# Using self-esteem instability to disentangle the connection between self-esteem level and perceived aggression

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ABSTRACT

Recent debate has considered the connection between self-esteem and aggression. The present study attempted to clarify this association by examining the possibility that self-esteem instability moderates the association that self-esteem level has with aggression. Perceived aggression was measured in 234 (34 men and 200 women) undergraduate participants. These participants were then evaluated by 1078 friends and family members. Self-esteem instability was found to moderate the association between self-esteem level and aggression such that individuals with stable high self-esteem were viewed as being less aggressive than those with unstable high self-esteem or low self-esteem (regardless of whether their low self-esteem was stable or unstable). These findings are discussed in the context of understanding the connection between self-esteem and aggression.

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## 1. Introduction

Recent debate has focused on the connection that self-esteem has with aggression. A popular view is that low self-esteem may sometimes cause aggression (e.g., Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). Although low self-esteem has been shown to be associated with a variety of externalizing behaviors and delinquency (e.g., Baumeister, Campbell, Krueger, & Vohs, 2003; Trzesniewski et al., 2006), there are actually very few studies that provide direct support for the idea that low self-esteem contributes to aggression per se (see Baumeister, Bushman, & Campbell, 2000 for an extended discussion of this issue). Among the studies that are consistent with the idea that low self-esteem is linked with aggression are a longitudinal field study showing that children with low levels of self-esteem reported getting into a relatively large number of fights and a study showing that college students with low levels of self-esteem reported relatively high levels of trait aggression (Donnellan et al., 2005). Although these studies found support for the connection between low self-esteem and aggression, similar results have failed to emerge from other studies (e.g., Bushman et al., 2009). Taken together, these studies suggest that even though low self-esteem is clearly associated with a range of negative behaviors including various externalizing behaviors and delinquency, the connection between low self-esteem and aggression is, at best, weak and inconsistent.

A rival hypothesis to the idea that low self-esteem causes aggression is that high levels of self-esteem lead to aggressive behavior (e.g., Baumeister, Smart, & Boden, 1996; Baumeister et al., 2000; Bushman & Baumeister, 1998; Bushman et al., 2009). It is important to note that this competing view does not suggest that the possession of high self-esteem is a simple and direct cause of aggression. Rather, the contention is that individuals with high levels of self-esteem are at greater risk for behaving in an aggressive manner if they believe that their feelings of self-worth have been threatened in some way. According to this view, aggressive behavior is considered to be a means by which individuals holding highly favorable – but easily threatened – views of themselves may protect their feelings of self-worth from potential threats. Support for this argument has been found in a number of laboratory studies in which individuals with high levels of self-esteem and/or narcissistic personality features were exposed to various self-esteem threats (e.g., receiving negative feedback on an essay) and responded aggressively to these threats (e.g., blasting a fellow participant with an aversive noise; see Bushman et al., 2009 for a review).

We believe that much of the confusion concerning the link between self-esteem and aggression may be due, at least in part, to researchers focusing on self-esteem level (i.e., whether self-esteem is low or high) without giving adequate attention to other aspects of self-esteem such as its temporal stability (i.e., fluctuations in moment-to-moment feelings of self-worth over time; see Kernis, 2005 for a review). Self-esteem instability is typically operationalized as the magnitude of change in state self-esteem across repeated measurements. The inclusion of self-esteem instability is

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important because high self-esteem has been shown to be a heterogeneous construct consisting of both a stable and unstable form (see Jordan & Zeigler-Hill, 2013 for a review). Stable high self-esteem reflects positive attitudes toward the self that are realistic, well-anchored, and resistant to threat. Individuals with stable high self-esteem are believed to have a solid foundation for their feelings of self-worth that does not require constant validation from others. In contrast, unstable high self-esteem refers to feelings of self-worth that are vulnerable to challenge, require constant validation, and rely upon some degree of self-deception. Individuals with unstable high self-esteem are believed to be preoccupied with protecting and enhancing their vulnerable feelings of self-worth. Much of the previous research concerning self-esteem instability has shown that it – in conjunction with self-esteem level – predicts a variety of important outcomes including defensiveness (Kernis, Lakey, & Heppner, 2008), psychological adjustment (Zeigler-Hill & Wallace, 2012), and interpersonal style (Zeigler-Hill, Clark, & Beckman, 2011). These studies suggest that the self-regard of those with unstable high self-esteem is constantly at risk which leads to heightened reactivity and defensiveness among these individuals.

Previous research has begun to examine the possibility that individuals with unstable high self-esteem will be particularly aggressive. The earliest of these studies found that individuals with unstable high self-esteem reported the highest levels of anger and hostility (Kernis, Grannemann, & Barclay, 1989). Although these results did not directly address aggression, the finding that individuals with unstable high self-esteem reported the highest levels of anger and hostility are certainly consistent with the idea that these individuals may also be highly aggressive. More recent studies have directly examined the connection between unstable high self-esteem and self-reported aggression (Webster, Kirkpatrick, Nezlek, Smith, & Paddock, 2007; Zeigler-Hill & Wallace, 2012). The results of these studies showed that individuals with unstable high self-esteem reported being more aggressive than those with stable high self-esteem. It is important to note that sex sometimes further moderated these results such that women with unstable high self-esteem were found to possess relatively low levels of aggression in two of the three studies reported by Webster et al. (2007) and men with unstable low self-esteem possessed the highest levels of physical aggression in one study reported by Zeigler-Hill and Wallace (2012). These results may shed important light on the connection between self-esteem and aggression because they show that individuals with unstable high self-esteem often report higher levels of aggression than those with stable high self-esteem. However, it is important to note that individuals with low levels of self-esteem often reported levels of aggression that were similar to those reported by individuals with unstable high self-esteem. Taken together, the results of these studies suggest that individuals with stable high self-esteem tend to report being less aggressive than those with either unstable high self-esteem or low levels of self-esteem (regardless of whether their low self-esteem is stable or unstable). This is important because it suggests that the continuing debate concerning whether low self-esteem or high self-esteem is associated with aggression may be persisting because both sides are partially correct. It may be necessary to account for self-esteem instability in order to gain a clearer understanding of the true connection between self-esteem level and aggression.

### 1.1. Overview and predictions

The purpose of the present study was to gain a more nuanced understanding of the connection between self-esteem and aggression by using self-esteem instability to distinguish between individuals with stable high self-esteem and those with unstable high self-esteem. This was accomplished by asking participants to complete a measure of self-esteem level as well as repeated measures of state self-esteem each day for up to seven consecutive days which were used to generate an index of self-esteem instability. Then, participants were asked to recruit up to five friends or family members who were asked to rate the participants in terms of their aggression. Thus, the present study was an attempt to improve our understanding of the connection between self-esteem and aggression by examining whether self-esteem instability moderated the association between self-esteem level and perceived aggression. Utilizing perceiver reports of aggression is an important extension of previous studies that relied on self-reported aggression because it is possible that the low levels of aggression reported by those with secure high self-esteem may have been due, at least in part, to socially desirable response tendencies. At the most basic level, we expected our results to replicate those of previous studies showing that self-esteem level had either no relationship or a relatively weak negative relationship with aggression. More importantly, we expected that any main effect of self-esteem level would be qualified by its interaction with self-esteem instability. Consistent with previous results concerning self-reported aggression (e.g., Zeigler-Hill & Wallace, 2012), we expected that individuals with stable high self-esteem would be perceived by others as being less aggressive than those with unstable high self-esteem or low levels of self-esteem (regardless of whether their low self-esteem was stable or unstable).

## 2. Method

### 2.1. Participants and procedure

Participants were 357 undergraduates at a university in the southern region of the United States enrolled in psychology courses who participated in return for partial fulfillment of a research participation requirement. Participants completed measures of self-esteem level – along with other measures that are not relevant to the present study (e.g., Big Five personality dimensions) – via a secure website. Following the completion of those questionnaires, participants were offered additional research credit for completing a measure of state self-esteem via the internet at approximately 10 pm for up to seven consecutive days. Of the 357 participants who completed the initial measures, 280 participants completed the daily measures for three or more days. The decision to only include participants in the final analyses who contributed data for 3 or more days was due to the fact that three data points are necessary to estimate self-esteem instability using the variability of these daily measures of state self-esteem (e.g., Zeigler-Hill & Showers, 2007). These 280 participants were offered additional research credit for recruiting up to five friends or family members (i.e., perceivers) to complete questionnaires concerning the perceived aggression of the participant (i.e., the target) – along with other evaluations of the target that are not relevant to the present study (e.g., personality features) – via the internet. In order to assess how targets with stable and unstable forms of self-esteem were viewed by others, it was necessary to establish some minimum number of perceivers for each target to be included in the final analyses. As a result, the final analyses only included targets who recruited three or more perceivers (see Malkin, Zeigler-Hill, Barry, & Southard, 2013 for a similar strategy). Of these 280 participants, 234 participants (34 men and 200 women) recruited three or more perceivers to participate in the study. Our final sample included 1078 perceivers (an average of 4.61 perceivers for each participant). The mean age of the targets was 20.88 years (SD = 4.99) and their racial/ethnic composition was 62% White, 33% Black, 2% Hispanic, and 3% Other. The final participants contributed 1280 daily reports of state self-esteem (i.e., an average of 5.47 reports for each participant).

## 2.2. Measures completed by the targets

### 2.2.1. Self-esteem level

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a 10-item measure of global self-esteem (e.g., "On the whole, I am satisfied with myself"). Participants were instructed to complete the instrument according to how they generally feel about themselves. Responses were made on scales ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency of this measure for the present study was $\alpha = .91$.

### 2.2.2. Self-esteem instability

The method for measuring self-esteem instability was adapted from the procedure developed by Kernis (2005). Participants completed a modified version of the Rosenberg Self-Esteem Scale via the internet at the end of each day for 7 consecutive days. This instrument was modified to capture state self-esteem by asking participants to provide the response that best reflected how they felt at that particular moment rather than how they generally felt about themselves. Responses to these items were made on scales ranging from 1 (strongly disagree) to 10 (strongly agree). The vast majority of past studies concerning self-esteem instability have used the within-subject standard deviation across the repeated assessments of state self-esteem as the index of self-esteem instability with higher standard deviations indicating higher self-esteem instability (see Kernis, 2005 for a review). However, recent studies have raised concerns about using the within-subject standard deviation as an indicator of intraindividual variability (Baird, Le, & Lucas, 2006). To address this concern, we used the *corrected standard deviation* suggested by Baird et al. (2006) as the index of self-esteem instability for the present study. This involved predicting the within-subject standard deviation of state self-esteem from the linear and quadratic effects of the average state self-esteem score for each participant and saving the residual as an indicator of self-esteem instability that is not confounded with mean-level information.[1]

## 2.3. Measures completed by the perceivers

### 2.3.1. Perceived aggression

A modified version of the Forms and Functions of Aggression Scale (Little, Henrich, Jones, & Hawley, 2003) was used to capture the extent to which the perceivers viewed the targets as aggressive. This measure is based on the idea that aggressive behavior can be understood as the combination of the function of aggressive behavior (i.e., pure, reactive, or instrumental) and the behavioral form of aggression (i.e., overt or relational). This two-dimensional model of aggression results in six subscales: pure overt aggression (3 items; e.g., "The target is the kind of person who often fights with others"), reactive overt aggression (3 items; e.g., "When the target is hurt by someone, he/she often fights back"), instrumental overt aggression (3 items; e.g., "The target often starts fights to get what he/she wants"), pure relational aggression (3 items; e.g., "The

target is the kind of person who tells his/her friends to stop liking someone"), reactive relational aggression (3 items; e.g., "If others upset or hurt the target, he/she often tells his/her friends to stop liking them"), and instrumental relational aggression (3 items; e.g., "The target often tells his/her friends to stop liking someone to get what he/she wants"). Our modifications to this instrument included (1) reducing the number of items from 36 to 18 by selecting the three best performing items from each subscale and (2) instructing perceivers to rate the targets rather than themselves. Perceivers were asked to rate their level of agreement with statements concerning their view of the target using scales ranging from 1 (not at all) to 4 (completely true). The aggression subscales were all highly correlated with each other in the present study ($rs > .60$, $ps < .001$) so they were combined into an overall composite score for perceived aggression. The internal consistency of this composite measure of perceived aggression was .97.

## 3. Results

The means, standard deviations, and intercorrelations for all variables are presented in Table 1. These correlations revealed that self-esteem level was not associated with self-esteem instability even though previous studies have consistently found them to have a modest negative association (e.g., Zeigler-Hill & Wallace, 2012). The reason for this inconsistency is that we used the corrected standard deviation as our indicator of self-esteem instability which removes the influence of the average level of state self-esteem instead of the simple within-subject standard deviation which has been used in most previous studies concerning self-esteem instability. Self-esteem level had a negative association with perceived aggression and self-esteem instability had a positive association with perceived aggression.

### 3.1. The associations that self-esteem level and self-esteem instability had with perceived aggression

The goal of the present analysis was to determine whether self-reported self-esteem level and self-esteem instability were associated with perceived aggression. The data from the present study comprised a multilevel data structure because observations at one level of analysis were nested within another level of analysis (i.e., perceiver ratings were nested within targets). More specifically, this was a one-with-many design (Marcus, Kashy, & Baldwin, 2009) in which each target was evaluated by multiple perceivers. A multilevel model using the program HLM (Bryk, Raudenbush, & Congdon, 1998) was employed to analyze these data due to this hierarchical structure. This approach is necessary to account for the violation of the independence assumption that occurs when using multiple perceivers for each target. The particular type of two-level model that was used in the present study is referred to as a means as outcomes analysis (Bryk & Raudenbush, 1992). For this analysis, we predicted the perceived aggression of targets

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[1] We replicated our analysis using the within-subject standard deviation as the indicator of self-esteem instability and found results that were consistent with those that emerged when we used the corrected standard deviation. In addition, we conducted our analysis using the within-subject standard deviation while controlling for the average level of state self-esteem across the daily assessments. The results of this analysis revealed main effects for self-esteem instability and average state self-esteem but the main effect of self-esteem level did not emerge. It is likely that self-esteem level did not emerge as a main effect because of its strong correlation with average state self-esteem ($r = .63$, $p < .001$). It is important to note that the interaction of self-esteem level and self-esteem instability emerged from this analysis and the pattern was similar to what was observed for the analysis that used the corrected standard deviation. Given the similarity of the results across these different analyses, we only present the results from the analysis that used the corrected standard deviation.

**Table 1**
Intercorrelations and descriptive statistics for self-esteem level, self-esteem instability, and perceived aggression.

|  | 1 | 2 | 3 |
|---|---|---|---|
| 1. Self-esteem level | – |  |  |
| 2. Self-esteem instability | −.04 | – |  |
| 3. Perceived aggression | −.15[*] | .14[*] | – |
| *M* | 4.08 | 0.00 | 1.46 |
| SD | 0.82 | 1.00 | 0.53 |

*Note.* The perceived aggression score is averaged across the perceivers.
[*] $p < .05$.

using self-reported self-esteem level, self-esteem instability, and their interaction. Sex of targets was included in preliminary models but failed to emerge as a main effect or moderator, therefore it was trimmed from the analysis presented below in the interest of parsimony. The results of this multilevel model are presented in Table 2.

The results of this analysis revealed main effects for self-esteem level ($B = -.09$, SE = .04, $t = -2.41$, $p = .02$) and self-esteem instability ($B = .10$, SE = .04, $t = 2.13$, $p = .03$) but these main effects were qualified by their interaction ($B = .07$, SE = .03, $t = 1.99$, $p = .05$). The predicted values for this interaction are presented in Fig. 1. To examine the pattern of this interaction, simple slopes tests for multilevel models were employed (Curran, Bauer, & Willoughby, 2006). These analyses found that the slope of the line representing the association between self-esteem instability and pure overt aggression was significant for those with high self-esteem ($B = .16$, SE = .07, $t = 2.43$, $p = .02$) but not for those with low self-esteem ($B = .03$, SE = .04, $t = 0.70$, $p = .48$). These results show that targets with stable high self-esteem were perceived to be less aggressive than those with unstable high self-esteem or low self-esteem.

## 4. Discussion

The purpose of the present study was to examine whether self-esteem level and self-esteem instability had unique associations with perceived aggression and whether the combination of self-esteem level and self-esteem instability predicted perceived aggression. The interaction of self-esteem level and self-esteem instability emerged which is important because it suggests that the association that self-esteem level has with aggression – at least perceived aggression – is moderated by self-esteem instability.

**Table 2**
Results of multilevel analysis predicting perceived aggression from self-esteem level and self-esteem instability.

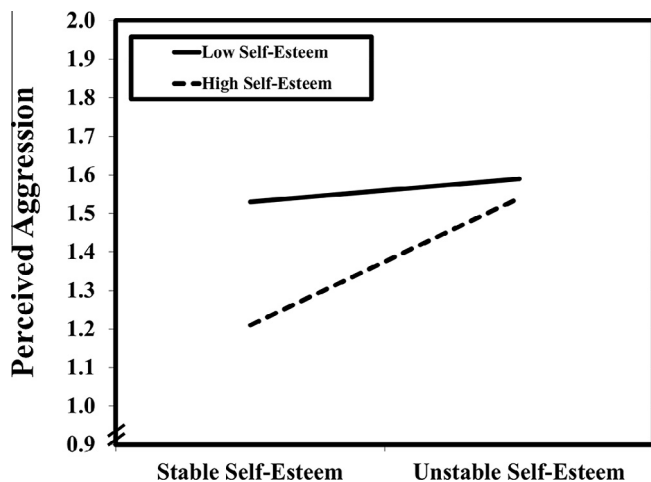|  | Coefficient | SE | t | d |
|---|---|---|---|---|
| Intercept | 1.46 | 0.03 | 43.75[***] |  |
| Self-esteem level (SEL) | −0.09 | 0.04 | −2.41[*] | .32 |
| Self-esteem instability (SEI) | 0.10 | 0.04 | 2.13[*] | .28 |
| SEL × SEI | 0.07 | 0.03 | 1.99[*] | .26 |

[*] $p < .05$.
[***] $p < .001$.



**Fig. 1.** Predicted values for perceived aggression illustrating the interaction of self-esteem level and self-esteem instability at values that are one standard deviation above and below their respective means. The scale of the Y-axis spans one standard deviation above and below the mean for perceived aggression.

More specifically, the pattern of results revealed that individuals with stable high self-esteem were perceived to be less aggressive than individuals with unstable high self-esteem or low self-esteem (regardless of whether their low self-esteem was stable or unstable). These results are consistent with those of previous studies that examined self-reported aggression (e.g., Zeigler-Hill & Wallace, 2012). Taken together, these studies suggest that researchers who are interested in the connection between self-esteem and aggression should account for self-esteem instability because it appears that highly aggressive individuals may have either low self-esteem or unstable high self-esteem.

A precise understanding of the nature of the association between self-esteem and aggression is important for improving our theoretical understanding of both constructs. Furthermore, these findings have practical implications for understanding individuals who frequently display aggressive behavior. For example, the present study suggests that simply having high self-esteem should not be considered a risk factor for aggression because those with high self-esteem are found at both ends of the continuum of aggressive behavior. It was necessary to account for self-esteem instability in order to understand the connection between self-esteem level and aggression because those with stable high self-esteem were perceived to be much less aggressive than other targets including those with unstable high self-esteem. It is possible that individuals with unstable high self-esteem may engage in more aggressive behavior as a defensive process to protect their vulnerable feelings of self-worth from potential threats. This aggressive behavior may also serve as a means by which these individuals assert their social dominance in order to further bolster their feelings of self-worth.

Previous research has shown that low self-esteem is associated with a range of negative outcomes including externalizing behaviors and delinquency (e.g., Trzesniewski et al., 2006). It is possible that the link between low self-esteem and aggression has often failed to emerge because it has been obscured by the fact that unstable high self-esteem is also associated with aggression. When researchers fail to account for self-esteem instability, the connection between low self-esteem and aggression may not clearly emerge. It has been suggested that the association between low self-esteem and aggression may be due to self-protective tendencies displayed by individuals with low self-esteem. For example, individuals with low self-esteem may attempt to protect themselves from feelings of inferiority by blaming others for their personal failures which can result in feelings of hostility and anger that may eventually culminate in aggressive behavior (Tracy & Robins, 2003). This is consistent with the results of the present study which showed that those with low self-esteem were perceived by their friends and family members to be as aggressive as those with unstable high self-esteem.

Our results may help shed some additional light on the debate surrounding the connection between self-esteem and aggression. The two dominant views suggest that aggression is either the result of low self-esteem (e.g., Donnellan et al., 2005) or high self-esteem that is easily threatened (e.g., Bushman and Baumeister, 1998). Although these two possibilities are often treated as being mutually exclusive, our results suggest that both of these perspectives may be at least partially correct. Our results show that the individuals who were perceived as being the most aggressive were those with low self-esteem (which is consistent with Donnellan et al., 2005) and those with unstable high self-esteem (which is consistent with Bushman and Baumeister, 1998). The individuals who were viewed as the least aggressive were those with stable high self-esteem. These results suggest that aggressive behavior may be a means by which individuals who are either holding somewhat unfavorable views of themselves – or are uncertain about the positivity of their self-views – may protect their feelings of self-worth from potential threats.

Although the present study had a number of strengths (e.g., a relatively large sample size, a more nuanced view of self-esteem that included self-esteem instability, the use of reports from both targets and perceivers), it is also important to acknowledge some of the potential limitations of the present study. The first potential limitation is that we were unable to clearly determine whether an individual's self-esteem causes others to develop a particular view of the individual due to the correlational nature of the data in the present studies. Our underlying process model was that low self-esteem or unstable high self-esteem would lead individuals to behave in such a manner that others would perceive them as being aggressive. However, the directionality of this relationship cannot be established using the present data. For example, it is unclear whether self-esteem actually causes individuals to be perceived as more aggressive or if there is another explanation for their association such as other personality features that may play a causal role in the development of both self-esteem and perceived aggression (e.g., narcissism). Further research is needed to gain a clearer understanding of the causal link between self-esteem and perceived aggression. Our second limitation is the low number of men who participated in the study. Only 34 of the final 234 participants were men. It would be helpful if future studies included a larger number of men because it is possible that there are sex differences in the link between self-esteem and perceived aggression which did not emerge in the present study due to the low number of men. Third, the generalizability of the present findings may be limited due to our reliance on undergraduate participants. It is unclear, for example, whether similar patterns would emerge for other samples in which participants would be expected to report much higher levels of aggression than were observed in the present studies (e.g., incarcerated violent offenders). It is also important to note that we have focused on relative levels of perceived aggression (e.g., those with stable high self-esteem were viewed as less aggressive than those with unstable high self-esteem or low self-esteem) rather than absolute levels of aggression.

## 5. Conclusion

The findings of the present study suggest that the combination of self-esteem level and self-esteem instability is associated with perceived aggression. More specifically, individuals with stable high self-esteem were viewed as less aggressive by their friends and family members than were those with unstable high self-esteem or low self-esteem. These results extend our understanding of the link between self-esteem and aggression by showing that self-esteem instability moderates the association that self-esteem level has with perceived aggression.

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