

***The Role of Ego-threat in the Aggressive Behavior of Narcissistic  
Individuals***

*Bachelor Thesis – University of Utrecht*

*Project 3*

*24-06-2016*

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**Abstract**

Highly narcissistic individuals are prone to be more aggressive when their ego is threatened. This quantitative cross-sectional study tested whether ego-threat moderates the link between narcissism and overt aggression. Narcissism, overt aggression, trait self-esteem and ego-threat were measured in a sample of 565 young adolescents (mean age = 12.9) using peer-report and self-report questionnaires. It was expected that narcissism would be associated with more overt aggression only when individuals experience ego-threat. Our regression analyses indicated that being a boy predicted higher levels of overt aggression. Furthermore, trait self-esteem was found to be negatively associated with overt aggression. Even though we did find that narcissism was positively associated with overt aggression, we found no significant effect for the interaction between ego-threat and narcissism in predicting overt aggression. Our findings contradict the view that ego-threat is a moderator of the link between narcissism and overt aggression.

*Keywords:* overt aggression, narcissism, ego-threat, self-esteem

The role of ego-threat in the aggressive behavior of narcissistic individuals

Every day, schoolchildren are confronted with bullying, verbal and physical assaults (Nishina & Juvonen, 2005). Bullying is a form of aggressive behavior in which an individual or group intentionally and repeatedly show behaviors like hitting, social exclusion and name-calling towards a relatively vulnerable person (Fanti & Henrich, 2015; Garandeau, Lee & Salmivalli, 2014; Griffin & Gross, 2004; Salmivalli, 2010). Some aspects of bullying behavior can be categorized as overt aggression. Overt aggression is openly displayed hostile behavior such as punching, kicking and saying mean things to insult others or to put them down. Overt aggression is related to many negative consequences such as injuries, psychological maladjustment and negative social interactions for both perpetrators and victims (see e.g. Archer & Coyne, 2005; Card, Stucky, Sawalani, & Little, 2008). With regard to gender differences, it is commonly found that boys show more overt aggressive behavior than girls (Bandura, 1978; Fossati, Borroni, Eisenberg, & Maffei, 2010; Konrath, Bushman, & Campbell, 2006; Prinstein, Boergers, & Vernberg, 2001).

Predicting aggression has proven to be difficult. There are numerous psychological factors that have been found, or are thought to predict aggression. One of these factors is self-esteem. There is to this date, however, no conclusive evidence on how self-esteem is linked to aggression. Conventional beliefs were that aggression is correlated with low self-esteem, meaning that a high self-esteem would reduce rates of aggression (Ringwalt, Graham, Paschall, Flewelling & Browne, 1996). Over the last decade this view has changed due to the fact that studies regarding this subject suggest the opposite. Aggressive people do not necessarily have low self-esteem, but tend to be narcissistic (see e.g. Baumeister, Smart, & Boden, 1996; Bushman & Baumeister, 1998). Research found that threats to the high self-esteem that is generally found in narcissists might moderate the association between narcissism and aggression (Baumeister et al., 1996; Donnelan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Esposito, Kobak, & Little, 2005; Griffin & Gross, 2004). Therefore, an important question is whether having a narcissistic personality explains aggressive behavior. However, in order to clarify the role of narcissism and self-esteem in explaining overt aggression and bullying behavior, more empirical evidence regarding this association is needed. Therefore, the aim of the current study is to contribute to this ongoing debate by investigating the effect of ego-threat on the link between narcissism and overt aggression. In doing so, new possibilities for intervening against or preventing aggression and bullying might be found.

### **Self-esteem, Narcissism and Aggression**

Self-esteem has been linked to aggression in various ways. The current study

conceptualizes self-esteem as an individual's overall subjective emotional evaluation of his or her own worth. The construct "trait self-esteem" refers to the way people generally feel about themselves (Heatherton & Polivy, 1991) and is relatively stable over time. For many years it was thought that having a low trait self-esteem could explain aggression in youths (see e.g. California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990; Oats & Forrest, 1985). The idea behind this theory was that having a low self-esteem was a predictor of feelings of self-doubt and self-dislike, and that these feelings would cause people to behave aggressively towards other people. Baumeister and colleagues (1996) rejected the view that low self-esteem predicts aggression. Firstly, they did not find any clear evidence of the theory that low self-esteem causes violence. Secondly, the studies suggesting that low self-esteem predicts aggression were based on indirect (e.g. Gondolf, 1985) or unsupportive evidence (e.g. Staub, 1989). Third, and most importantly, Baumeister and colleagues (1996) found in their extensive review of literature on aggression, crime and violence evidence that opposed the view that low self-esteem predicts aggression. Specifically, they found that violence appears to be predicted by a high self-esteem. For instance, the most violent torturers, youths and individuals committing hate-crimes appeared to be the ones with the highest self-esteem (Hamm, 1993; Katz, 1988; Gibson & Haritos-Fatouros, 1986). In accordance with these findings, Bushman and Baumeister (1998) concluded that low self-esteem had no direct and independent effect on aggression. It is interesting however that they also found that high self-esteem had no direct and independent effect on aggression. Narcissistic individuals facing ego-threat, however, were found to be prone to aggressive behavior.

Research on the association between narcissism and self-esteem suggests that the two constructs are partly overlapping, mostly because narcissists and individuals with high self-esteem have a positive opinion of themselves (Campbell, Rudich, & Sedikides 2002). However, narcissism and high self-esteem are not the same. Narcissistic individuals, for instance, appear to be more egoistic, self-centred and more competing in order to maintain their positive self-view (Campbell et al., 2002). Nevertheless there is evidence that narcissism, like high self-esteem, is linked to aggression. In its extreme form, individuals with a narcissistic personality disorder are characterized by a pervasive pattern of grandiosity in fantasy or behavior, a need for admiration and a lack of empathy (American Psychiatric Association, 2013). In the current study, narcissism is conceptualized as a personality trait that reflects a positive, inflated view of the self, and behavior or regulation efforts aimed at self-enhancement such as attention-seeking or taking credit from others. To better understand the link between narcissism and aggression, it is important to

understand that narcissists desperately want to maintain their grandiose self-views. When these grandiose self-views are put in jeopardy by others, narcissists are likely to aggress against the source of the threat (Morf & Rhodewalt, 2001). Not surprisingly, narcissism has been associated with a tendency to perceive ambiguous social cues as threats (Ruiz, Smith, & Rhodewalt, 2001). Furthermore, narcissism has been positively linked to aggressive behavior, including bullying (Ang, Ong, Lim & Lim, 2010; Brown & Zeigler-Hill, 2004; Fanti & Heinrich, 2015; Krizan & Bushman, 2011; Penney & Spector, 2002; Reidy, Foster & Zeichner, 2010; Ruiz et al., 2001; Smalley & Stake, 2010; Thomaes, Bushman, Orobio de Castro, Cohen, & Denissen, 2009).

However, not all evidence suggests that narcissism predicts aggression. For instance, it was found that narcissism was not significantly associated with a trait measure of aggressiveness (Bond, Ruaro, & Wingrove, 2006). It appears there is no conclusive evidence that either self-esteem or narcissism alone predict more aggression in individuals (Baumeister et al., 1996; Konrath et al., 2006). However, research suggests that the association between narcissism and aggression may depend on a third variable.

### **The role of Ego-threat**

Because many non-violent individuals have high self-esteem and narcissistic personality traits, Baumeister and colleagues (1996) introduced the threatened egotism theory which suggests that individuals with unrealistic high trait self-esteem are more likely to show aggression than individuals with low self-esteem. Specifically, the theory states that when individuals are highly narcissistic, their level of aggression may depend on their perception that their ego is being threatened. When their positive self-view is threatened or undermined by others, the individual wishes to maintain this positive self-view and might achieve this through aggressive behavior such as cursing and derogating others (Baumeister et al., 1996; Bushman & Baumeister, 1998; Thomaes et al., 2009; Washburn, McMahon, King, Reinecke, & Silver, 2004).

How do the constructs self-esteem and narcissism fit in the theory of threatened egotism? In this theory, a perceived ego-threat is seen as a moderator of the association between narcissism and aggression in such a way that narcissism is associated with more aggression in the presence of an ego-threat. A temporary fluctuation in one's self-esteem caused by perceptions of changes in a particular setting or temporary events is referred to as "state self-esteem". Changes in one's state self-esteem can be positive or negative (Heatherton & Polivy, 1991). In this study, threats to the ego, or "ego-threat" is operationalised as state self-esteem.

An important question is how can ego-threats moderate the association between narcissism and aggression when narcissists are generally characterized by a high self-esteem? In spite of the aforementioned characteristics, narcissists do not necessarily have a stable high self-esteem. Zeigler-Hill (2006) found that the feelings of positive self-worth in narcissistic individuals who are characterized by a fragile high self-esteem get lost very quickly when experiencing an ego-threat, until they encounter new situations where they have the opportunity to return to their high level of self-worth. This was supported by recent research (Alexander, Humensky, Guerrero, Park, & Loewenstein, 2010; Locke, 2009). Recent research suggests that narcissism in combination with a low state self-esteem predicts overt aggression. Narcissistic individuals were found to be more aggressive than non-narcissists, but only after they had been shamed or received a negative evaluation (Bushman et al., 2009; Thomaes, Bushman, Stegge, & Olthoff, 2008; Bushman & Baumeister, 1998). Furthermore, it was found that narcissistic individuals with a positive but unstable and insecure self-view are more likely to become aggressive after ego-threats in contrast to narcissists with a stable and neutral or negative self-view (Bushman et al., 2009; Stucke & Sporer, 2002). Also, there are studies that contradict the hypothesis that narcissism combined with a low state self-esteem predicts aggression. For instance, Heatherton & Vos (2000) found that narcissists did not show negative emotions and aggressive behavior to the source of the ego-threat.

Based on these findings, it has become clear that there is still no conclusive evidence about the link between narcissism, ego threat and aggression as a result of differences in research outcomes regarding this topic. Furthermore, previous studies regarding the subject have not taken subtypes of aggression in consideration, such as whether overt or covert aggression was exhibited. The current study will investigate the moderating effects of ego-threat on the link between narcissism and overt aggression. We hypothesize that narcissism is associated with more overt aggression only when individuals experience ego-threat.

## **Method**

### **Participants**

The sample consisted of 565 participants (48.5% girls, 51% boys) who provided data on a total of 642 adolescents. Participants were recruited from the first three grades of 27 classrooms in 14 secondary schools in different cities in the Netherlands. Participants belonged to different school types (27.63% lower vocational Education, 23.4% upper general secondary education, 23.7% mixed upper general secondary education and pre-university education, 25.6% pre-university education). The participants ranged in age from 11 to 17 years old (mean age=12.9, SD=0.873). Most participants were born in the

Netherlands (95.8%). The whole sample consisted of 642 adolescents. Of this sample, 89% received parental consent. Among them 90% agreed to participate.

### **Procedure**

The data was collected across four assessments, but this study will examine the data from assessments 1 and 2 only. The parents gave active parental consent prior to the data collection. The participants signed informed consent only once, but participated in the four assessments. However, the consent form did specify that participants could stop participating at any time. The two assessments took place within a time range of three weeks. Prior to administering the questionnaires, the researchers gave a short explanation of the research and what the students were expected to do. This included information about the seating and the duration of the questionnaire administration. When the classroom and class sized allowed it, the participants were asked to sit apart from each other. Furthermore, the researchers emphasized the importance of anonymity. Every participant was assigned to a personal eight-digit number. The eight digits represented the identity of the school, class, researcher and participant in order to ensure anonymity without eliminating the possibility of retrieving this information. Furthermore, during all assessments the questionnaires were matched with the same adolescent using these personal eight-digit numbers. Narcissism, aggression and trait self-esteem were measured at the first assessment. In the second assessment, two items measured peer-reported aggression, two items measured state self-esteem and four positive fillers were measured. For all peer-reported items, the participants had to nominate their classmates. For these items, a list was created that showed the first names of the participants combined with the two-digit numbers taken from the personal eight-digit numbers that represented the students identity. These lists were handed out with the questionnaire and researcher explained that instead of nominating their classmates by their real names, students were requested to write down the code number of the specific classmate as specified on the list. This was done in order to ensure anonymity in both the classroom and this study. At both assessments three researchers and one teacher were present in the classroom in order to keep the class calm and to answer possible questions from the participants.

### **Measures**

**Trait self-esteem.** To measure trait self-esteem, the Dutch version of the Rosenberg self-esteem scale (RSES) was used (Rosenberg, 1979). A recent study indicates that the psychometric properties of the Dutch RSES are very similar to the original version, recommending it to assess self-esteem (Franck, de Raedt, Barbez & Rosseel, 2008). The reliability of this questionnaire is in line with past research that reports alpha reliabilities in a

range from .72 up to .90 (Franck et al., 2008; Pullmann & Allik, 2000; Gray-Little, Williams & Hancock, 1997). The RSES measures trait self-esteem with 10 questions describing self-worth statements. Five statements are attributed as negative (e.g. "At times, I think that I am no good at all") and five as positive (e.g., "On the whole, I am satisfied with myself"). Cronbach's alpha in this sample was .81. All the items were rated on a 4-point scale ranging from strongly disagree (0) to strongly agree (3). For the statistical analyses, the negative statements had to be reverse-coded, so that high values would indicate high trait self-esteem.

**Narcissism.** To measure narcissism, the 10-item Childhood Narcissism Scale (CNS) (Thomaes et al., 2008) was used. This questionnaire assesses grandiose, entitled self-views and adversarial interpersonal attitudes (e.g., "I like to think about how incredibly nice I am" and "Kids like me deserve something extra"). Questions are rated on a 4-point scale (0 = not at all true, 1 = not really true, 2 = sort of true, and 3 = completely true). The CNS is a reliable, one-dimensional measure of stable individual differences in childhood narcissism (Cronbach's alpha .77; Thomaes et al., 2008). Cronbach's alpha in this sample was .80.

**State self-esteem.** In the current study, ego-threat is operationalized as state self-esteem. To measure state self-esteem, one question from the Self-Assessment Manikin (SAM) was used (Bradley & Lang, 1994). The SAM is a non-verbal pictorial assessment consisting of 3 questions measuring pleasure, arousal, and dominance individually. Students were presented a pictorial scale that shows five figures scaled from smallest on the left to the biggest on the right. The SAM pictures range from an excited, wide-eyed figure to a relaxed, sleepy figure for the arousal dimension and from a smiling, happy figure to a frowning, unhappy figure when representing the pleasure dimension. The smallest figure is labelled "very unsatisfied with myself in the past week" and the largest figure is labelled "very satisfied with myself in the past week". On a 9-point scale beneath the figures, students could indicate how they felt about themselves in the past week before the experiment. The 9-point scale ranged from -4 to +4. The score 0 represents the center segment of the scale. The SAM is an effective method for measuring the subjective experience of emotion and can be applied to various populations, including non-English speakers (Bradley, & Lang, 1994).

**Overt aggression.** Overt aggression was measured with two peer-nomination items from a questionnaire that was developed in a pilot study (see Aggression Measure Pilot Study in the Supporting Information available online; p. 1542). One item measured direct verbal aggression ("Who called another student names, or said mean things to another student at school in the past week?"), one item measured physical aggression ("Who



kicked, pushed, or hit another student at school in the past week?"). Students were told to write down the code number of the classmates to whom each item applied. For each student, the number of nominations per item was divided by the number of nominators. Hereafter, a composite variable for overt aggression was created ( $r=.576$ ,  $p<.001$ ). Of this composite variable the proportion was based on the sum scores of the 2 items that measured overt aggression, divided by the amount of children in the specific classroom. The range of possible scores on the composite variable of overt aggression varied from 0 to 1. A score of 0 indicated no nominations were received and a score of 1 was the maximum amount of nominations that was received from others. Cronbach's alpha of aggression in this study was .754.

**Analysis plan.** The current study investigated the moderating effects of ego-threat on the link between narcissism and overt aggression. It was hypothesized that narcissism would be associated with higher aggression only when individuals have low state self-esteem, and not when they have high state self-esteem. All analyses were conducted in SPSS and the analyses were conducted on participants only. To test this study's hypotheses, two models were tested with a linear regression analysis. The first model consisted of the independent variables gender, age, trait self-esteem, narcissism and state self-esteem and the dependent variable overt aggression. The second model consisted of model 1 with the interaction term of narcissism and state self-esteem. Before creating the interaction term, the variables narcissism, state self-esteem, trait self-esteem and age were centered by subtracting the mean from each score.

## Results

### Descriptive analyses

Descriptive statistics for the main variables, namely narcissism, state self-esteem, trait self-esteem, overt aggression and age in years, are shown in Table 1. The descriptive statistics were computed for the participants only. An independent samples  $t$  test was conducted to compare overt aggression between boys and girls. Boys' mean aggression level ( $M=.04$ ,  $SD=.07$ ) was higher than girls' ( $M=.01$ ,  $SD=.02$ ),  $t(560)=6.71$ ,  $p < .001$ , two-tailed,  $d = .59$ .

Table 1

*Means, Standard Deviations, Minimum and Maximum of Main Variables*

	N	M	(SD)	Minimum	Maximum
Narcissism	540	1.17	(0.47)	0.00	2.90

State self-esteem	522	6.77	(1.72)	1.00	9.00
Trait self-esteem	540	2.19	(0.44)	.50	3.00
Overt aggression	565	.03	(.05)	.00	.47
Age (years)	546	12.89	(0.87)	11.00	17.00

### Correlations

To examine the size and direction of the linear association between the main variables of this study, bivariate correlations were calculated. Results of the correlations between overt aggression, narcissism, state self-esteem, trait self-esteem and age are shown in Table 2. This study found one significant correlation at the .05 level (2-tailed) and multiple significant correlations at the .01 level (2-tailed). As shown in Table 2, narcissism is significantly and positively correlated with state self-esteem ( $p < .001$ ), trait self-esteem ( $p < .001$ ) and overt aggression ( $p = .001$ ). Second, trait self-esteem is significantly and negatively correlated with age ( $p = .02$ ). Third, state self-esteem is significantly and positively correlated with trait self-esteem ( $p = <.001$ ). Furthermore, ego-threat, operationalized as state self-esteem, was not found to be correlated with age ( $p = <.001$ ).

Table 2

#### *Correlations of Main Variables*

Variables	1	2	3	4
1.Overt aggression	-	-	-	-
2.Narcissism	<b>.14**</b>	-	-	-
3.State self-esteem	.002	<b>.23**</b>	-	-
4.Trait self-esteem	-.04	<b>.29**</b>	<b>.55**</b>	-
5.Age (years)	.005	.07	-.06	<b>-.10*</b>

Note. \* $p < .05$ . \*\* $p < .01$ .

### Regression analyses

To examine whether narcissism had an effect on overt aggression and if this effect was depended on state self-esteem, a standard multiple regression analysis was conducted. This analyses also examined the proportion of variance in overt aggression explained by the

independent variables. In a first model (Model 1) this study tested the main effects on overt aggression. Model 1 explained 10% of the variance in overt aggression,  $R^2 = .11$ , adjusted  $R^2 = .10$ ,  $F(5, 493) = 12.07$ ,  $p < .001$ . Model 1 showed that narcissism had a statistically significant positive effect on overt aggression ( $p = .004$ ), and a statistically significant negative effect on trait self-esteem ( $p = .018$ ) and gender ( $p < .001$ ).

In a second model (Model 2) the 2-way interaction variable between narcissism and state self-esteem was entered in the standard multiple regression analyses. Narcissism, state self-esteem, trait self-esteem and age were centered to reduce multicollinearity (Bowerman & O'Connell, 1990). Model 2 explained 10% of the variance in overt aggression,  $R^2 = .11$ , adjusted  $R^2 = .10$ ,  $F(6, 492) = 10.06$ ,  $p < .001$ . Table 3 contains the results of the first and second model. No significant effect was found for the interaction between state self-esteem and narcissism ( $p = .719$ ). Model 2 showed narcissism to have a statistically significant positive effect on overt aggression ( $p = .004$ ). It further showed that trait self-esteem had a statistically significant negative effect on overt aggression ( $p = .017$ ). Lastly gender had a statistically significant effect on overt aggression ( $p < .001$ ). Being a boy predicts higher values of peer-reported overt aggression. Higher scores on trait self-esteem tend to predict lower values of peer-reported overt aggression. On the contrary, higher scores in narcissism predict higher scores on peer-reported overt aggression.

Table 3

*Unstandardized (B) and Standardized ( $\beta$ ) Regression Coefficients and Standard Errors for Each Predictor in a Regression Model Predicting Overt Aggression*

	Model 1			Model 2		
	B		$\beta$	B		$\beta$
Constant	.04	(.00)	-	.04	(.00)	-
Narcissism	.02	(.01)	<b>.13**</b>	.02	(.01)	<b>.13**</b>
State self-esteem	-.00	(.00)	-.05	-.00	(.00)	-.05
Trait self-esteem	-.02	(.01)	<b>-.12*</b>	-.02	(.01)	<b>-.13*</b>
Age	-.00	(.00)	-.04	-.00	(.00)	-.04
Gender	-.03	(.01)	<b>-.30**</b>	-.03	(.01)	<b>-.30**</b>

*Notes.* 1. B=unstandardized regression,  $\beta$ =standardized regression  
2. Standard errors in parentheses.  
3.\* $p < .05$ , \*\* $p < .01$ .  
3. Gender is a binary variable, coded 0=male 1=female.

The aim of this study was to examine the effect of ego-threat on overt aggression in narcissistic individuals. It was hypothesized that narcissism would be associated with more overt aggression only when individuals experience ego-threat. However, we did not find any support for our hypothesis. We found that narcissism was positively associated with both state- and trait self-esteem and overt aggression. However, we did not find ego-threat to moderate the association between narcissism and overt aggression. The finding that narcissism is associated with both state- and trait self-esteem is in line with studies suggesting that state self-esteem and narcissism are partly overlapping, for instance because narcissists and individuals with high self-esteem have a positive opinion of the self (see e.g. Campbell, Rudich, & Sedikides 2001). Furthermore, the finding that narcissism had a significant positive effect on overt aggression is in line with previous research that found narcissism to be predictive of aggressive behavior (see e.g. Jones & Paulhus, 2010; Barry et al., 2007).

The finding that ego-threat does not moderate the association between narcissism and overt aggression, however, is not consistent with the majority of the previous research, which found the opposite (Baumeister et al., 1996; Donnelan et al., 2005; Esposito et al., 2005; Griffin & Gross, 2004). Furthermore, this finding partly contradicts the theory of threatened egotism which states that highly narcissistic individuals' level of aggression may depend on their perception that their ego is being threatened (Baumeister et al., 1996; Bushman & Baumeister, 1998; Thomaes et al., 2009; Washburn et al., 2004). More specifically, our findings did suggest, in line with the theory of threatened egotism, that narcissistic individuals tend to be more aggressive and have a higher trait- and state self-esteem compared to non-narcissistic individuals. However, narcissists do not appear to use overt aggression in order to maintain their positive self-view when experiencing ego-threat. In fact, narcissists appeared to show more overtly aggressive behavior regardless of their level of state self-esteem. This finding is in line with various studies (Ang et al., 2010; Brown & Zeigler-Hill, 2004; Fanti & Heinrich, 2015; Krizan & Bushman, 2011; Penney &

Spector, 2002; Reidy et al., 2010; Ruiz et al., 2001; Smalley & Stake, 2010; Thomaes et al., 2009).

One possible explanation for the finding that ego-threat is not a moderating variable of the link between narcissism and overt aggression might be that ego threat influences covert aggression and not overt aggression, while this study only considered overt aggression. To our knowledge, no data has been found on the effects of low self-esteem on the link between narcissism and covert aggression. Thus, because there is no evidence that contradicts this suggestion, it is possible that ego-threat moderates the link between covert aggression and narcissism. A second explanation for this finding could be found in the diversity of the study's sample. 14 schools and 27 classrooms with different educational levels participated in this study. Within these educational levels, different peer group and classroom dynamics are present along with different values and looks on aggression (Espelage, Wasserman, Fleisher, 2007; Graham, Bellmore & Mize, 2006). A recent study documented that children and adolescents evaluate responses to group norms of all types of aggression in a different way (Mulvey & Killen, 2016). Therefore, it could be that different group dynamics and values resulted in different evaluations of the meaning of (potentially) aggressive behavior, such as pushing and kicking. However, within this study, no differences were examined between educational levels of the participants. A last possible explanation for our findings might be that this study operationalized ego-threat as state self-esteem, measured with one question, namely 'How satisfied were you with yourself in the past week?'. Past studies that did find a significant interaction effect of narcissism with ego-threat on aggression, measured aggression following negative feedback or insult (i.e., an ego threat) (Barry et al., 2006; Bushman & Baumeister, 1998; Bushman et al., 2009; Jones & Paulhus, 2010; Twenge & Campbell, 2003; Vaillancourt, 2013). Instead of measuring aggression directly, this study measured aggression with peer-reported questionnaires based on the participants' memories of past events involving aggression.

Despite the study's large similar sample size, which makes it less likely that the outcome of the results was influenced by coincidental factors of the participants, several limitations present in this study could have influenced the outcomes. A first limitation is that narcissism was measured by self-report questionnaires. Participants could have given socially desirable answers, which could have affected the reliability of these measures. It has been found that younger participants are more vulnerable to social desirability than older participants (Crandall, Crandall & Katkovsky, 1965). In future research it is suggested to obtain data through the use of experiments and observations. Another limitation of this study is the limited amount of questions that were used to measure state self-esteem and

overt aggression. Both variables were measured with no more than two questions. Apart from that, overt aggression values were obtained by peer reports. This means that overt aggression was based on the thoughts of students about the behavior of others. This could have negatively influenced the outcome, because the students might not know the aggressive behavior of all others, but only the ones they hang out with or accidentally saw. For example, a student that is very aggressive could have got a lower score on overt aggression because he or she had few nominations on the peer reported questions because others did not see him or her participate in aggressive behavior. Recall bias is also something to take into account when interpreting the outcomes. The questions on overt aggression asked to nominate students who kicked or pushed others in the past week. Several students did not remember these actions resulting in not nominating anyone. This also could have negatively influenced the reliability of our results. Along with this, the question was measured at different moments within the different classrooms. Some students filled in this question after finishing a test and some just before or after the weekend. Although the sample size was large ( $N=565$ ), it cannot be ruled out that these situational events did influence the results (Coté et al, 2006; Tremblay, 2000).

Furthermore, no conclusions can be made about the causation of overt aggression due to the cross-sectional design of this study. Longitudinal data is needed to shine light on the causality within the association of narcissism and aggression. This study also suggest to use a different method to measure aggression to lower the recall bias. In combination with peer-reported questions, this would also give more power to the outcomes when an aggressive student is also nominated as being aggressive.

The present study contributes to the literature in several ways. To our knowledge this study is one of the few recent studies examining the interaction between narcissism and state self-esteem. Furthermore, our study measured peer-reported overt aggression instead of self-reported aggression. This peer-reported measure was conducted in a large sample of participants which makes our data reliable and good for making generalizations. Furthermore, the findings in this study contribute to past research on student aggression related to gender, trait self-esteem and narcissism.

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