# Laboratory aggression and personality traits: A meta-analytic review

Courtland S. Hyatt

Amos Zeichner

Joshua D. Miller

University of Georgia

Note: as of 2/6/2019, this manuscript is currently in press at *Psychology of Violence.*

Abstract

**Objective:** In the current meta-analysis, we conducted a quantitative review of the relations between laboratory aggression and trait-based personality constructs. Specifically, we investigated the relations between laboratory aggression and traits from the predominant model of general personality (Big Five/Five Factor Model [FFM]), as well as pathological personality constructs including psychopathy, narcissism, impulsivity, and sadism. **Methods:** We used multiple manuscript retrieval strategies, including searches of PsycINFO, reference review, and emailing relevant society listservs. Random-effects models were used to estimate the population mean Pearson's *r* between the personality variables and laboratory aggression. **Results:** Our search yielded 54 usable studies containing 123 effect sizes. Random-effects models suggest that psychopathy, narcissism, sadism, and low FFM Agreeableness are significant predictors of laboratory aggression with small to moderate effect sizes. Impulsivity and FFM Openness also showed relations that did not overlap with zero, though they were smaller in magnitude. **Conclusions:** Traits related to aggression outside of the laboratory also appear to be related to aggression in the laboratory. Suggestions are made for future research in this area, including an emphasis on methodological rigor.

Keywords: laboratory aggression, personality, meta-analysis, five-factor model, narcissism

# Laboratory aggression and personality traits: A meta-analytic review

Though aggression can be conceived as a latent trait (i.e., aggressiveness), the term aggression is most typically used to denote an action (i.e., behavior) directed toward another. Based largely on work done by Buss (1961) and Taylor (1967), laboratory aggression paradigms have been developed in order to capture aggression as it manifests (as opposed to reports of such behavior) while controlling for important confounds that can occur in the "real world" (e.g., differences in provocation; differences in types of aggression received or inflicted). Although these paradigms have been used to examine the influence of situational variables (e.g., negative feedback; Bushman & Baumeister, 1998), they have also been used to investigate which personality traits – individual differences in patterns of cognition, affect and behavior – and pathological personality constructs (e.g., psychopathy, narcissism) are related to aggression.

Despite decades of research on the relations between personality traits and aggression, there have been almost no formal quantifications of these effects. The notable exception is an important meta-analysis conducted by Bettencourt, Talley, Benjamin, and Valentine (2006), in which the authors investigated the personality constructs related to behavioral aggression in provoking and neutral conditions. The dependent variables included scores from established laboratory paradigms (e.g., competitive reaction time task), as well as other behavioral paradigms designed for particular studies (e.g., aggressive responding in a video game). The results suggest that trait aggressiveness and trait irritability were related to aggression in both provoking and neutral conditions, while trait anger, Type A personality, dissipation-rumination, emotional susceptibility, narcissism, and impulsivity were related to aggression in provoking circumstances only. To organize and interpret these results, Bettencourt et al. (2006) evoked perhaps the most common general structure trait of personality, the Big Five/Five-Factor Model

(FFM[1]; Costa & McCrae, 1992; John, Naumann, & Soto, 2008). They posited that the traits aggressiveness and irritability may be more closely aligned with FFM domain Agreeableness and linked to "cold-blooded" forms of aggression (i.e., not in direct response to provocation); alternately, the traits linked to aggression in provoking circumstances only may be more closely tied to FFM domain Neuroticism and "hot-blooded" forms of aggression (Bettencourt et al., 2006). However, the authors note that this was a theoretical rather than empirical organization of the trait correlates of laboratory aggression, as none of the studies included in their 2006 meta-analysis directly measured FFM traits.

Since this meta-analysis was published, an increase in publications on the relations between structural models of personality such as the FFM and laboratory aggression now allows this theoretical framework to be tested in an explicit manner. Concurrently, there has been an increase in studies examining the relations between pathological personality constructs (e.g., psychopathy, narcissism) and laboratory aggression. This is consistent with the contemporary shift in the personality disorder literature to examine personality disorder constructs as compilations of more fundamental basic traits (e.g., Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger & Trull, 2007). Thus, in the current manuscript, after briefly reviewing the literature linking personality and aggression, we investigate the extent to which basic traits and specific pathological personality constructs like psychopathy are related to laboratory aggression.

## Personality and Aggression

**Five factor model.** Although many prominent historical theories of aggression emphasize the importance of situation (e.g., social learning theory; Bandura, 1973), research on

[1]Hereafter collectively referred to as FFM, considering the theoretical and empirical overlap between the Big Five and Five Factor Model.

individual difference variables like personality traits has also made significant contributions to the study of aggressive behavior. Multiple meta-analyses have linked low levels of Big Five/FFM Agreeableness and Conscientiousness to aggression and antisocial behavior more broadly (Jones, Miller, & Lynam, 2011; Miller & Lynam, 2001; Vize, Miller, & Lynam, 2018). At the more granular level, the facets of straightforwardness, compliance, and altruism from Agreeableness and deliberation from Conscientiousness were among the strongest correlates. These relations were relatively consistent across population (e.g., community vs. prison), measure, and sample characteristics (e.g., gender). These same traits have also been linked with other antisocial behaviors such as substance use (Kotov, Gamez, Schmidt, & Watson, 2010), gambling (e.g., Bagby et al., 2007), and risky sexual behavior (Hoyle, Fejfar, & Miller, 2000) that tend to covary to form a general externalizing construct that can be found in nearly all quantitative models of psychopathology (e.g., Kotov et al., 2017). In sum, low FFM Agreeableness and low Conscientiousness are related to a range of externalizing behaviors, including multiple indices of aggression.

**Pathological personality constructs.** In addition to basic traits, theoretical and empirical attention has been devoted to pathological personality constructs that are related to the externalizing behaviors in general and aggression more specifically. For example, multiple studies have positively linked narcissism to aggression, both self-reported and in the laboratory (e.g., Bettencourt et al., 2006; Reidy, Zeichner, Foster, & Martinez, 2008). The meta-analysis by Bettencourt and colleagues (2006) suggests that narcissism may only be related to aggression that occurs after provocation, which is consistent with the ego-threat hypothesis that states the narcissism-aggression link is mediated by perceived threat (e.g., Bushman et al., 1998). Alternately, other evidence suggests that narcissism is related to aggression in the laboratory

before provocation occurs (Reidy, Foster, & Zeichner, 2010), as well as with or without the guise of competitive interaction (Hyatt, Weiss, Carter, Zeichner, & Miller, 2018).

Psychopathy - a construct originating in the clinical/forensic literature - has shown strong, positive relations with self-reported aggression, violence, and criminal recidivism (e.g., Leistico, Salekin, DeCoster, & Rogers, 2008; Vize, Lynam, Collison, & Miller, 2016), as well as behavioral aggression (Miller, Wilson, Hyatt, & Zeichner, 2015). While some reviews have suggested that psychopathy is only related to proactive aggression (Reidy, Shelley-Tremblay, & Lilienfeld, 2011), other self-report and behavioral studies suggest that psychopathy is related to both forms of aggression (e.g., Lynam, Hoyle, & Newman, 2006). Furthermore, the FFM traits most strongly linked to psychopathy (i.e., low Agreeableness, low Conscientiousness) are also those that are most strongly linked to aggression (e.g., Jones et al., 2011; Vize et al., 2016).

Impulsivity, a construct akin to low Conscientiousness, has also been positively linked to aggression (e.g., Derefinko, DeWall, Metze, Walsh, & Lynam, 2011). In addition to aggression, impulsivity is regularly studied alongside other externalizing behaviors like substance use as an important individual difference variable that represents a trans-diagnostic indicator of externalizing psychopathology (Dawe & Loxton, 2004). Biological models posit that similar neurotransmitter systems underlie impulsivity and aggression (e.g., Seo, Patrick, & Kennealy, 2008), and specific patterns of neural activation have been posited to characterize chronically impulsive and aggressive individuals (Coccaro, McCloskey, Fitzgerald, & Phan, 2006).

Finally, sadism, a trait defined by the experience of pleasure in response to the suffering of others, has been positively linked to self-report and behavioral indices of aggression (Buckels, Jones, & Paulhus, 2013; Chester & DeWall, 2017). Although many traditional accounts of aggression emphasize the role of negative affect (e.g., frustration hypothesis; Berkowitz, 1989),

there is growing evidence that indices of positive affect (e.g., consummatory pleasure) are important in the enactment of some forms of aggressive behaviors (Chester, 2017a). Thus, aggression represents one type of behavior in which individuals who are high in trait sadism may engage in at elevated levels in an effort to derive pleasure.

**The Current Study**

In sum, there is ample literature linking FFM traits low Agreeableness, low Conscientiousness, and the pathological personality constructs psychopathy, narcissism, impulsivity, and sadism to self-report and behavioral indices of aggression. The goal of the current manuscript is to meta-analyze the relations between these personality traits and laboratory aggression. We aim to advance the work by Bettencourt and colleagues (2006) in two important respects. First, by considering the examined personality traits through the lens of the FFM, we build on the meta-analysis by Bettencourt and colleagues (2006) by using perhaps the most widely used taxonomy of personality to interpret and organize the laboratory aggression literature. Second, although there is very slight overlap (i.e., 2 overlapping manuscripts out of 54 included herein) in the analyses herein and in the meta-analysis by Bettencourt and colleagues (2006), data from the large majority (i.e., over 96%) of the manuscripts in the current meta-analysis have not been previously aggregated (i.e., 115 new effect sizes from 52 manuscripts). Additionally, we present effect size estimates of the relations between personality traits and laboratory aggression in the form of Pearson's *r* (instead of Cohen's d) across all experimental conditions to examine how these traits function in a range of environments.

We also examine several moderators that are putatively relevant to understanding and interpreting this literature. First, given the empirical literature suggesting that male gender is a risk factor for aggressive behavior (e.g., Bettencourt & Miller, 1996), we examined the percent

of individuals who reported male gender as a moderator that may increase the relations between personality and aggression. Second, given evidence that violence and criminality tend to decrease over the lifespan following adolescence (e.g., Huesmann, Eron, Lefkowitz, & Walder, 1984; Moffitt, 1993), we tested whether the relations between personality traits and laboratory aggression decreased as the average age of the sample increased. We also considered additional, potentially relevant moderator variables, including sample type (i.e., student, community, clinical/forensic), type of paradigm (i.e., competitive reaction time task vs. point subtraction aggression paradigm), and type of aversive stimuli (i.e., noise blast vs. electric shock), but we did not have directional hypotheses regarding these moderators.

## Methods

### Data Search and Study Selection

We conducted a comprehensive search of articles written in English published since 1967 (i.e., the year of the publication of the Taylor Aggression Paradigm). To be considered for the current meta-analysis, articles needed to be published in a peer-reviewed journal and include a laboratory aggression measure; to meet this definition, a paradigm must include provisions that participants anticipate actual negative consequences for the "victim" (e.g., getting shocked, losing money) as opposed to a mere negative evaluation that may not been seen by the victim. Additionally, articles needed to include a personality measure, which was operationalized as a measure of individual difference variables that capture cross-situational tendencies in behavior, cognition, and affect that is situated in a structural model of personality (e.g., FFM), or as a

personality construct that is commonly studied in the clinical, social, and forensic psychology literatures (e.g., psychopathy, narcissism).[2]

We employed several data collection strategies. First, the search terms *personality* and *laboratory aggression* were entered simultaneously into PsycINFO. Subsequently, we searched for specific personality traits of interest alongside *laboratory aggression*, namely *five factor model*, *FFM*, *big five*, *personality disorder*, *narcissism*, *psychopathy*, *impulsivity*, and *sadism*[3]. We also used the Tests & Measures Advanced Search function on PsycINFO to search for studies that included laboratory aggression measures in their methods. In this search option, we searched for *Taylor Aggression Paradigm*, *competitive reaction time task*, *response-choice aggression paradigm*, *point subtraction aggression paradigm*, and *hot sauce paradigm*. Authors were emailed for all instances where the relevant effect sizes were not presented and could not be calculated from the manuscript. Additionally, any authors emailed for data were also asked if they could provide any unpublished data relevant to the goals of this meta-analysis.

Second, we reviewed the references of previous meta-analyses relevant to the current topic, including those conducted by Bettencourt et al. (2006), Jones et al. (2011), Lorber (2004), and Miller et al. (2001), and included relevant effect sizes found in these manuscripts whenever possible. Finally, requests for unpublished data and manuscripts were sent to the email listservs of three psychology research societies (Association for Research in Personality, International Society for Research on Aggression, Society for Research in Psychopathology). There were also

---

[2] Note that this definition of personality trait does not include trait aggressiveness, and therefore we excluded studies where this was the only trait measure, as we were more interested in non-tautological relations (i.e., trait aggression predicting behavioral aggression).

[3] Of note, we gathered data for other relevant personality variables, such as Borderline Personality Disorder and Machiavellianism; however these did not meet our pre-set minimum of k=5 for a personality variable to be included in this review.

several data sets from our own research lab that included the variables of interest. Data were retrieved from the articles twice by the lead author and any discrepancies were resolved by consulting a third party for guidance. Age (i.e., average age of participants), gender (i.e., % of male participants), sample type (i.e., student, community, clinical/forensic), type of paradigm (i.e., competitive reaction time task vs. point subtraction paradigm), and type of aversive stimuli (i.e., noise blast vs. electric shock) were coded as potential sources of variance.

**Statistical Analysis**

Random-effects models were used to estimate the population mean Pearson's *r* between the personality variables examined herein and laboratory aggression (Lipsey & Wilson, 2001). In line with common meta-analytic practice, all *r* values were standardized using a Fisher's z transformation prior to aggregation, then back transformed when presented in final form (Rosenthal, 1991). The MeanES macro was used to calculate the aggregated effect in SPSS version 24.0, as well as *Q*, an index of heterogeneity in the distribution of the effect sizes (Wilson, 2006). The MetaReg macro was used to conduct moderator analyses using mixed-effects maximum likelihood estimation, where multiple regression models were generated to test the independent effects of potential moderators (Rosenthal, 1991; Wilson, 2006). Finally, to assess for likelihood of publication bias, we conducted PET-PEESE analyses as recommended by Stanley and Doucouliagos (2014) and Lakens and colleagues (2016). The PET-PEESE procedure involves two regression models wherein observed effect sizes are regressed onto either their standard error (PET model) or the squared standard error (PEESE model). Results of these models provide 1) an estimate of an effect size that is ostensibly uninfluenced by publication bias by extrapolating a regression line for an estimate of the effect size when the standard error is zero (i.e., intercept $b_0$) and 2) an estimate of asymmetry in effect size dispersion across the range

of standard errors (i.e., slope coefficient $b_1$; Van Elk et al., 2015). Thus, in these models, a positive, significant slope coefficient is indicative of publication bias (Carter & McCullough, 2014). In the current study, we focus primarily on the estimates of effect size asymmetry derived from the slope coefficient $b_1$.

## Results

### Effect Size Retrieval

Our PsycINFO searches yielded 733 potential manuscripts (see Figure 1). Of these, we retrieved 87 manuscripts that included the variables of interest. Out of these 87 manuscripts, 52 did not include the necessary information to calculate the effect size of interest. Multiple emails were sent to the corresponding authors for each of these manuscripts. In addition to the original 35 usable manuscripts (i.e., 87 relevant manuscripts retrieved minus 52 without the necessary information), we received data from authors of 19 additional studies. Our final number of included manuscripts was 54 (i.e., original 35 usable manuscripts plus the additional 19 received from emailing authors), from which we located 187 effect sizes. Studies occasionally presented effect sizes separately by experimental condition, and these were treated as separate effect sizes. There were several factors underlying the imbalance between number of studies and number of effect sizes. First, studies often published relations between multiple traits and laboratory aggression (e.g., *r*s for each of the FFM traits and laboratory aggression). Second, there were numerous occasions when a study reported the relation between laboratory aggression and a personality variable operationalized in multiple ways (e.g., several measures of psychopathy), or when only the subscales had been analyzed and presented (e.g., the subscales of the Narcissistic Personality Inventory). In both of these instances, the effect sizes were averaged to form a composite. This resulted in a total of 123 usable effect sizes. See Tables 1 and 2 for a full list of

studies and effect sizes, information about the personality measure used in each study, as well as details for how each study calculated the aggression value. Additionally, the data retrieved from this search is publicly available (https://osf.io/fvnb2/).

**Mean Effect Analyses**

Table 3 presents the results of the random-effects analyses examining the relations between laboratory aggression and the FFM domains, including the number of effect sizes, total sample size, standard error, the weighed mean effect size, the 95% confidence interval, and the *Q*-statistic and associated p-value. Agreeableness demonstrated a small, negative relation to laboratory aggression ($r$ = -.20), and its confidence interval did not overlap with zero. Openness also showed a negative relation that did not overlap with zero ($r$ = -.10), though the magnitude of this relation is relatively small. Neuroticism and Extraversion manifested positive relations with aggression, whereas Conscientiousness showed a small, negative relation; however, these mean effect sizes were small and their confidence intervals overlapped with zero, suggesting that these variables do not have meaningful relations with laboratory aggression.

Table 3 also presents results from the random-effects analyses examining the relations between laboratory aggression and narcissism, psychopathy, impulsivity, and sadism[4]. Each of these pathological personality variables showed positive relations to laboratory aggression, and none of their confidence intervals overlapped with zero. Psychopathy manifested the largest relation ($r$ = .23), which in magnitude verges on a medium effect size by conventional standards.

[4] Although self-esteem is not considered a pathological personality construct, it is often studied alongside narcissism, considering they are both variables that capture positive views of the self. Our search yielded 11 studies (N=1376) that included the relation between laboratory aggression and self-esteem. Analysis suggests that self-esteem is a very small, positive correlate of laboratory aggression ($r$ = .034, 95% C.I. = -.019 to .088), but that this confidence interval overlaps with zero ($Q$ = 8.02, p = .63)

Narcissism and sadism showed similar relations that were small and positive ($r$ = .20 and .19, respectively), while impulsivity manifested the smallest (but still positive and non-overlapping with zero) effect size ($r$ = .15).

**Moderator Analyses**

Examination of the $Q$-statistics suggests that, in general, using a cut-off of $p < .05$ there was not significant heterogeneity among our effect sizes except for psychopathy. Moderator analyses were undertaken using separate, weighted regression models for each moderator, which included age, percentage of men in the sample, the type of sample (i.e., student, community, or clinical/forensic), the type of paradigm (i.e., competitive reaction time task [Taylor Aggression Paradigm or Response-Choice Aggression Paradigm]) or point-subtraction aggression paradigm), and the form of the harmful stimuli applied within the paradigm (i.e., noise blast vs. electric shock). The results of the moderator analyses are presented in Table 4. In general, there were very few significant moderators of effect size. Percentage of men in the sample and the use of shock (as opposed to noise blast) moderated the relation between Neuroticism and laboratory aggression, such that the effect was stronger in samples with more men and when the harmful stimulus applied was shock. Additionally, participant age and sample type (student vs. community) moderated the relation between Openness and laboratory aggression, such that the effect was stronger in older, community samples compared to younger, student samples.

No statistically significant moderators were identified for psychopathy. However, there is literature suggesting that some measures of psychopathy include constructs that are not related to aggression and other forms of antisocial behavior (i.e., Psychopathic Personality Inventory [PPI]; Miller & Lynam, 2012). Thus, we conducted post-hoc moderator analyses to test whether the relation between psychopathy and laboratory aggression was significantly different when

measured by a scale that included such subscales. For these purposes, the Elemental Psychopathy Assessment (EPA) and the PPI were included in this category, due to their subscales Emotional Stability and Fearless Dominance, respectively. Our moderator analyses suggest that this is not a significant source of heterogeneity, but we note that statistical power for these analyses is quite low, considering the relatively small number of studies relating these measures to laboratory aggression.

**Publication Bias**

Consistent with the recommendations by Van Elk and colleagues (2015), we used the magnitude and direction of the slope coefficient (i.e., $b_1$) from the PET-PEESE models as an index of publication bias. Large, positive $b_1$ coefficients indicate a positive relationship between effect size and standard error, suggesting that the effect may be influenced by publication bias such that the largest effect sizes are associated with the largest standard errors (which is related to smaller samples). Results of each model are presented for all traits based on recent recommendations for best practice with this technique (Table 5; Hilgard, 2017). Of the six personality traits/constructs whose meta-analytic relation with laboratory aggression did not overlap with zero (i.e., Agreeableness, Openness, narcissism, psychopathy, impulsivity, and sadism), only Openness was associated with a significant positive slope coefficient, suggesting that publication bias is a likely issue for these relations. Narcissism and Agreeableness were associated with non-significant positive slope coefficients, and psychopathy, impulsivity, and sadism were associated with non-significant negative slope coefficients.

## Discussion

The purpose of the current undertaking was to provide a quantitative review of the relations between laboratory aggression paradigms and personality traits, as well as to test the

structural model of personality proposed by Bettencourt and colleagues (2006) as means of understanding the traits most closely linked with aggression. In terms of basic traits, FFM Agreeableness bore a small, negative relation with laboratory aggression, and Openness also showed a smaller (but still non-overlapping with zero), negative relation. Small-to-moderate positive relations with laboratory aggression were also found for psychopathy, narcissism, and sadism, with a smaller relation (but still non-overlapping with zero) found for impulsivity.

Examination of the *Q* statistic associated with each meta-analytic effect size did not indicate significant heterogeneity in terms of effect size except for psychopathy, and indeed subsequent regression-based moderation analyses suggest that there are very few significant moderators identified. In fact, for the personality traits/pathological constructs that demonstrated substantive meta-analytic relations with laboratory aggression (i.e., 95% confidence intervals that do not overlap with zero), significant moderators were located for Openness only, which exhibited the smallest meta-analytic relation. However, due to the small number of effects and a restricted range for the examined moderators (e.g., for Openness, mean age of the sample ranged from 19.2 to 24.4 years), these statistically significant moderators are difficult to interpret. As another example, although gender (i.e., % male) was a moderator of particular interest given the documented gender differences in aggression and violence (e.g., Bettencourt & Miller, 1996; Card, Stucky, Sawalani, & Little, 2008), 22/54 (41%) of studies included used samples consisting only of male participants. Thus, it is our position that the results from all of the moderation analyses must be interpreted with great caution, as the relative restriction of range and the small number of effect sizes suggest that statistical power to assess these effects was quite low, and the current analyses are not well-suited to robustly test for the presence of moderators.

Finally, the tests of publication bias suggest that publication bias is likely a major factor in the pattern of effect sizes located for Openness, but the non-statistically significant $b_1$ coefficients for the other constructs examined herein suggest that publication bias may not be a major factor for the remainder of the current results. However, we believe these results must be interpreted with caution, as this technique does not perform optimally in conditions where there are a small number of effect sizes, or when the studies are exclusively comprised of very small samples (i.e., $N < 40$; Stanley, 2017; see McShane, Böckenholt, & Hansen, 2016 for a critical account of PET-PEESE). Given other high-profile instances where meta-analytic findings have not held up to increased scrutiny (e.g., ego depletion, religious priming; Carter & McCullough, 2014; Van Elk et al., 2015), we believe that publication bias is likely an issue with the laboratory aggression literature as well as every area of study in psychology, and that publication bias correction techniques cannot supplant rigorous, pre-registered, open science practices (e.g., Nosek et al., 2015; Open Science Collaboration, 2015). Specifically, we encourage laboratory aggression researchers to conduct power analyses appropriate to the study design and pre-register the sample size they intend to collect, as well as the hypotheses they intend to test. By doing so, we hope that outlets will be more willing to publish results of well-powered laboratory aggression studies regardless of whether or not results are consistent with hypotheses; this will serve to reduce publication bias and ultimately bolster the credibility of this line of research.

**A Basic Trait Framework for Personality-Laboratory Aggression Relations**

The current results underscore the importance of low FFM Agreeableness (hereafter Antagonism) in understanding aggression and other related externalizing outcomes. Many contemporary models of psychopathy (e.g., Miller et al., 2001; Patrick et al., 2009) and narcissism (Miller, Lynam, Hyatt, & Lynam, 2017) treat these constructs as amalgams of

relevant traits (as opposed to unidimensional constructs), and Antagonism is a core feature of both (Vize et al., 2016). Although an inadequate number of studies examined narcissism and psychopathy at a more granular, trait-based level, our data support the centrality of Antagonism, as do singular studies that have taken this more nuanced approach (Hyatt et al., 2017; Miller et al., 2015). Furthermore, since Antagonism itself is a multi-faceted construct (Crowe, Lynam, & Miller, 2018), more work is necessary to determine if its facets are uniformly related to laboratory aggression or whether the facets exhibit differential predictive utility.

In contrast to Antagonism, our analyses do not support the importance of Neuroticism in the prediction of laboratory aggression. This is inconsistent with the framework proposed by Bettencourt and colleagues (2006), but consistent with other meta-analytic findings on the FFM and aggression (e.g., Jones et al., 2011). In the Bettencourt et al. (2006) meta-analysis, the variables most germane to Neuroticism were anger and irritability. Angry-hostility represents the only approach-related facet of Neuroticism, as each of the other facets is related to avoidance-related negative affectivity (e.g., depressiveness, anxiousness; Carver & Harmon-Jones, 2009). Furthermore, anger appears to an interstitial trait that loads onto both Neuroticism and Agreeableness (Griffin & Samuel, 2014). Although our analyses cannot speak to facet-level differences, the Angry-hostility facet has been linked to self-reported aggression (Jones et al., 2011), and anger plays a role in many seminal theories of aggression (e.g., Berkowitz, 1989). As mentioned above in relation to the facets of Agreeableness, we more generally encourage future work into parsing facet-level differences as they pertain to laboratory aggression.

**Limitations**

A primary limitation inherent in all meta-analyses is the possibility that relevant studies were unintentionally excluded. In addition to the published studies that did not contain the

necessary data for inclusion, there is always the likelihood that this literature is subject to the "file drawer problem" (Rosenthal, 1979), wherein studies with null or non-significant results are conducted but never published, thus artificially inflating the aggregate effect size across the literature. Although we attempted to assess for the degree of publication bias, we believe this technique is not capable of rectifying the issue of publication bias, and thus we believe this (and all meta-analyses of similar magnitude) must be understood under these conditions.

Furthermore, publication bias techniques are not equipped to correct for two additional issues that are consistently present across the laboratory aggression literature: small samples and analytic flexibility. To the first issue, an a priori power analysis ($\alpha = .05$, $\beta = .80$) suggests that a sample of 150 is necessary to reliably find a Pearson's *r* value of |.20|. The average sample size across the studies included in the current meta-analysis is N = 94, suggesting that in general, laboratory aggression studies are underpowered to find the effect size of interest. Furthermore, in many cases, laboratory aggression paradigms are used to locate an interaction effect between a dispositional variable (e.g., personality trait) and a situational variable (e.g., media violence), in which case substantially larger samples (i.e., 3-16x larger) are needed (Gelman, 2018; Kenny, 2015).

To the second issue, there are documented concerns about the issue of unstandardized analytic flexibility in the laboratory aggression literature (Elson, Mohseni, Breuer, Scharkow, & Quandt, 2014; Hyatt, Chester, Zeichner, & Miller 2018). By operationalizing aggression in different ways (e.g., Trial 1 intensity; composite of intensity and duration in Trial 1 or across all trials, etc.), researchers can increase Type I error by electing to report statistically significant finding but not others (e.g., Easterbrook, Gopalan, Berlin, & Matthews, 1991). Across laboratory aggression tasks using a competitive reaction time task framework (i.e., TAP or RCAP) that

were included in the current manuscript, 13 different operationalization strategies were used. We encourage future work on this issue within laboratory aggression methodology, which will hopefully bring long-needed standardization to this field of research.

Another limitation is that we are also unable to speak to the influence of provocation on the relations between personality traits and laboratory aggression. In order to do so appropriately, we would need the bivariate relation between personality trait X and aggression that occurs *before* the participant has received a shock/noise blast from their opponent, as well as the relation between X and aggression *after* the opponent has aggressed toward the participant. Almost none of the reviewed studies present these separate effects. We believe that the interplay between provocation, personality, and aggression is important and complex, and we encourage researchers to consider presenting separate effects for pre-provocation aggression and post-provocation aggression in future work. An additional limitation is that we did not include trait aggressiveness in our analyses, and thus the current study cannot speak to this meta-analytic relation (see Bettencourt et al., 2006).

**Research Implications**

We believe the current findings are a novel and necessary contribution to the study of aggression using laboratory paradigms. Though the construct validity of these paradigms has been questioned (e.g., Ritter & Elsea, 2005; Tedeschi & Quigley, 1996, 2000; c.f. Giancola, & Chermack, 1998), the relations with constructs strongly related to Antagonism found herein are an important contribution in establishing the convergent validity of this methodology given that these are the same personality-based correlates of aggression and antisocial behavior found when using self and informant reports, as well as official records (Edens, Poythress, & Lilienfeld, 1999; Jones et al., 2011; Miller et al., 2001). Furthermore, the lack of relations to other

constructs that are not generally related to aggression (e.g., Extraversion) is useful in establishing discriminant validity. The current meta-analyses suggests that the same traits associated with "real-world" aggression also appear to be associated with aggression in the laboratory.

We encourage research into contextual moderators that may accentuate or diminish this relation, such as the presence of a bystander. Additionally, we encourage empirical investigation into the affective and cognitive mechanisms by which Antagonism is related to aggression. For instance, work by Wilkowski and colleagues (2006) has shown that disagreeable individuals have a more difficult time disengaging from antisocial stimuli. We believe that it is time to move from an examination of the predictors of laboratory aggression and to a mechanism-based approach to understanding how antagonistic traits manifest in increased aggression (e.g., diminished reactivity to signs of distress in victim/confederate). Similarly, it is important to test possible contextual moderators that may exacerbate or diminish Antagonism's relation to aggression. However, we note that in order to test hypothesized moderators and mechanisms, much larger samples are necessary than those that characterize this literature in its current state. We strongly encourage future laboratory aggression researchers to consider the methodological issue of statistical power, and to pre-register their study design and analytic strategy.

**Prevention Implications**

Although we do not believe the current research has direct prevention implications, we hope to contribute to the field's understanding of laboratory aggression as a methodological tool with ample flexibility to accommodate many important research questions about aggression and ways in which it can be diminished. As research on the contexts and mechanisms that precipitate aggression continues, this basic research can inform prevention and intervention efforts aimed at reducing the societal burden of aggressive behavior (e.g., Rivenbark et al., 2017).

# References

**studies preceded by an asterisk were included in the current meta-analysis*

*Alcorn, J. L., Green, C. E., Schmitz, J., & Lane, S. D. (2015). Effects of oxytocin on aggressive responding in healthy adult men. *Behavioural Pharmacology, 26,* 798-804. doi:10.1097/FBP.0000000000000173

*Allen, T. J., Dougherty, D. M., Rhoades, H. M., & Cherek, D. R. (1996). A study of male and female aggressive responding under conditions providing an escape response. *The Psychological Record, 46,* 651-664.

Bagby, R. M., Vachon, D. D., Bulmash, E. L., Toneatto, T., Quilty, L. C., & Costa, P. T. (2007). Pathological gambling and the five-factor model of personality. *Personality and Individual Differences, 43,* 873-880. doi: 10.1016/j.paid.2007.02.011

Bandura, A. (1973). Aggression: A social learning analysis. Englewood Cliffs, NJ: Prentice Hall.

Berkowitz, L. (1989). Frustration-aggression hypothesis: examination and reformulation. *Psychological Bulletin, 106,* 59-73. doi:10.1037/0033-2909.106.1.59

Bettencourt, B., & Miller, N. (1996). Gender differences in aggression as a function of provocation: a meta-analysis. *Psychological Bulletin, 119,* 422-447.

Bettencourt, B., Talley, A., Benjamin, A. J., & Valentine, J. (2006). Personality and aggressive behavior under provoking and neutral conditions: a meta-analytic review. *Psychological Bulletin, 132,* 751-777. doi:10.1037/0033-2909.132.5.751

*Bjork, J. M., Dougherty, D. M., Huang, D., & Scurlock, C. (1998). Self-reported impulsivity is correlated with laboratory-measured escape behavior. *Journal of General Psychology*, *125*, 165-174. doi:10.1080/00221309809595541

*Bobadilla, L., Metze, A. V., & Taylor, J. (2013). Physical attractiveness and its relation to unprovoked and reactive aggression. *Journal of Research in Personality*, *47*, 70-77. doi:10.1016/j.jrp.2012.09.004

*Buckels, E. E., Jones, D. N., & Paulhus, D. L. (2013). Behavioral confirmation of everyday sadism. *Psychological Science, 24*, 2201-2209. doi:10.1177/0956797613490749

*Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence?. *Journal of Personality and Social Psychology, 75*, 219. doi:10.1037/0022-3514.75.1.219

*Bushman, B. J., Baumeister, R. F., Thomaes, S., Ryu, E., Begeer, S., & West, S. G. (2009). Looking again, and harder, for a link between low self-esteem and aggression. *Journal of Personality*, *77*, 427-446. doi:10.1111/j.1467-6494.2008.00553.x

Buss, A. H. (1961). *The Psychology of Aggression*. Wiley.

Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, *79*, 1185-1229.

Carter, E. C., & McCullough, M. E. (2014). Publication bias and the limited strength model of self-control: has the evidence for ego depletion been overestimated?. *Frontiers in Psychology*, *5*, 823.

Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: evidence and implications. *Psychological Bulletin, 135,* 183-204. doi:10.1037/a0013965

Chester, D. S. (2017a). The role of positive affect in aggression. *Current Directions in Psychological Science, 26,* 366-370.

*Chester, D. S. (2017b). Correlation between sadism and laboratory aggression. Unpublished raw data.

*Chester, D. S. (2017c). Correlation between sadism and laboratory aggression. Unpublished raw data.

*Chester, D. S. (2017d). Correlation between sadism and laboratory aggression. Unpublished raw data.

*Chester, D. S. (2017e). Correlation between sadism and laboratory aggression. Unpublished raw data.

*Chester, D. S. (2017f). Correlation between sadism and laboratory aggression. Unpublished raw data.

*Chester, D. S., & DeWall, C. N. (2016). Sound the alarm: The effect of narcissism on retaliatory aggression is moderated by dACC reactivity to rejection. *Journal of Personality, 84,* 361-368. doi:10.1111/jopy.12164

*Chester, D. S., & DeWall, C. N. (2017). Combating the sting of rejection with the pleasure of revenge: A new look at how emotion shapes aggression. *Journal of Personality and Social Psychology, 112,* 413-430. doi:10.1037/pspi0000080

*Coccaro, E. F., Berman, M. E., Kavoussi, R. J., & Hauger, R. L. (1996). Relationship of prolactin response to d-fenfluramine to behavioral and questionnaire assessments of aggression in personality-disordered men. *Biological Psychiatry, 40,* 157-164.

doi:10.1016/0006-3223(95)00398-3

Coccaro, E. F., McCloskey, M. S., Fitzgerald, D. A., & Phan, K. L. (2007). Amygdala and orbitofrontal reactivity to social threat in individuals with impulsive aggression. *Biological Psychiatry*, *62*, 168-178.

Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, *13*, 653-665. doi:10.1016/0191-8869(92)90236-I

Crowe, M., Lynam, D. R., & Miller, J. D. (2018). Uncovering the structure of Agreeableness from self-report measures. *Journal of Personality.* Manuscript in press.

Dawe, S., & Loxton, N. J. (2004). The role of impulsivity in the development of substance use and eating disorders. *Neuroscience & Biobehavioral Reviews*, *28*, 343-351.

*Denson, T. F., White, A. J., & Warburton, W. A. (2009). Trait displaced aggression and psychopathy differentially moderate the effects of acute alcohol intoxication and rumination on triggered displaced aggression. *Journal of Research in Personality*, *43*, 673-681. doi:10.1016/j.jrp.2009.04.003

Derefinko, K., DeWall, C. N., Metze, A. V., Walsh, E. C., & Lynam, D. R. (2011). Do different facets of impulsivity predict different types of aggression?. *Aggressive Behavior*, *37*, 223-233. doi:10.1002/ab.20387

Easterbrook, P. J., Gopalan, R., Berlin, J. A., & Matthews, D. R. (1991). Publication bias in clinical research. *The Lancet*, *337*, 867-872. doi: 10.1016/0140-6736(91)90201-Y

Edens, J. F., Poythress, N. G., & Lilienfeld, S. O. (1999). Identifying inmates at risk for disciplinary infractions: A comparison of two measures of psychopathy. *Behavioral Sciences & the Law*, *17*, 435-443. doi:10.1002/(SICI)1099-0798(199910/12)17:4<435::AID-BSL356>3.0.CO;2-Z

Elson, M., Mohseni, M. R., Breuer, J., Scharkow, M., & Quandt, T. (2014). Press CRTT to measure aggressive behavior: The unstandardized use of the competitive reaction time task in aggression research. *Psychological Assessment, 26*, 419-432. doi:10.1037/a0035569

Gelman, A. (2018, March 15). You need 16 times the sample size to estimate an interaction than to estimate a main effect [blog post]. Retrieved from http://andrewgelman.com/2018/03/15/need-16-times-sample-size-estimate-interaction-estimate-main-effect/

*Gerra, G., Zaimovic, A., Moi, G., Bussandri, M., Bubici, C., Mossini, M., & ... Brambilla, F. (2004). Aggressive responding in abstinent heroin addicts: neuroendocrine and personality correlates. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, *28*, 129-139. doi:10.1016/j.pnpbp.2003.09.029

Giancola, P. R., & Chermack, S. T. (1998). Construct validity of laboratory aggression paradigms: A response to Tedeschi and Quigley (1996). *Aggression and Violent Behavior*, *3*, 237-253. doi:10.1016/S1359-1789(97)00004-9

*Gowin, J. L., Green, C. E., Alcorn, J. L., Swann, A. C., Moeller, F. G., & Lane, S. D. (2012). Chronic tiagabine administration and aggressive responding in individuals with a history of substance abuse and antisocial behavior. *Journal of Psychopharmacology, 26*, 982-993. doi:10.1177/0269881111408962

*Gowin, J. L., Green, C. E., Alcorn, J. I., Swann, A. C., Moeller, F. G., & Lane, S. D. (2013). The role of cortisol and psychopathy in the cycle of violence. *Psychopharmacology, 227*, 661-672. doi:10.1007/s00213-013-2992-1

Griffin, S. A., & Samuel, D. B. (2014). A closer look at the lower-order structure of the Personality Inventory for DSM-5: Comparison with the Five-Factor Model. *Personality Disorders: Theory, Research, and Treatment, 5*, 406-412. doi:10.1037/per0000074

Hilgard, J. (2017, April 12). Response by Joe Hilgard to Data Colada [59] [Blog post]. Retrieved from http://datacolada.org/wp-content/uploads/2017/04/Response-by-Joe-Hilgard-to-Colada-59.pdf

Hoyle, R. H., Fejfar, M. C., & Miller, J. D. (2000). Personality and sexual risk taking: A quantitative review. *Journal of Personality*, *68*, 1203-1231. doi:10.1111/1467-6494.00132

Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1984). Stability of aggression over time and generations. *Developmental Psychology*, *20*, 1120-1134.

*Hyatt, C. S., Berke, D. S. Zeichner, A., & Miller, J. D. (2014). Correlations between FFM, psychopathy, narcissism, and laboratory aggression. Unpublished raw data.

Hyatt, C. S., Chester, D. S., Zeichner, A., & Miller, J. D. (2018). Analytic flexibility in laboratory aggression paradigms: Relations with personality traits vary (slightly) by operationalization of aggression. *Aggressive Behavior*. Manuscript in press.

*Hyatt, C. S., Weiss, B. M., Carter, N. T., Zeichner, A., & Miller, J. D. (2018). The relation between narcissism and laboratory aggression is not contingent on environmental cues of competition. *Personality Disorders: Theory, Research, and Treatment.* Manuscript in press.

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, L.

A. Pervin, O. P. John, R. W. Robins, L. A. Pervin (Eds.) , *Handbook of personality: Theory and research, 3rd ed* (pp. 114-158). New York, NY, US: Guilford Press.

Jones, S. E., Miller, J. D., & Lynam, D. R. (2011). Personality, antisocial behavior, and aggression: A meta-analytic review. *Journal of Criminal Justice, 39,* 329-337. doi:10.1016/j.jcrimjus.2011.03.004

*Jones, D. N., & Paulhus, D. L. (2010). Different provocations trigger aggression in narcissists and psychopaths. *Social Psychological and Personality Science, 1,* 12-18. doi:10.1177/1948550609347591

*Keller, P. S., Blincoe, S., Gilbert, L. R., DeWall, C. N., Haak, E. A., & Widiger, T. (2014). Narcissism in romantic relationships: A dyadic perspective. *Journal of Social and Clinical Psychology, 33,* 25-50. doi:10.1521/jscp.2014.33.1.25

Kenny, D. A. (2015, March 31). *Moderation.* Retrieved from http://davidakenny.net/cm/moderation.htm

*Kimonis, E. R., Frick, P. J., Skeem, J. L., Marsee, M. A., Cruise, K., Munoz, L. C., & ... Morris, A. S. (2008). Assessing callous-unemotional traits in adolescent offenders: Validation of the inventory of callous-unemotional traits. *International Journal of Law and Psychiatry, 31,* 241-252. doi:10.1016/j.ijlp.2008.04.002

Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking 'big' personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychological Bulletin, 136,* 768-821. doi:10.1037/a0020327

Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., ... & Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A

dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology, 126,* 454-477. doi:10.1037/abn0000258

Lakens, D., Hilgard, J., & Staaks, J. (2016). On the reproducibility of meta-analyses: Six practical recommendations. *BMC Psychology*, *4*, 24.

*Lane, S. D., Gowin, J. L., Green, C. E., Steinberg, J. L., Moeller, F. G., & Cherek, D. R. (2009). Acute topiramate differentially affects human aggressive responding at low vs. Moderate doses in subjects with histories of substance abuse and antisocial behavior. *Pharmacology, Biochemistry and Behavior*, *92*, 357-362. doi:10.1016/j.pbb.2009.01.002

Leistico, A. M. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28-45. doi:10.1007/s10979-007-9096-6

Lipsey, M. W., & Wilson, D. B. (2001). Practical meta-analysis. Thousand Oaks, CA: Sage Publications.

*Lobbestael, J., Baumeister, R. F., Fiebig, T., & Eckel, L. A. (2014). The role of grandiose and vulnerable narcissism in self-reported and laboratory aggression and testosterone reactivity. *Personality and Individual Differences*, *69*, 22-27. doi:10.1016/j.paid.2014.05.007

Lorber, M. F. (2004). Psychophysiology of aggression, psychopathy, and conduct problems: a meta-analysis. *Psychological Bulletin*, *130*, 531-552. doi:10.1037/0033-2909.130.4.531

Lynam, D. R., Hoyle, R. H., & Newman, J. P. (2006). The perils of partialling: Cautionary tales from aggression and psychopathy. *Assessment*, *13*, 328-341. doi:10.1177/1073191106290562

*Maples, J. L., Miller, J. D., Wilson, L. F., Seibert, L. A., Few, L. R., & Zeichner, A. (2010). Narcissistic personality disorder and self-esteem: An examination of differential relations with self-report and laboratory-based aggression. *Journal of Research in Personality, 44,* 559-563. doi:10.1016/j.jrp.2010.05.012

*Martinez, M. A., Zeichner, A., Reidy, D. E., & Miller, J. D. (2008). Narcissism and displaced aggression: Effects of positive, negative, and delayed feedback. *Personality and Individual Differences,* 44, 140-149. doi:10.1016/j.paid.2007.07.012

*McCloskey, M. S., Lee, R., Berman, M. E., Noblett, K. L., & Coccaro, E. F. (2008). The relationship between impulsive verbal aggression and intermittent explosive disorder. *Aggressive Behavior, 34,* 51-60. doi:10.1002/ab.20216

*McCloskey, M. S., New, A. S., Siever, L. J., Goodman, M., Koenigsberg, H. W., Flory, J. D., & Coccaro, E. F. (2009). Evaluation of behavioral impulsivity and aggression tasks as endophenotypes for borderline personality disorder. *Journal of Psychiatric Research, 43,* 1036-1048. doi:10.1016/j.jpsychires.2009.01.002

McShane, B. B., Böckenholt, U., & Hansen, K. T. (2016). Adjusting for publication bias in meta-analysis: An evaluation of selection methods and some cautionary notes. *Perspectives on Psychological Science, 11,* 730-749.

*Meier, B. P., Wilkowski, B. M., & Robinson, M. D. (2008). Bringing out the agreeableness in everyone: Using a cognitive self-regulation model to reduce aggression. *Journal of Experimental Social Psychology, 44,* 1383-1387. doi:10.1016/j.jesp.2008.05.005

*Miller, C. A., Parrott, D. J., & Giancola, P. R. (2009). Agreeableness and alcohol-related aggression: The mediating effect of trait aggressivity. *Experimental and Clinical Psychopharmacology, 17,* 445-455. doi:10.1037/a0017727

*Miller, J. D., Campbell, W. K., Young, D. L., Lakey, C. E., Reidy, D. E., Zeichner, A., & Goodie, A. S. (2009). Examining the relations among narcissism, impulsivity, and self-defeating behaviors. *Journal of Personality*, *77*, 761-794. doi:10.1111/j.1467-6494.2009.00564.x

*Miller, J. D., & Lynam, D. (2001). Structural models of personality and their relation to antisocial behavior: a meta-analytic review. *Criminology*, *39*, 765-798. doi: 10.1111/j.1745-9125.2001.tb00940.x

Miller, J. D., Lynam, D. R., Hyatt, C. S., & Campbell, W. K. (2017). Controversies in narcissism. *Annual Review of Clinical Psychology*, *13*, 291-315.

Miller, J. D., Lyman, D. R., Widiger, T. A., & Leukefeld, C. (2001). Personality disorders as extreme variants of common personality dimensions: Can the five factor model adequately represent psychopathy?. *Journal of Personality*, *69*, 253-276. doi:10.1111/1467-6494.00144

Miller, J. D., Rausher, S., Hyatt, C. S., Maples, J., & Zeichner, A. (2014). Examining the relations among pain tolerance, psychopathic traits, and violent and nonviolent antisocial behavior. *Journal of Abnormal Psychology*, *123*, 205-213. doi:10.1037/a0035072

*Miller, J. D., Wilson, L. F., Hyatt, C. S., & Zeichner, A. (2015). Psychopathic traits and aggression: Which trait components predict aggressive responding in a laboratory task?. *Personality and Individual Differences*, *87*, 180-184. doi:10.1016/j.paid.2015.08.008

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: a developmental taxonomy. *Psychological Review*, *100*, 674-701.

*Muñoz, L. C., Frick, P. J., Kimonis, E. R., & Aucoin, K. J. (2008). Types of aggression, responsiveness to provocation, and callous-unemotional traits in detained adolescents. *Journal of Abnormal Child Psychology, 36,* 15-28. doi:10.1007/s10802-007-9137-0

Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., ... & Contestabile, M. (2015). Promoting an open research culture. *Science, 348,* 1422-1425.

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science, 349*(6251), aac4716.

*Parrott, D. J., & Zeichner, A. (2006). Effect of psychopathy on physical aggression toward gay and heterosexual men. *Journal of Interpersonal Violence, 21,* 390-410. doi:10.1177/0886260505283153

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21,* 913-938. doi:10.1017/S0954579409000492

*Pinto, D. G., Maltby, J., Wood, A. M., & Day, L. (2012). A behavioral test of Horney's linkage between authenticity and aggression: People living authentically are less-likely to respond aggressively in unfair situations. *Personality and Individual Differences, 52,* 41-44. doi:10.1016/j.paid.2011.08.023

*Reidy, D. E., Foster, J. D., & Zeichner, A. (2010). Narcissism and unprovoked aggression. *Aggressive Behavior, 36,* 414-422. doi:10.1002/ab.20356

Reidy, D. E., Shelley-Tremblay, J. F., & Lilienfeld, S. O. (2011). Psychopathy, reactive aggression, and precarious proclamations: A review of behavioral, cognitive, and biological research. *Aggression and Violent Behavior, 16*, 512-524. doi:10.1016/j.avb.2011.06.002

*Reidy, D. E., Zeichner, A., Foster, J. D., & Martinez, M. A. (2008). Effects of narcissistic entitlement and exploitativeness on human physical aggression. *Personality and Individual Differences, 44*, 865-875. doi:10.1016/j.paid.2007.10.015

*Reidy, D. E., Zeichner, A., Miller, J. D., & Martinez, M. A. (2007). Psychopathy and aggression: Examining the role of psychopathy factors in predicting laboratory aggression under hostile and instrumental conditions. *Journal of Research in Personality, 41*, 1244-1251. doi:10.1016/j.jrp.2007.03.001

*Reidy, D. E., Zeichner, A., & Seibert, L. A. (2011). Unprovoked aggression: Effects of psychopathic traits and sadism. *Journal of Personality, 79*, 75-100. doi:10.1111/j.1467-6494.2010.00691.x

Ritter, D., & Eslea, M. (2005). Hot sauce, toy guns, and graffiti: A critical account of current laboratory aggression paradigms. *Aggressive Behavior, 31*, 407-419. doi:10.1002/ab.20066

Rivenbark, J. G., Odgers, C. L., Caspi, A., Harrington, H., Hogan, S., Houts, R. M., ... & Moffitt, T. E. (2017). The high societal costs of childhood conduct problems: evidence from administrative records up to age 38 in a longitudinal birth cohort. *Journal of Child Psychology and Psychiatry*. doi:10.1111/jcpp.12850

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*, 638-641.

Rosenthal, R. (1991). Meta-analytic procedures for social research (Vol. 6). Newbury Park: Sage Publications.

*Sandstrom, M. J., & Herlan, R. D. (2007). Threatened egotism or confirmed inadequacy? How children's perceptions of social status influence aggressive behavior toward peers. *Journal of Social and Clinical Psychology*, *26*, 240-267. doi:10.1521/jscp.2007.26.2.240

*Seibert, L. A., Miller, J. D., Pryor, L. R., Reidy, D. E., & Zeichner, A. (2010). Personality and laboratory-based aggression: Comparing the predictive power of the Five-Factor Model, BIS/BAS, and impulsivity across context. *Journal of Research in Personality*, *44*, 13-21. doi:10.1016/j.jrp.2009.09.003

Seo, D., Patrick, C. J., & Kennealy, P. J. (2008). Role of serotonin and dopamine system interactions in the neurobiology of impulsive aggression and its comorbidity with other clinical disorders. *Aggression and Violent Behavior*, *13*, 383-395. doi:10.1016/j.avb.2008.06.003

Stanley, T. D. (2017). Limitations of PET-PEESE and other meta-analysis methods. *Social and Personality Science*, *8*, 581-591.

Stanley, T. D., & Doucouliagos, H. (2014). Meta-regression approximations to reduce publication selection bias. *Research Synthesis Methods*, *5*, 60-78.

Taylor, S. P. (1967). Aggressive behavior and physiological arousal as a function of provocation and the tendency to inhibit aggression. *Journal of Personality*, *35*(2), 297–310.

Tedeschi, J. T., & Quigley, B. M. (1996). Limitations of laboratory paradigms for studying aggression. *Aggression and Violent Behavior*, *1*, 163-177. https://doi.org/10.1016/1359-1789(95)00014-3

Tedeschi, J. T., & Quigley, B. M. (2000). A further comment on the construct validity of laboratory aggression paradigms: A response to Giancola and Chermack. *Aggression and Violent Behavior, 5,* 127-136. doi:10.1016/S1359-1789(98)00028-7

*Terrell, H. K., Hill, E. D., & Nagoshi, C. T. (2008). Gender differences in aggression: The role of status and personality in competitive interactions. *Sex Roles, 59,* 814-826. doi:10.1007/s11199-008-9486-3

*Thomaes, S., Bushman, B. J., Stegge, H., & Olthof, T. (2008). Trumping shame by blasts of noise: narcissism, self-esteem, shame, and aggression in young adolescents. *Child Development, 79,* 1792-1801. doi:10.1111/j.1467-8624.2008.01226.x

*Twenge, J. M., & Campbell, W. K. (2003). "Isn't it fun to get the respect that we're going to deserve?" Narcissism, social rejection, and aggression. *Personality and Social Psychology Bulletin*, *29,* 261-272. doi: 10.1177/0146167202239051

Van Elk, M., Matzke, D., Gronau, Q., Guang, M., Vandekerckhove, J., & Wagenmakers, E. J. (2015). Meta-analyses are no substitute for registered replications: A skeptical perspective on religious priming. *Frontiers in Psychology, 6,* 1365.

*Veit, R., Lotze, M., Sewing, S., Missenhardt, H., Gaber, T., & Birbaumer, N. (2010). Aberrant social and cerebral responding in a competitive reaction time paradigm in criminal psychopaths. *Neuroimage, 49,* 3365-3372. doi:10.1016/j.neuroimage.2009.11.040

Vize, C. E., Lynam, D. R., Collison, K. L., & Miller, J. D. (2016). Differences among dark triad components: A meta-analytic investigation. *Personality Disorders: Theory, Research, and Treatment*. doi:10.1037/per0000222

*Vize, C.E., Miller, J. D., Collison, K. L., & Lynam, D. R. (2018). Untangling the Relation between Narcissistic Traits and Behavioral Aggression Following Provocation Using an FFM Framework. *Journal of Personality Disorders*. Manuscript in press.

Vize, C. E., Miller, J. D., & Lynam, D. R. (2018). FFM facets and their relations with different forms of antisocial behavior: An expanded meta-analysis. *Journal of Criminal Justice*, *57*, 67-75.

*Webster, G. D., & Kirkpatrick, L. A. (2006). Behavioral and self-reported aggression as a function of domain-specific self-esteem. *Aggressive Behavior*, *32*, 17-27. doi:10.1002/ab.20102

Widiger, T. A., & Trull, T. J. (2007). Plate tectonics in the classification of personality disorder: Shifting to a dimensional model. *American Psychologist*, *62*, 71-83. doi:10.1037/0003-066X.62.2.71

Wilkowski, B. M., Robinson, M. D., & Meier, B. P. (2006). Agreeableness and the prolonged spatial processing of antisocial and prosocial information. *Journal of Research in Personality*, *40*, 1152-1168. doi:10.1016/j.jrp.2005.12.004

Wilson, D.B. (2006). Meta-analysis macros for SAS, SPSS, and Stata. <http://mason.gmu.edu/~dwilsonb/ma.html> Retrieved 6.2.17.

*Wilson, L. F., Zeichner, A., & Miller, J. D. (2010). Correlations between impulsivity, FFM, and laboratory aggression. Unpublished raw data.

*Zhou, J., Wang, X., Li, L., Cao, X., Xu, L., & Sun, Y. (2006). Plasma serotonin levels in young violent offenders: Aggressive responding and personality correlates. *Progress In Neuro-Psychopharmacology & Biological Psychiatry*, *30*, 1435-1441. doi:10.1016/j.pnpbp.2006.05.021

Table 1

Studies Included in the Meta-Analytic Relations Between Lab Aggression and Basic Traits

| *Variable* (k, total N)<br>-Study | Personality Measure | Aggression Paradigm | Operationalization | N | *r* |
|---|---|---|---|---|---|
| *Neuroticism* (k=9, N =935) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | BFI[1] | TAP[2] | Standardized composite of intensity and duration across all trials | 71 | -.19 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | BFI | RCAP[3] | Standardized composite of frequency, intensity, and duration across all trials | 182 | .19 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60[4] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | -.02 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60[4] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | -.03 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 56 | -.03 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 60 | .13 |
| -Miller, Wilson, Hyatt, & Zeichner, unpublished | NEO PI-R[5] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 101 | .09 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | .06 |
| -Wilson, Zeichner, & Miller, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | -.01 |
| *Extraversion* (k=9, N=935) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | BFI | TAP | Standardized composite of intensity and duration across all trials across all trials | 71 | .15 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | BFI | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | -.08 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | -.07 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | .09 |

| | | | | | |
|---|---|---|---|---|---|
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 56 | .05 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 60 | .17 |
| -Miller, Wilson, Hyatt, & Zeichner, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 101 | .06 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | .04 |
| -Wilson, Zeichner, & Miller, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | .12 |
| *Openness* (k=9, N=935) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | BFI | TAP | Standardized composite of intensity and duration across all trials | 71 | -.11 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | BFI | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | -.22 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | -.07 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | -.08 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 56 | .03 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 60 | .25 |
| -Miller, Wilson, Hyatt, & Zeichner, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 101 | -.15 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | -.21 |
| -Wilson, Zeichner, & Miller, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | -.14 |
| *Agreeableness* (k=12, N=1068) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | BFI | TAP | Standardized composite of intensity and duration across all trials | 71 | -.07 |

| | | | | | |
|---|---|---|---|---|---|
| -Hyatt, Berke, Zeichner, & Miller, unpublished | BFI | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | -.27 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | -.24 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | |
| -Meier, Wilkowski, & Robinson, 2008 | Goldberg's 10-AS[6] | TAP | Mean intensity across all trials | 32 | -.43 |
| -Meier, Wilkowski, & Robinson, 2008 | Goldberg's 10-AS | TAP | Mean intensity across all trials | 39 | .02 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 56 | .04 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible shock administered | 60 | -.24 |
| -Miller, Wilson, Hyatt, & Zeichner, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 101 | -.16 |
| -Pinto, Maltby, Wood, & Day, 2012 | IPIP AS[7] | PSAP | Number of aggressive responses selected | 62 | -.04 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | -.24 |
| -Wilson, Zeichner, & Miller, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | -.29 |
| *Conscientiousness* (k=9, N=935) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | BFI | TAP | Standardized composite of intensity and duration across all trials | 71 | -.13 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | BFI | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | -.12 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | .11 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | IPIP-60 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | -.06 |
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible level administered | 56 | -.06 |

| | | | | | |
|---|---|---|---|---|---|
| -Miller, Parrott, & Giancola, 2009 | BFI | TAP | Proportion of highest possible level administered | 60 | -.04 |
| -Miller, Wilson, Hyatt, & Zeichner, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 101 | .02 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | -.03 |
| -Wilson, Zeichner, & Miller, unpublished | NEO PI-R | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | -.07 |

[1] Big Five Inventory; [2]Taylor Aggression Paradigm; [3]Response-Choice Aggression Paradigm; [4]International Personality Item Pool – 60 item measure of the FFM; [5]NEO-Personality Inventory-Revised; [6]Goldberg's 10 item Agreeableness Scale; [7]Agreeablness Scale of the International Personality Item Pool.

Table 2

Studies Included in the Meta-Analytic Relations Between Lab Aggression and Pathological Personality Variables

| *Variable*<br>-Study (k, total N) | Personality Measure | Aggression Paradigm | Operationalization | N | *r* |
|---|---|---|---|---|---|
| *Narcissism* (k=34, N=2752) | | | | | |
| -Buckels, Jones, & Paulhus, 2013 | SD3[1] | TAP[2,3] | Standardized composite of intensity and duration across all trials | 71 | .34 |
| -Bushman & Baumeister, 1998 | NPI-40[4] | TAP | Standardized composite of intensity and duration of first trial | 260 | .27 |
| -Bushman & Baumeister, 1998 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 70 | .25 |
| -Bushman & Baumeister, 1998 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 70 | .10 |
| -Bushman & Baumeister, 1998 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 70 | .14 |
| -Bushman & Baumeister, 1998 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 70 | -.10 |
| -Bushman et al., 2009 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 132 | .25 |
| -Bushman et al., 2009 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 260 | .10 |
| -Chester & DeWall, 2016 | NPI-16 | TAP | Standardized composite of intensity and duration across all trials | 30 | .08 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | Composite[5] | RCAP[6] | Standardized composite of frequency, intensity, and duration across all trials | 113 | .10 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | Composite[5] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | .20 |
| -Ferriday, Vartanian, & Miller, 2011 | NPI-40 | TAP | Composite of trial intensity and dummy-coded long vs. short duration | 165 | .24 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | SD3[7] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | .24 |

| | | | | | |
|---|---|---|---|---|---|
| -Jones & Paulhus, 2010 | NPI-40 | TAP | Standardized composite of intensity and duration across all trials | 80 | .22 |
| -Keller et al., 2014 | NPI-40 | TAP | Standardized composite of intensity and duration across all trials | 74 | .13 |
| -Keller et al., 2014 | NPI-40 | TAP | Standardized composite of intensity and duration across all trials | 74 | .28 |
| -Lobbestael, Baumeister, Fiebig, & Eckel, 2014 | NPI-37 | TAP | Not reported. | 94 | .25 |
| -Maples et al., 2010 | Composite[8] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | .24 |
| -Maples et al., 2010 | Composite[8] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 134 | .19 |
| -Martinez, Zeichner, Reidy, & Miller, 2008 | NPI-40 | RCAP | Composite of intensity and duration across first four trials | 30 | .29 |
| -Martinez, Zeichner, Reidy, & Miller, 2008 | NPI-40 | RCAP | Composite of intensity and duration across first four trials | 32 | -.04 |
| -Martinez, Zeichner, Reidy, & Miller, 2008 | NPI-40 | RCAP | Composite of intensity and duration across first four trials | 30 | .40 |
| -Meier, Wilkowski, & Robinson, 2008 | NPI-40 | TAP | Mean intensity across all trials | 32 | .17 |
| -Meier, Wilkowski, & Robinson, 2008 | NPI-40 | TAP | Mean intensity across all trials | 39 | .21 |
| -Miller et al., 2009 | NPI-40 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 86 | .40 |
| -Reidy, Foster, & Zeichner, 2010 | NPI-40 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | .19 |
| -Reidy, Zeichner, Foster, & Martinez, 2008 | NPI-40 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 86 | .27 |
| -Terrell, Hill, Nagoshi, 2008 | NPI-37 | TAP | Frequency across all trials | 72 | .26 |
| -Terrell, Hill, Nagoshi, 2008 | NPI-37 | TAP | Frequency across all trials | 78 | .09 |
| -Thomaes, Bushman, Stegge, & Olthof, 2008 | CNS[9] | FastKid! | Mean intensity in first three trials | 163 | .14 |

| | | | | | |
|---|---|---|---|---|---|
| -Twenge & Campbell, 2003 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 37 | .42 |
| -Twenge & Campbell, 2003 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 20 | -.17 |
| -Twenge & Campbell, 2003 | NPI-40 | TAP | Standardized composite of intensity and duration of first trial | 31 | .52 |
| -Vize, Miller, Collison, & Lynam, in press | Composite[5] | TAP | Standardized composite of intensity and duration of first trial | 134 | .15 |
| *Psychopathy* (k=24, N=1969) | | | | | |
| -Alcorn, Green, Schmitz, & Lane, 2015 | Composite[10] | PSAP[11] | Number of aggressive responses per minute | 15 | -.12 |
| -Bobadilla, Metze, & Taylor, 2013 | PPI[12] | TAP | Mean intensity across first two trials | 35 | .24 |
| -Bobadilla, Metze, & Taylor, 2013 | PPI | TAP | Mean intensity across first two trials | 43 | -.01 |
| -Buckels, Jones, & Paulhus, 2013 | SD3 | TAP | Standardized composite of intensity and duration across all trials | 71 | .35 |
| -Denson, White, & Warburton, 2009 | PPI | Hot sauce paradigm | Grams of hot sauce administered | 82 | .24 |
| -Gerra et al., 2004 | MMPI[13] | PSAP | Mean aggressive responses per minute | 40 | .45 |
| -Gowin et al., 2013 | SRP-III[14] | PSAP | Natural log-transformed aggressive responses per provocation | 67 | .12 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | Composite[15] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 113 | .20 |
| -Hyatt, Weiss, Carter, Zeichner, & Miller, 2018 | Composite[15] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 107 | .22 |
| -Hyatt, Berke, Zeichner, & Miller, unpublished | SD3 | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 182 | .22 |
| -Jones & Paulhus, 2010 | SRP | TAP | Standardized composite of intensity and duration across all trials | 80 | .32 |
| -Kimonis et al., 2008 | Composite[16] | PSAP | Mean aggressive responding across all trials | 98 | .27 |
| -Kimonis et al., 208 | Composite[16] | PSAP | Mean aggressive responding across all trials | 60 | .36 |

| | | | | | |
|---|---|---|---|---|---|
| -Miller & Lynam, 2003 | FFM Psychopathy[17] | MWAP[18] | Amount of money withdrawn from opponent | 211 | .17 |
| -Miller, Wilson, Hyatt, & Zeichner, 2015 | PPI | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 133 | .21 |
| -Miller, Wilson, Hyatt, & Zeichner, 2015 | Composite[19] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 104 | .23 |
| -Muñoz, Frick, Kimonis, & Aucoin, 2008 | ICU[20] | PSAP | Mean aggressive responding across all trials | 85 | -.06 |
| -Parrott & Zeichner, 2006 | LSRP[21] | RCAP | Mean intensity across all trials where shock is given | 42 | .38 |
| -Parrott & Zeichner, 2006 | LSRP | RCAP | Mean intensity across all trials where shock is given | 42 | -.14 |
| -Reidy, Zeichner, Miller, & Martinez, 2007 | LSRP | RCAP | Composite of frequency, intensity, duration, proportion of highest shocks, flashpoint intensity, and flashpoint duration | 64 | .36 |
| -Reidy, Zeichner, Miller, & Martinez, 2007 | LSRP | RCAP | Composite of frequency, intensity, duration, proportion of highest shocks, flashpoint intensity, and flashpoint duration | 71 | .51 |
| -Reidy, Zeichner, & Seibert, 2011 | Composite[22] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | .27 |
| -Veit et al., 2010 | Composite[23] | TAP | Mean intensity across all trials | 8 | -.34 |
| -Zhou et al., 2006 | MMPI | PSAP | Total aggressive responding | 79 | .25 |
| *Impulsivity* (k=11, N=941) | | | | | |
| -Allen, Dougherty, Rhoades, & Cherek, 1996 | BIS[24] | PSAP | Number of aggressive responses | 42 | .18 |
| -Bjork, Dougherty, Huang, & Scurlock, 1998 | BIS | PSAP | Mean aggressive responses per session | 40 | .18 |
| -Coccaro, Berman, Kavoussi, & Hauger, 1996 | BIS | PSAP | Mean aggressive responses per session | 14 | -.10 |
| -Gowin et al., 2012 | Composite[25] | PSAP | Mean aggressive responses per session | 12 | -.32 |
| -Gowin et al., 2013 | BIS | PSAP | Log-transformed mean aggressive responses per provocation | 67 | .14 |
| -Lane et al., 2009 | Composite[25] | PSAP | Mean aggressive responses per session | 12 | -.06 |

| | | | | | |
|---|---|---|---|---|---|
| -McCloskey, Lee, Berman, Noblett, & Coccaro, 2008 | BIS | TAP | Mean intensity across all trials | 68 | .22 |
| -McCloskey et al., 2009 | BIS | PSAP | Proportion of aggressive responses | 355 | .17 |
| -Miller et al., 2009 | BIS | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 86 | .25 |
| -Seibert, Miller, Pryor, Reidy, & Zeichner, 2010 | UPPS[26] | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 137 | .09 |
| -Wilson, Zeichner, & Miller, unpublished | UPPS | RCAP | Standardized composite of frequency, intensity, and duration across all trials | 108 | .07 |
| *Sadism* (k=6, N=1113) | | | | | |
| -Chester, 2017b | SSIS[27] | TAP | Standardized composite of intensity and duration across all trials | 179 | .13 |
| -Chester, 2017c | SSIS | TAP | Standardized composite of intensity and duration across all trials | 143 | .08 |
| -Chester, 2017d | SSIS | TAP | Standardized composite of intensity and duration across all trials | 150 | .28 |
| -Chester, 2017e | SSIS | TAP | Standardized composite of intensity and duration across all trials | 158 | .23 |
| -Chester, 2017f | SSIS | VDAT[28] | Number of pins stuck in voodoo doll | 238 | .20 |
| -Chester & DeWall, 2017 | SSIS | TAP | Standardized composite of intensity and duration across all trials | 245 | .20 |

[1]Short Assessment of the Dark Triad; [2]Taylor Aggression Paradigm; [3]of note, the majority of the studies reported making use of a "modified version of the TAP", but for the sake of parsimony they are herein labelled as TAP; [4]Narcissistic Personality Inventory; [5]composite includes Narcissistic Personality Inventory and Five Factor Narcissism Inventory; [6]Response-Choice Aggression Paradigm; [7]Short measure of the Dark Triad; [8]composite includes score on Structured Clinical Interview for DSM-IV Narcissistic Personality Disorder (NPD) and intraclass correlation between an participant's score on the Revised NEO Personality Inventory and expert prototypical ratings of NPD; [9]Childhood Narcissism Scale; [10]composite includes score on Self-Report Psychopathy Scale-III (SRP) and Buss-Perry Aggression Questionnaire; [11]Point Subtraction Aggression Paradigm; [12]Psychopathic Personality Inventory; [13]Minnesota Multiphasic Personality Inventory-II Psychopathic-Deviant subscale; [14]Self-Report Psychopathy Scale-III; [15]composite includes Elemental Psychopathy Assessment and Self-Report Psychopathy Scale; [16]composite includes Inventory of Callous-Unemotional traits and Callous-Unemotional subscale of the Antisocial Process Screening Device; [17]intraclass correlation between an participant's score on the Revised NEO Personality Inventory and expert prototypical ratings of psychopathy; [18]Money Withdrawal Aggression Paradigm; [19]composite includes Elemental Psychopathy Assessment and Self-Report Psychopathy Scale; [20]Inventory of

Callous-Unemotional traits; [21]Levenson Self-Report Psychopathy Scale; [22]composite includes Psychopathic Personality Inventory, Levenson Self-Report Psychopathy Scale, and Self-Report Psychopathy Scale; [23]composite includes Levenson Self-Report Psychopathy Scale and Psychopathy Checklist; [24]Barratt Impulsiveness Scale; [25]composite includes Barratt Impulsiveness Scale and Eysenck Impulsivity Scale; [26]UPPS-P impulsive behavior scale; [27]Short Sadistic Impulse Scale; [28]Voodoo Doll Aggression Task.

Table 3

Meta-Analytic Relations Among Personality and Lab Aggression

| | k (N) | Weighted *r* | Std. Error | 95% C.I. | *Q* (p) |
|---|---|---|---|---|---|
| *Neuroticism* | 9 (935) | .036 | .0376 | -.037 to .110 | 10.02 (.26) |
| *Extraversion* | 9 (935) | .037 | .0332 | -.028 to .102 | 6.73 (.57) |
| *Openness* | 9 (935) | **-.103** | .0429 | -.185 to -.029 | 12.89 (.12) |
| *Agreeableness* | 12 (1068) | **-.201** | .0344 | -.265 to -.135 | 12.97 (.30) |
| *Conscientiousness* | 9 (935) | -.043 | .0332 | -.108 to .022 | 4.73 (.79) |
| *Narcissism* | 34 (2752) | **.199** | .0189 | .167 to .238 | 35.18 (.37) |
| *Psychopathy* | 24 (1998) | **.231** | .0297 | .175 to .285 | 35.86 (.04) |
| *Impulsivity* | 11 (931) | **.146** | .0332 | .082 to .209 | 5.84 (.83) |
| *Sadism* | 6 (1231) | **.190** | .0287 | .135 to .244 | 4.10 (.53) |

Note: bolded effect sizes have confidence intervals that do not include zero; k = number of effect sizes; N = total sample size; Std. Error = Standard Error; C.I. = confidence interval; Q = index of heterogeneity.

Table 4

Analyses Examining Potential Moderators of Personality-Lab Aggression Relations

| | % Male | Age | Student vs. Community[1] | Student vs. Clinical/Forensic | Community vs. Clinical/Forensic | Noise vs. Shock | PSAP vs. CRTT |
|---|---|---|---|---|---|---|---|
| *Neuroticism* | .003*[2] | -.002 | .018 | n/a[3] | n/a | .253* | n/a |
| *Extraversion* | -.001 | .018 | .086 | n/a | n/a | -.123 | n/a |
| *Openness* | .001 | .058** | .299** | n/a | n/a | .002 | n/a |
| *Agreeableness* | -.001 | .029 | .112 | n/a | n/a | -.101 | -.178 |
| *Conscientiousness* | -.002 | -.005 | -.007 | n/a | n/a | .094 | n/a |
| *Narcissism* | .000 | .003 | .040 | n/a | n/a | .031 | n/a |
| *Psychopathy* | .000 | -.002 | -.017 | -.072 | -.057 | .074 | .092 |
| *Impulsivity* | .001 | .003 | .105 | .067 | -.335 | n/a | .002 |
| *Sadism* | .002 | .035 | n/a | n/a | n/a | n/a | n/a |

Note: effect sizes presented are standardized β values; [1]For each moderator analysis, the variable listed first was coded as 0, and the second coded as 1; [2]* = moderator is significant at $p < .05$, ** = significant at $p < .01$; [3] n/a indicates that there was insufficient methodological heterogeneity to test for moderation; PSAP = point subtraction aggression paradigm; CRTT = competitive reaction time task (includes both TAP and RCAP).

Table 5

PET-PEESE Model Results

| | PET | | PEESE | |
|---|---|---|---|---|
| Trait | $b_0$ (p)<br>95% C.I. | $b_1$ (p)<br>95% C.I. | $b_0$ (p)<br>95% C.I. | $b_1$ (p)<br>95% C.I. |
| *Neuroticism* | .354 (.090)<br>-.072 to .779 | -3.189 (.121)<br>-7.465 to 1.088 | .177 (.105)<br>-.048 to .402 | -13.661 (.171)<br>-34.840 to 7.518 |
| *Extraversion* | -.282 (.063)<br>-.584 to .020 | 3.266 (.038)<br>.232 to 6.301 | -108 (.155)<br>-.269 to .052 | 14.708 (.055)<br>-.411 to 29.826 |
| *Openness* | -.639 (.003)<br>-.972 to -.307 | 5.343 (.007)<br>2.003 to 8.682 | -.370 (.001)<br>-.537 to -.203 | 25.585 (.006)<br>9.914 to 41.257 |
| *Agreeableness* | -.393 (.014)<br>-.688 to -.098 | 1.774 (.179)<br>-.960 to 4.508 | -.278 (.002)<br>-.432 to -.125 | 6.054 (.271)<br>-5.525 to 17.634 |
| *Conscientiousness* | -.079 (.611)<br>-.429 to .271 | .360 (.816)<br>-3.155 to 3.874 | -.051 (.522)<br>-.229 to .127 | .744 (.919)<br>-16.030 to 17.519 |
| *Narcissism* | .189 (.003)<br>.067 to .311 | .159 (.781)<br>-1.000 to 1.319 | .202 (<.001)<br>.138 to .265 | .320 (.888)<br>-4.251 to 4.891 |
| *Psychopathy* | .281 (.006)<br>.090 to .472 | -.444 (.596)<br>-2.157 to 1.296 | .263 (<.001)<br>.180 to .346 | -2.363 (.310)<br>-7.078 to 2.352 |
| *Impulsivity* | .218 (.001)<br>.110 to .327 | -.737 (.126)<br>-1.724 to .251 | .180 (<.001)<br>.122 to .238 | -2.699 (.048)<br>-5.363 to -.035 |
| *Sadism* | .237 (.22)<br>-.216 to .691 | -.648 (.79)<br>-7.099 to 5.804 | .216 (.073)<br>-.032 to .464 | -4.801 (.793)<br>-52.314 to 42.711 |

Note: effect sizes presented are unstandardized b coefficients.

Figure 1.

Flow Chart of Search Results