

McCullough (2008) proposed that forgiveness following a transgression is strongly related to the extent to which victims view their transgressors as valuable and non-threatening relationship partners. Agreeableness is a reasonable summary of these characteristics at the level of personality traits (Costa and McCrae, 1995; John, 1990; Luchies et al., 2010). How might a transgressor influence a victim's perception of his or her agreeableness? Following a transgression, apologies, affiliative physical contact, offers of compensation, and self-abasing gestures have been associated with the promotion of reconciliation and forgiveness (for review see McCullough, 2008). Behaviors such as these might make transgressors seem desirable (i.e., valuable and non-threatening) as continuing relationship partners—perceptions that are associated with accelerated forgiveness over time (McCullough et al., 2010). Moreover, in two studies, Tabak et al. (in press) found that perceived transgressor agreeableness mediated the relationship of conciliatory gestures exhibited by the transgressor with forgiveness. These authors speculated that conciliatory gestures facilitate forgiveness via perceived agreeableness because these conciliatory gestures provide information about a transgressor's desirability as a future relationship partner.

Perceived transgressor agreeableness might influence not only subjective psychological processes like forgiveness, but HPA axis activation as well. Psychosocial stress can increase the secretion of cortisol—particularly when those stressors involve appraisals of social threat (Dickerson and Kemeny, 2004). Because agreeable people are typically perceived as trustworthy, generous, and kind (Jensen-Campbell et al., 2003), perhaps they are also less likely to elicit the HPA axis responses that are associated with social threat (Dickerson and Kemeny, 2004) simply because they are perceived as generally less threatening. Indeed, McCullough et al. (2007) found a positive within-persons association of rumination about psychologically painful interpersonal transgressions with salivary cortisol. Among women in particular, the relationship between rumination and cortisol was mediated by fear of the transgressor (i.e., increased social threat; Dickerson and Kemeny, 2004). Based on these findings, along with research demonstrating that women may be more physiologically reactive (as evinced by greater corti-

sol responses) to social rejection than are men (Stroud et al., 2002), it seems likely that among women in particular, perceived transgressor agreeableness not only makes transgressors seem more forgivable, but also, leads to a reduced cortisol response among victims who are asked to think about their transgressors in a laboratory setting.

1.2. The present study

In the present study, we examined the role of victims' perceptions of their transgressors' agreeableness as a predictor of victims' HPA-axis responses to interpersonal transgressions and self-reported forgiveness (which we were able to measure on two occasions, thereby enabling a more rigorous evaluation of possible causal relationships; Finkel, 1995). We predicted that individual differences in victims' perceptions of their transgressors' agreeableness would be negatively associated with the magnitude of cortisol response following a relational stress task conducted approximately one month after the interpersonal transgression. We also hypothesized that perceived transgressor agreeableness would be positively associated with greater longitudinal increases in victims' self-reported forgiveness for their transgressors over time.

2. Method

2.1. Participants

For analyses involving cortisol, participants were 39 female¹ undergraduate psychology students at the University of Miami (mean age = 19.31 years, $SD = 3.45$, range = 17–39 years) who were part of a larger study ($N = 212$) that occurred over the course of several semesters. This subsample included all female participants who had voluntarily consented to blood draws and were also able to attend sessions when we had scheduled a phlebotomist. Chi-squared tests to examine whether the study subsample ($n = 39$) differed from the total sample ($N = 212$) on any of the variables of interest revealed no significant differences between groups. All participants had encountered a significant interpersonal transgression approximately 5 days ($n = 39$, $M = 4.95$; $SD = 3.3$) before enrollment. Participants were not enrolled into the study if the transgression involved: someone whom they did not know, a petty argument that was quickly resolved, a misunderstanding that was easily cleared up, or something the participant did that they regretted. Students who enrolled through their Introduction to Psychology courses received course credit for participation, and all participants were paid between \$60 and \$100 on a *pro rata* basis for completing various aspects of the study. For analyses involving forgiveness, participants comprised a much larger set of participants from the same study ($N = 212$, mean age = 19.32 years, $SD = 2.28$, range = 17–39). In the larger data set, participants had encountered a significant interpersonal transgression approximately 5 days ($N = 212$, $M = 4.58$; $SD = 3.03$) before enrollment.²

2.2. Overview of procedure

Upon enrollment, participants completed several self-report measures (described below). Approximately 25 days after enrollment, they completed a second self-report measure of forgiveness. Several days after completing this second measure of forgiveness, participants attended a laboratory session during which they were asked to prepare and deliver a speech as if they were speaking to the person who had initially harmed them. For the $n = 39$ participants enumerated above, several blood draws were taken before and after the speech to examine individual differences in task-related cortisol secretion.

¹ In addition to the 39 female participants, 9 male participants consented to blood draws during the speech reactivity task. Among male participants there was a non-significant increase in cortisol response and no significant relationships emerged between all variables of interest. Obviously, given the extremely small sample size, we are hesitant to draw any conclusions from these data, so we do not examine the data from men in the present study.

² The reduction in original sample size occurred for the following reasons: Out of the 39 female participants who participated in blood draws, 7 participants did not provide self-reported measures of agreeableness and neuroticism and were consequently not included in analyses. This resulted from the administration of incomplete initial questionnaires. In addition, 7 of the 39 participants did not complete blood draws at time point 3, and 9 participants did not complete blood draws at time point 4. This typically resulted from lack of blood flow.

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