

Development of a measure of aggressive behavior expectancies in adults:

The Aggression Expectancy Questionnaire

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### Abstract

According to socio-cognitive theories, aggression is learned and elicited through a series of cognitive processes such as expectancies, or the various consequences that an individual considers more or less likely following aggressive behavior. The current manuscript describes a measurement development project that ultimately yielded a 16-item measure of positive and negative aggression expectancies suitable for use in adult populations. Across two content generation surveys, two preliminary item refinement studies, and three full studies, we took an iterative approach and administered large item pools to several samples and refined item content through a combination of empirical (i.e., factor loadings, model fit) and conceptual (i.e., content breadth, non-redundancy) considerations. The Aggression Expectancy Questionnaire (AEQ) displays a four-factor structure, as well as evidence of convergent and divergent validity with self-reported aggression and relevant basic (e.g., antagonism, anger) and complex (e.g., psychopathy) personality variables. It is posited that this type of cognitive mechanism may serve as an intermediary link between distal characterological predictors of aggression and its proximal manifestation, which is in line with several prominent theories of personality and may ultimately hold clinical utility by providing a framework for aggression interventions.

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Aggression is defined as intentional harm inflicted upon an individual who is motivated to avoid this harm (Anderson et al., 2002). It can take many forms (e.g., physical, verbal) and be enacted with many motivations (e.g., proactive, reactive). There are many person-level factors that have been linked to greater aggression, including male sex, adolescence/early-adulthood (e.g., Moffitt, 2003), and the constellation of personality traits that comprise antagonism (i.e., low Five Factor Model [FFM] agreeableness; Hyatt et al., 2020; Vize et al., 2019). Aggression researchers have sought to identify proximal psychological states that precipitate aggression, which may provide an explanatory link between these distal person-level predictors and aggressive behavior. Identification of these mechanisms can inform interventions aimed at reducing problematic instances of aggressive behavior, and ultimately reduce the societal burden of aggression. One proposed link is *expectancies* – or the various consequences that one anticipates following an aggression action. In this manuscript, we describe the development and refinement of a self-report measure of aggression expectancies suitable for an adult population.

### **Social Learning Theories and Aggression**

Social learning theory was partially founded on the observation that young children learn complex social behaviors through observing an actor and encoding the reinforcement or punishment that the actor receives (e.g., Bandura et al., 1969). As children develop, they encounter a variety of aggression-related experiences which inform their mental representation of how this social behavior can manifest (e.g., witnessing a fistfight), how others in the environment respond (e.g., praise, condemn), and their capacity to engage in such behavior themselves (e.g., Grusec, 1992; Malti & Rubin, 2018). A theoretical descendant of Bandura's

social learning theory is the social information-processing model (Dodge et al., 1990). In this model, an aggressive response represents the outcome of a series of learned social-cognitive processes: attending to, encoding, and appraising a social situation, mentally searching for possible responses to that situation, then selecting and initiating a response from an array of potential responses. Though much of this seminal work was conducted in samples of children given the dynamic learning during this stage of development, this model is pertinent to aggression across the lifespan (e.g., Tuente et al., 2019).

An important component of the social information-processing model that occurs during the response decision phase is called *expectancies*. Expectancies are “cognitive representations summarizing an individual’s learning about their environment,” which in turn “guide behavior by allowing people to anticipate changes in the environment or predict potential outcomes of their behavior” (p. 120; Treloar et al., 2015). In other words, expectancies represent the variety of intra-/interpersonal consequences that an individual has learned to anticipate may follow a given behavior (e.g., physical aggression at school will be met by consequences such as suspension). In the context of this model, aggression can be understood as the behavioral result of a complex adjudication process, during which individuals reference learned experiences to forecast the potential outcomes that they can expect after behaving aggressively (or not). Expectancies are traditionally separated into response expectancies (i.e., subjective, intrapersonal responses) and outcome expectancies (i.e., interpersonal or environmental contingencies; Treloar et al., 2015). Based on the perceived likelihood of these various consequences and the subjective value placed on them, individuals may enact an aggressive response as a behavioral strategy in pursuit of a desired goal, which may vary by cultural factors (Archer, 2006) such as gender role

adherence (Berke & Zeichner, 2016)<sup>1</sup>. Indeed, meta-analytic evidence suggests that psychological expectations are more potent motivators of human behavior than current psychological states (DeWall et al., 2016).

In studies with children (age 9-12) from the United States, more aggressive individuals tend to have more positive outcome expectancies for aggression (e.g., “you get what you want if you’re a bully”; Bentley et al., 1996; Crick et al., 1996). Although the semantic distinction between response and outcome expectancies was not incorporated into this research, both types of expectancies were recognized as important precipitants of aggression. For example, Perry and colleagues (1986) developed an expectancy questionnaire for elementary school children (age 9-12) that included response (e.g., self-reward – “if I shouted at this person, then I would feel very good”) and outcome expectancies (e.g., tangible reward – “if I push my way to the front of the line, then I will get to drink water first”). They found that aggressive children expected more tangible rewards, more peer approval, and less aversive treatment by peers in the future compared to non-aggressive children. Similarly, Hall and colleagues (1998) found that in children (age 10-15), self-reported aggression is negatively related to expectations of feeling bad and being punished after aggressing. Research on children (age 12-14) from the U.K. found that outcome expectancies about antisocial behavior are a significant predictor of self-reported direct and indirect aggression (Pornari & Wood, 2010). Importantly, this work also found that these expectancies were positively linked to hostile attribution bias, a key element of the social information processing model that indexes the tendency for individual to perceive hostile intentions from others in ambiguous social situations.

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<sup>1</sup>There is a larger literature on the role of the expectancies in substance use (e.g., Jones et al., 2001). This work also recognizes stimulus expectancies (Vogell-Sprott & Fillmore, 1999), which concern the physical properties or delivery method of a given substance.

Using a sample of American adults, Dill and colleagues (1997) found that individuals who are higher in trait irritability and aggressiveness are more likely to report that characters in a vignette are having aggression-related thoughts and imagining aggressive outcomes. Besides this work, there is virtually no other existing research on the individual differences associated with aggression expectancies in adults, although a small ( $N = 70$ ), short longitudinal study of French university students found that increases in hostile expectancies was related to increases in aggressive behavior (Hasan et al., 2013). This is an important gap in the literature to address, as aggression expectancies are germane to several key elements of the General Aggression Model (GAM; see Allen et al., 2018), an integrative, contemporary model of aggressive behavior. In the GAM, activation of aggression-related beliefs like expectancies can be considered a relatively proximal risk factor in the “Cognitions” category that may contribute to elevated likelihood of aggressive behavior<sup>2</sup>, alongside other proximal cognitive factors like aggression-supportive normative beliefs and aggression-related behavioral scripts (Huesmann, 1988). Second, aggression-related cognitions like expectancies also represent a potential link that binds more distal risk factors like personality traits to the manifestation of aggression in a given moment. In sum, expectancies are important elements of several preeminent theories of aggression, but have unfortunately received relatively little empirical attention in adults due, perhaps in part, to a lack of a comprehensive self-report measure appropriate to this population.

### **The Current Study**

The primary goal of the current initiative is to develop a measure of aggression expectancies in adults. Although originally investigated in the child/adolescent literature,

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<sup>2</sup>One can also conceive of aggression expectancies as a more “trait-like” underlying accumulation of lessons learned about the likely consequences of aggression. Contextual factors can then activate these expectancies in a present moment in a more “state-like” manner.

understanding factors like expectancies that may precipitate aggression in adults is imperative given the substantial burden that aggression (e.g., bullying, intimate partner violence, murder) places on public health. Part of this validity-construction process for this new measure involves comparing aggression expectancies scores to self-reported aggression and antisocial behavior, as well as constructs from the personality literature that are well-established correlates of aggression (e.g., low Five Factor Model agreeableness, psychopathy) as indices of convergent validity (Vize et al., 2018a, 2018b). A series of studies was conducted to construct and test the psychometric properties of this scale in an iterative manner (Clark & Watson, 1995). First, two preliminary content generation surveys were run to inform item generation, followed by two preliminary item refinement studies to test items, explore the factor structure, and examine convergent and divergent validity. Following these initial projects, Study 1 was run to further the aims of the preliminary studies and identify a final item set. Study 2 examined the factor structure using confirmatory factor analysis, and Study 3 explored convergent and divergent relations of the final measure with aggression-related indices.

Importantly, we referenced existing, similar measures – the Outcome-Expectations Questionnaire (Perry et al., 1986), the How I Think Scale (Barriga & Gibbs, 1996), the Social Representations of Aggression Questionnaire (Archer & Haigh, 1997; Campbell et al., 1992), and the Story Completion Task (Dill et al., 1999) – throughout this development process. This study represents an advancement beyond each of these measures in several ways. First, an important limitation with the Outcome-Expectations questionnaire developed by Perry and colleagues (1986) is the child-specific content of the measure (e.g., items regarding how one may behave on a school field trip, or when another student drops their lunch tray) which makes it unfit for adult populations. Second, the content of the How I Think Scale and the Social

Representations of Aggression Questionnaire include subscales that are difficult to interpret because they include items intended to capture aggression expectancies (e.g., “if I hit someone and hurt them, I feel guilty,” p. 86) as well as items that are more ethical in nature (e.g., “I believe that physical aggression is always wrong,” p. 86) or pertain to the attributes of individuals who aggress (e.g., “Someone who never behaves aggressively has admirable patience,” p. 86; Archer & Haigh, 1996). Third, although the Story Completion Task has been used to measure aggression expectancies in adults, this measure did not undergo a measurement validation procedure, and scoring this measure involves trained raters interpreting participant responses to vignettes about how hypothetical characters may think and feel. This design presents practical (i.e., resource demands) and conceptual concerns: it is unclear from this design if participant responses are actually indexing the expectancies *they themselves* would endorse.

Thus, the development of a new expectancy measure allowed for several improvements upon these initial, foundational works. First, by deliberately including items that are not child- or student-specific, this measure will be appropriate for individuals in late adolescence through older adulthood. However, given that many of the categories of aggression expectancies captured by these measures transcend developmental period (e.g., expectancies about reward), we referenced these measures during the initial stages of development to ensure sufficient content coverage. Second, we strived to ensure our new measure captured both response expectancies of aggressive behavior (e.g., intrapersonal consequences) as well as outcome expectancies (i.e., interpersonal consequences). Third, by adopting a more traditional self-report format without the resource costs and potential confounds of task-based measures, we hope to yield a measure that is straightforward to interpret and easy to implement across research and clinical settings.

### **Data Availability Note and Ethics Statement**



Data and relevant syntax are available for all studies (<https://osf.io/fuz6h/>). The relevant Institutional Review Boards (IRB) provided approval for the preliminary studies, Study 1 and Study 2 (UGA IRB #PROJECT00002718), and Study 3 (VCU IRB #HM20019997).

### **Preliminary Content Generation Surveys**

Prior to Study 1, we surveyed 225 laypersons on Amazon's Mechanical-Turk and the editorial board members of *Aggressive Behavior* and *Psychology of Violence* to help generate content that informed the aggression expectancy items generated for and examined in Study 1 (see Table 1). Full descriptions of these preliminary content generation efforts are available at <https://osf.io/fuz6h/>. The positive aggression expectancies reported by laypersons and experts were characterized by one or more of seven themes: 1) *counter/thwart attack* (e.g., "I will defend myself"), 2) *gain social capital* (e.g., "I will be respected by others"), 3) *emotion/tension release* (e.g., "I will feel better after venting my anger"), 4) *positive feelings* (e.g., "I will get a self-esteem boost"), 5) *achieving a goal* (e.g., "people will bend to my will"), 6) *justice* (e.g., "teach the other person a lesson"), and 7) *demonstrate efficacy* (e.g., "I will learn what I am really capable of"). The reported negative aggression expectancies were characterized by one or more of seven themes: 1) *formal punishment* (e.g., "I will get arrested"), 2) *physical harm to self* (e.g., "I may get beaten up"), 3) *physical harm to others* (e.g., "I may hurt them seriously"), 4) *emotional harm to self* (e.g., "I would lose respect for myself"), 5) *emotional harm to others* (e.g., "I will make them cry"), 6) *damage to relationships* (e.g., "people will think poorly of me"), and 7) *increased likelihood of future harm* (e.g., "I will gain an enemy").

### **Preliminary Item Refinement and Factor Identification Studies**

Following the content generation studies, we conducted two additional preliminary item refinement and factor identification studies. Full descriptions of these preliminary content

generation efforts are available at <https://osf.io/fuz6h/>. In the first preliminary item refinement and factor identification study, we used the themes identified in the content generation studies (Table 1) to create an 84-item pool and administered these items alongside measures of aggression and personality to a sample of adults from MTurk (valid  $N = 335$ )<sup>3</sup>. After culling highly redundant items (i.e., correlated  $r \geq .70$ ) and eliminating items that did not receive responses across the full range of response options, we conducted a series of exploratory factor analyses (EFA) using principal axis factoring and direct oblimin rotation to explore the factor structure of these items. Parallel Analyses and Velicer's MAP test were used to inform the interpretation of the various factor solutions, and we also conducted EFA with maximum likelihood estimation for additional empirical evidence regarding the fit of various solutions. One-factor (i.e., "general expectancy") and two-factor (i.e., "general positive and general negative") models demonstrated poor fit (Supplemental Table 2), and six- and seven-factor models were either overly specific (i.e., "bloated specific") in content or difficult to interpret. Thus, based on superior model fit, interpretability, and representation of the themes from the content generation surveys (Table 1), we elected to move forward with items that we anticipated would form a five-factor solution: two positive expectancy factors (i.e., "positive intrapersonal" and "positive interpersonal") and three negative expectancy factors (i.e., "harm to self," "damage to self-image/reputation," and "harm to victim"). Importantly, the positive expectancy factors demonstrated positive correlations with self-reported aggression (i.e.,  $r_s = .38$  to  $.58$ ) and antagonism (i.e.,  $|r_s| = .31$  to  $.41$ ; Supplemental Table 3). The negative expectancy factors

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<sup>3</sup>Here and in subsequent samples, we strived for a minimum sample size of  $N = 300$ , consistent with recommendations by Clark and Watson (1995) and MacCallum and colleagues (1999) for factor analysis in the scale development process. Samples of this size should also provide stable estimates of correlation coefficients (Schönbrodt et al., 2013).

exhibited smaller and less directionally consistent relations (i.e.,  $|rs| = .10$  to  $.25$ ) with self-reported aggression and personality traits. We identified the highest loading items on each of these five factors, and eight items per factor were selected that met criteria of being sufficiently high loading (i.e.,  $\geq .40$ ).

In the second preliminary item refinement and factor identification study, we administered this reduced set of items 1 to another online sample of adults from MTurk (valid  $N = 322$ ). Similar to the previous study, the model fit and factor interpretability was best for the four- and five-factor solutions, with the factor structure of these items unfolding such that the expected positive and negative intrapersonal and interpersonal factors (i.e., “positive intrapersonal,” “positive interpersonal,” “harm to self,” and “harm to victim”) emerged at the four-factor level, with a “damage to self-image/reputation” factor emerging at the five-factor level. These factors, especially the positive expectancy factors, demonstrated positive relations with self-reported aggression (i.e.,  $rs = .20$  to  $.43$ ) and antagonism (i.e.,  $|rs| = .41$  to  $.50$ ; see Supplemental Tables 4, 5, and 6). Thus, the primary issue at the end of the preliminary item refinement and factor identification studies was adjudicating between the four- and five-factor level solutions.

## Study 1

### Study Overview

The goals of Study 1 were to continue to refine the Aggression Expectancy Questionnaire (AEQ) by administering a reduced and amended set of items to another sample of adults and testing the factor structure exhibited by this reduced set of items.

### Methods

**Participants.** Study 1 participants were recruited from Amazon’s MTurk. Following a

screening procedure (Supplemental Table 1), the final sample was N = 308 (54.9% male; mean [SD] age = 36.8 years [10.8]; 81.5% White or Caucasian, 5.8% Black or African-American, 5.2% Asian, 3.9% reporting more than one racial identity, 3.6% Hispanic or Latino).

**AEQ.** The iteration of the AEQ administered in Study 1 included 31 items. The top four highest-loading items (all loading  $\geq .40$ ) from each of the five factors observed in second preliminary item refinement and factor identification study were included for an initial pool of 20 items. Eleven items were added in the interest of not creating overly narrow scales or falling prey to the “attenuation paradox” (Loevinger, 1954). Seven of these 11 items were generated for the “harm to victim” factor because the item content of the four highest-loading items skewed toward more extreme harm, (e.g., “I may seriously hurt the other person”). One additional item was generated for the “positive intrapersonal” factor: “It will feel good.” Two items added were for the “harm to self” factor: “I will get hurt,” and “I will experience formal negative consequences (e.g., get arrested, lose my job)” in the interest in increasing the content coverage beyond the revenge-oriented content (e.g., “I’d be vulnerable to retaliation”) in the four highest-loading items. With this same consideration in mind, the item “I will get into trouble” from previous iterations of the measure was also included.

As in the preliminary studies, participants were presented with the following prompt: *“People often behave in certain ways because they expect a certain consequence to occur. For example, you may eat a snack because you expect the consequence will be that you feel less hungry afterwards. Below is a series of statements about **possible consequences of being aggressive**. Please respond on a 1-5 scale to indicate how likely you think each consequence is for you.”* Participants were presented with a Likert-type scale with the following labels: 1 = Very Unlikely (i.e., it is very unlikely that this will happen if I behave aggressively), 2 = Somewhat

Unlikely, 3 = Neither Likely nor Unlikely, 4 = Somewhat Likely, and 5 = Very Likely (i.e., it is very likely that this will happen if I behave aggressively). We included the running statement “*If I am aggressive toward other people, then I expect that...*” above each cluster of 10 items.

**Analyses.** As in the preliminary item refinement and factor identification studies, items were eliminated that did not receive responses across the full range of response options, and pairs of items correlated at  $r \geq .70$  were identified and the items that exhibited the largest number of these high correlations (i.e., the most redundancies) were eliminated (Clark & Watson, 1995). To examine the factor structure of the reduced set of items, a series of EFA using principal axis factoring and direct oblimin rotation were conducted. EFA with promax rotation and maximum likelihood fitting procedure were also conducted to examine fit. In all studies in the current work, we assumed missing data were missing completely at random. Analyses for all studies were done in IBM SPSS Statistics (Version 26.0) or R computing software (R Core Team, 2022).

## Results

**Item refinement and exploratory factor analyses.** All items exhibited the full range of responses, and only one pair of items correlated at  $r \geq .70$  (i.e., one item deleted). An iterative sequence of analyses was conducted to examine four- and five-factor solutions of the remaining 30 items. At the four-factor level, the “positive interpersonal,” “harm to self,” and “harm to victim” factors emerged as expected. Unexpectedly, many of the new items generated for the factor “harm to victim” loaded onto a loose “positive intrapersonal” factor that also emerged at this stage. This factor was difficult to interpret, as it represented a blend of (positively loading) positive intrapersonal items, (negatively loading) damage to self-image/reputation items, and (negatively loading) new harm to victim items. At the five-factor level, the “positive interpersonal” and “harm to self” factors remained extremely similar, and a more focal “positive

intrapersonal” factor emerged. The “harm to victim” factor emerged, but the fifth factor to emerge was also a “harm to victim” factor. The only apparent difference between these two “harm to victim” factors was severity of harm, with the former representing more irreparable harm and the latter representing more transient, emotion-specific harm.

**Secondary item refinement.** After this round of EFA, the primary interpretative issue was the peculiar break-down of the “harm to victim” items that emerged, as the item loadings at the four- and five-factor levels were puzzling. Notably, most of the items that displayed problematic loadings were generated for this current iteration of the measure, and therefore seven of the eleven of the items generated for the “harm to victim” category were eliminated, as the ultimate goal was to include four items per subscale for the sake of measure brevity. Multiple criteria were used to eliminate items, including item loadings, item clarity, and breadth of content.

**Exploratory factor analysis of remaining items.** Following this reduction in items, the EFA were repeated on these 23 items to examine how this reduced number of “harm to victim” items would perform in concert with the other items. At the four-factor level, the results were largely consistent with the four factors previously identified at this level, but with far more interpretative clarity. A clear “positive intrapersonal” factor emerged, such that all four positive intrapersonal items and all four damage to self-image/reputation items loaded onto this factor  $>.40$ . Clear “positive interpersonal,” “harm to self,” and “harm to victim” factors also emerged, with all of the items included for each of these factors displayed loadings  $>.40$ . At the five-factor level, the “positive intrapersonal” factor fractured into two sub-factors. The items that loaded onto the first “positive intrapersonal” factor  $>.40$  included a blend of items from damage to self-image/reputation, positive intrapersonal, and harm to self. The second “positive intrapersonal”

factor only had two items with loadings  $>.40$ , both of which were justice-oriented.

**Final item refinement.** After this round of analyses, we decided to pursue a four-factor structure, consisting of “positive intrapersonal,” “positive interpersonal,” “harm to self,” and “harm to victim.” This decision was based on the interpretative difficulties that emerged at the five-factor level, as well as the conceptual and empirical overlap<sup>4</sup> between the content of the positive expectancy factors and the “damage to self-image/reputation” factor.

The final item refinement process involved selecting four items for each of these four factors that would ultimately constitute the final aggression expectancy measure. This was straightforward for the “positive intrapersonal,” “positive interpersonal,” and “harm to victim” factors, as there were only four items remaining that were included in the current version of the measure for the positive expectancy factors, and four items were chosen for the “harm to victim” factor at the previous step of these analyses. There were seven remaining items for the “harm to self” factor at this stage. One item (“I will experience negative formal consequences [e.g., get arrested, lose my job]”) that did not load onto this factor  $>.40$  was eliminated. The two items that exhibited the highest loadings onto the “harm to self” factor at the four-factor level (i.e., “I’d be vulnerable to retaliation,” “I will have to watch my back in the future”) were selected. Given that the retaliation/revenge-oriented content of these items, we elected to include the two other items generated for this factor (i.e., “I will get hurt,” “I will get into trouble”) that capture a broader content about the ways in which one may be harmed after behaving aggressively.

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<sup>4</sup>We compared the empirical profile of the “damage to self-image/reputation” factor to the two positive expectancy factors in terms of their relations to self-reported aggression as well as the Five Factor Model domains and facets in the second preliminary item refinement and factor identification study. Results suggests that the “damage to self-image/reputation” factor bears very high empirical similarity to the two positive expectancy factors (i.e.,  $r_{ICC} \geq .85$ ), suggesting that they function similarly in relation to external criteria (Supplemental Table 5).

**Exploratory factor analysis of final item set.** A last round of EFA was conducted on this finalized set of 16 items to ensure that the expected structure emerged. Item loadings are presented in Table 2. At the four-factor level (cumulative variance = 62.3%), we observed the expected structure: each of the four expected factors emerged and all items designated for those factors displayed loadings  $>.45$ . Finally, we examined the fit statistics of these items with EFA with promax rotation and a maximum likelihood fitting procedure. The results suggested that the four-factor level solution (RMSR = .03, TLI = .916, RMSEA [90% C.I.] = .063 [.047 to .075], BIC = -222.30) displayed relatively good model fit.

## **Discussion**

The primary advance in Study 1 was the establishment of a four-factor structure for the AEQ due to the elimination of the “damage to self-image/reputation” factor given difficulties with interpretation and empirical overlap. We elected to move forward with a 16-item version of the measure comprising four subscales (i.e., *Positive Intrapersonal*, *Positive Interpersonal*, *Harm to Self*, and *Harm to Victim*) with four items each.

## **Study 2**

### **Study Overview**

The goal of Study 2 was to examine the proposed four-factor structure of the AEQ in an independent sample using a confirmatory factor analytic approach. We conducted analyses to assess the fit of a four-factor model using maximum likelihood estimation method, as well as a model that included higher order General Positive and General Negative factors superordinate to the four lower order factors. A final goal was to continue to examine the nomological networks of these aggression expectancies by investigating the criteria relations with the five domains and 30 facets of the FFM. Consistent with results from the preliminary item refinement and factor



identification studies (and meta-analytic work on personality and aggression; Hyatt et al., 2019; Vize et al., 2018b), we hypothesized that the positive expectancy factors would correlate negatively with FFM agreeableness and its facets.

## Methods

**Participants.** Study 2 participants were recruited from Amazon's MTurk.

Following a screening procedure (Supplemental Table 1), the final sample included  $N = 358$  participants (53.8% male; mean [SD] age = 37.0 years [11.4]; 70.8% White or Caucasian, 11.1% Black or African-American, 7.8% Asian, 4.5% Hispanic or Latino, 4.5% reporting more than one racial identity, 1.1% American Indian, less than 1% Native Hawaiian or Pacific Islander).

**AEQ.** The final iteration of the AEQ comprised the 16 items identified in Study 1. We calculated subscale scores by averaging the four constituent items. These scales demonstrated good internal consistency: *Positive Intrapersonal*  $\alpha = .81$ ,  $\omega = .87$ , mean inter-item correlation (mIIC) = .52; *Positive Interpersonal*  $\alpha = .79$ ,  $\omega = .81$ , mean inter-item correlation (mIIC) = .48; *Harm to Self*  $\alpha = .80$ ,  $\omega = .82$ , mean inter-item correlation (mIIC) = .50; and *Harm to Victim*  $\alpha = .77$ ,  $\omega = .80$ , mean inter-item correlation (mIIC) = .45.

**Five factor model rating form.** The Five Factor Model Rating Form (FFM-RF) is a 30-item measure that uses one item to assess each of the 30 FFM facets. Domain scores were created by averaging the scores for relevant facets: neuroticism ( $\alpha = .82$ ), extraversion ( $\alpha = .82$ ), openness ( $\alpha = .72$ ), agreeableness ( $\alpha = .78$ ), and conscientiousness ( $\alpha = .86$ ).

**Analyses.** Using the *lavaan* package in R (Rosseel, 2012), we conducted confirmatory factor analyses using weighted least square mean and variance adjusted (WLMSV) estimation procedure to examine the model fit of these items at the four-factor level (Sellbom et al., 2019). As comparisons, we used this same procedure to assess fit in a model where second-order

General Positive and General Negative factors were modeled above the four first-order positive and negative expectancies, respectively, as well as a one-factor model (i.e., all items loading onto a single General Expectancy factor) and a two-factor model (i.e., all positive expectancy items loading on a General Positive factor and all negative expectancy items loading on a General Negative factor). Latent factors were allowed to correlate. Interrelations between the aggression expectancy scales were computed, as well as correlations with the FFM domains and facets.

## Results

**Confirmatory factor analysis.** Examination of fit statistics (CFI = .960, TLI = .951, RMSEA = .061, SRMR = .077) suggested that the expected four-factor model displayed reasonably good fit that was better than the alternate models tested (see Table 3; Sellbom et al., 2019). The model that included the second-order General Positive and General Negative factors also exhibited acceptable fit (CFI = .919, TLI = .902, RMSEA = .085, SRMR = .097), albeit worse than the first model. In the model with the second order factors, the *Positive Intrapersonal* factor loaded onto the General Positive factor at |1.00|, suggesting there is little variance in *Positive Intrapersonal* that is outside of the higher-order factor. The two-factor model with a General Positive and a General Negative factor demonstrated mediocre fit (CFI = .839, TLI = .812, RMSEA = .118, SRMR = .126), and the one factor model with a General Expectancy factor displayed poor fit (CFI = .684, TLI = .635, RMSEA = .165, SRMR = .166).

**Factor interrelations.** The positive and negative subscales bore large, positive relations to one another (*Positive Intrapersonal* – *Positive Interpersonal*  $r = .40$ ; *Harm to Self* – *Harm to Victim*  $r = .58$ ; Table 4). The *Positive Intrapersonal* factor bore large, negative relations to the *Harm to Self* and *Harm to Victim* subscales ( $r_s = -.33$ ), and the *Positive Interpersonal* factor bore small, positive relations with these scales ( $r_s = .11$  and  $.10$ ).

**External criteria.** The *Positive Intrapersonal* and *Positive Interpersonal* scales bore small-to-large, negative relations to agreeableness ( $r = -.32, -.18$ , respectively; Table 4) and its facets (Supplemental Table 7) and the warmth facet of extraversion, and positive relations to the anger facet of neuroticism and the assertiveness facet of extraversion. The *Harm to Self* and *Harm to Victim* scales bore small-to-medium, positive relations to agreeableness ( $r = .14, .17$ , respectively) and its facets, and the *Harm to Self* scale bore small, positive relations to neuroticism ( $r = .14$ ) and its facet self-consciousness ( $r = .20$ ).

## Discussion

Study 2 provided evidence that the final 16-item version of the AEQ exhibited acceptable model fit in an independent sample. This study also contributes to the convergent and divergent validity of the aggression expectancy subscales, although the relations exhibited were notably stronger for the positive expectancies compared to the negative expectancies.

## Study 3

### Study Overview

The goal of Study 3 was to replicate and extend Study 2. First, the four-factor structure of the AEQ was examined in another independent sample using confirmatory factor analyses. Second, we continued to examine the nomological networks of aggression expectancies by investigating the criteria relations with self-reported aggression and aggression discounting, basic (i.e., FFM domains and facets) and complex (i.e., psychopathy, sadism) personality traits, and components of empathy. We chose this set of criterion variables given the importance of linking the aggression expectancies to the outcome they purportedly predict (i.e., aggression) and the meta-analytic links between these basic (e.g., low FFM agreeableness) and complex (e.g., psychopathy) personality traits and aggressive behavior (Vize et al., 2019). These criteria

relations also permitted investigation of the absolute similarity of these scales.

## Methods

**Participants.** Study 3 participants were undergraduates recruited from a large Southeastern university located in the U.S. The final sample included  $N = 382$  participants (79.9% female; mean [SD] age = 18.9 years [2.7]; 38.6% White, 20.6% Black or African-American, 19.6% Asian or Pacific Islander, 11.7% mixed race, 8.9% Hispanic or Latino, 1% Arab, and 7.3% missing race data). Participants received credit towards their class research requirement for participation.

**Aggression expectancy measure.** The final iteration of the AEQ comprised the 16 items identified in Study 1 and used in Study 2. Subscale scores were calculated by averaging the four constituent items. These scales demonstrated good internal consistency: *Positive Intrapersonal*  $\alpha = .80$ ,  $\omega = .86$ , mean inter-item correlation (mIIC) = .49; *Positive Interpersonal*  $\alpha = .83$ ,  $\omega = .84$ , mIIC = .56; *Harm to Self*  $\alpha = .77$ ,  $\omega = .80$ , mIIC = .46; and *Harm to Victim*  $\alpha = .78$ ,  $\omega = .81$ , mIIC = .47.

**Buss-Perry Aggression Questionnaire.** The Buss-Perry Aggression Questionnaire (BPAQ) is a 29-item self-report measure of aggression and related affective constructs (Buss & Perry, 1992). The subscales exhibited acceptable internal consistency: Physical Aggression  $\alpha = .78$ , Verbal Aggression  $\alpha = .76$ , Anger  $\alpha = .77$ , and Hostility  $\alpha = .82$

**Displaced Aggression Questionnaire.** The Displaced Aggression Questionnaire is a 31-item self-report measure of displaced aggression and related cognitive constructs (Denson et al., 2006). The subscales exhibited acceptable internal consistency: Angry Rumination  $\alpha = .92$ , Behavioral Displaced Aggression  $\alpha = .88$ , and Revenge-Planning  $\alpha = .92$ .

**IPIP-NEO-60.** The IPIP-NEO-60 is a 60-item self-report measure of FFM domains

(measured with 12 items each) and 30 facets (two items each; Maples-Keller et al., 2019). The domains exhibited acceptable internal consistency (neuroticism  $\alpha = .77$ , extraversion  $\alpha = .84$ , openness  $\alpha = .69$ , agreeableness  $\alpha = .74$ , and conscientiousness  $\alpha = .76$ ), as did the facets (mean inter-item correlation = .49, range = .21 [self-discipline] to .78 [anger]). Full information about facet reliability can be found in Supplemental Table 8.

**Self-Report Psychopathy-III.** The Self-Report Psychopathy-III (SRP-III) is a 64-item self-report measure of various elements of psychopathic personality (Williams et al., 2007). The subscales exhibited acceptable internal consistency: Interpersonal Manipulation ( $\alpha = .82$ ), Callous Affect ( $\alpha = .76$ ), Criminal Tendencies ( $\alpha = .71$ ), and Erratic Lifestyle ( $\alpha = .80$ ).

**Short Sadistic Impulse Scale.** The Short Sadistic Impulse Scale is a 10-item self-report measures of various forms of sadism (O'Meara et al., 2011). This scale exhibited adequate internal consistency ( $\alpha = .78$ ).

**Affective and Cognitive Measure of Empathy.** The Assessment and Cognitive Measure of Empathy (ACME) is a 36-item self-report measure of several operationalizations of empathy (Vachon et al., 2016). The subscales exhibited acceptable internal consistency: Cognitive Empathy ( $\alpha = .88$ ), Affect Resonance ( $\alpha = .87$ ), and Affect Dissonance ( $\alpha = .85$ ). Cognitive Empathy refers to empathic accuracy, or knowing what others are feeling; Affect Resonance refers to empathic concern and compassion; Affect Dissonance refers to the experience of a contradictory emotional response, such as feeling annoyance with this happiness of others.

**Aggression Choice Questionnaire.** The Aggression Choice Questionnaire (ACQ) is a self-report measure of delay discounting for aggressive behavior developed by West and colleagues (2022), completed by  $N = 285$  in the current study. The ACQ was adapted from the Monetary Choice Questionnaire (Kirby et al., 1999), a measure of delay discounting for

monetary reward involving dichotomous choices between immediate receipt of a smaller amount of money and a delayed receipt of a larger amount of money. In the ACQ, participants were instructed to think of a person who had hurt or angered them in the past. Then, participants were presented with a pain rating scale from 1 (very mild pain) to 10 (worst possible pain) and asked to make 27 dichotomous choices between inflicting immediate-but-lesser and delayed-but-greater amount of hypothetical pain on that chosen target. For example, participants responded to items such as “would you rather inflict pain level 4 right now or inflict pain level 8 on this person in 260 days.” The scoring procedure for the ACQ is analogous to the MCQ, such that individual scores represent the discounting parameter  $k$  (see Kaplan et al., 2016). Higher  $k$  values reflect a greater degree of discounting, or a preference for the immediate-but-lesser aggression option. In line with the internal meta-analysis by West and colleagues (2022) suggesting that aggression and antagonistic traits were negatively related to aggression discounting, we expected that the positive aggression expectancies would be negatively related to aggression discounting.

**Analyses.** Using the *lavaan* package in R, we conducted confirmatory factor analyses using weighted least square mean and variance adjusted (WLMSV) estimation procedure to examine the model fit of these items at the four-factor level. As a comparison, we modeled a one-factor model (i.e., all items loading onto a single General Expectancy factor) and a two-factor model (i.e., all positive expectancy items loading on a General Positive factor and all negative expectancy items loading on a General Negative factor). The latent factors were allowed to correlate. Interrelations between the aggression expectancy scales were computed, as well as correlation with the FFM domains and facets. To examine absolute empirical similarity, intraclass correlations were calculated between each aggression expectancy scale using all the aggression and personality variables as criteria.

## Results

**Confirmatory factor analysis.** Examination of fit statistics (CFI = .955, TLI = .944, RMSEA = .074, SRMR = .079) suggested that the four-factor model displayed reasonably good fit (see Table 3; Sellbom et al., 2019) that was comparable to the fit identified in Study 4 and the best among the models tested. The model that included the second-order General Positive and General Negative factors also exhibited acceptable fit (CFI = .923, TLI = .907, RMSEA = .095, SRMR = .095), albeit worse than the first model. The two-factor model with a General Positive and a General Negative factor demonstrated mediocre fit (CFI = .867, TLI = .846, RMSEA = .123, SRMR = .119), and the one factor model with a General Expectancy factor displayed poor fit (CFI = .701, TLI = .655, RMSEA = .184, SRMR = .172).

**Factor interrelations.** The positive and negative subscales bore large, positive relations to one another (Table 5). The *Positive Intrapersonal* factor bore null relations to the *Harm to Self* and *Harm to Victim* subscales, and the *Positive Interpersonal* factor bore medium-to-very large positive relations with these scales.

**External criteria.** The *Positive Intrapersonal* and *Positive Interpersonal* scales bore medium-to-very large, positive relations with various indices of aggression, including physical aggression, verbal aggression, displaced aggression, and revenge planning ( $r_s = .19$  to  $.46$ ; Table 5). The *Harm to Victim* scale displayed very small-to-medium, mostly positive relations with the aggression indices ( $|r_s| = .04$  to  $.20$ ), and the *Harm to Self* scale bore null-to-medium, generally positive relations with the aggression indices ( $|r_s| = .06$  to  $.19$ ). The *Positive Intrapersonal* and *Positive Interpersonal* scales bore medium-to-very large, negative relations with agreeableness, the empathy scales Affect Resonance and Affect Dissonance ( $|r_s| = .21$  to  $.33$ ) as well as large-to-very large, positive relations to psychopathy scales of Interpersonal Manipulation, Callous

Affect, and Erratic Lifestyle, as well as a measure of sadism ( $|rs| = .29$  to  $.47$ ). The *Harm to Self* scale bore medium, positive relations to neuroticism and openness ( $|rs| = .17, .18$ ), and null-to-small, generally negative relations to the psychopathy subscales and sadism ( $|rs| = .03$  to  $.17$ ). The *Harm to Victim* subscale bore null-to-small, generally positive relations to the psychopathy subscales and sadism ( $|rs| = .05$  to  $.15$ ). The *Positive Intrapersonal* and *Positive Interpersonal* scales bore medium-to-very large relations to the FFM facets cooperation (A;  $|rs| = .38, .34$ ), morality (A;  $|rs| = .28, .29$ ), and anger (N;  $|rs| = .28, .21$ ; Supplemental Table 8). The *Harm to Self* scale bore medium, positive relations with self-consciousness (N;  $|r| = .24$ ), imagination (O;  $|r| = .22$ ), artistic interests ( $|r| = .18$ ), and depression (N;  $|r| = .16$ ). The *Harm to Victim* scale bore a medium, positive relation to imagination (O;  $|r| = .17$ ) and a medium, negative relation cooperation (A;  $|r| = .18$ ). Finally, the *Positive Intrapersonal* and *Positive Interpersonal* scales bore medium, negative relations to aggression discounting ( $|rs| = .23, .20$ ).

**Intraclass correlations.** The *Positive Intrapersonal* and *Positive Interpersonal* scales bore a relatively high degree of absolute similarity ( $r_{ICC} = .74$ ). The *Harm to Self* and *Harm to Victim* scales exhibited smaller, but still substantial absolute similarity ( $r_{ICC} = .49$ ). The positive expectancy subscales bore low absolute similarity to the *Harm to Self* subscale ( $r_{ICCs} \leq .05$ ). In contrast, the *Positive Intrapersonal* and *Positive Interpersonal* scales bore a moderate degree of absolute similarity to the *Harm to Victim* scale ( $r_{ICC} = .45, .49$ ).

### General Discussion

The goal of the current manuscript was to describe the development a measure of general aggression expectancies for use in adult populations. Across two preliminary surveys, two preliminary item refinement and factor identification studies, and three full studies, we described the iterative scale construction process that yielded the 16-item AEQ. This measure yields four



factors (*Positive Intrapersonal*, *Positive Interpersonal*, *Harm to Self*, and *Harm to Victim*) that fit into a two x two matrix comprised of outcome valence (i.e., positive or negative) and outcome target (i.e., self or other). The AEQ and scoring instructions are available in the appendix and at <https://osf.io/fuz6h/>.

### **Review of Indices of Validity**

In support of the AEQ's content validity, it is worth revisiting the seven positive and seven negative aggression expectancy themes identified in the preliminary surveys. By and large, the final version of the AEQ captures these themes. Based on this informal coding (Table 1), all seven of the positive expectancy themes are captured, and six of the seven negative expectancy themes are captured, with the exception being *damage to relationships* (e.g., "people will think poorly of me"). This apparent gap in content coverage is due, in part, to the decision to eliminate the items included for the factor "damage to self-image/reputation." Results from the two preliminary item refinement and factor identification studies and from Study 1 demonstrated that items written for this theme loaded strongly onto the "positive intrapersonal" factor. Moreover, absolute similarity analyses in the second preliminary item refinement and factor identification study suggest that the "damage to self-image/reputation" factor bears remarkably similar relations to external criteria as the "positive intrapersonal" factor. Although these items appear to capture a distinct type of social consideration, the data suggest that these concerns are very highly interrelated.

In terms of convergent and discriminant validity, in the preliminary item refinement and factor identification studies and Studies 1-3, slightly different iterations of the *Positive Intrapersonal* and *Positive Interpersonal* factors showed expected positive relations with trait aggression as well as negative relations with agreeableness and conscientiousness – two of the

major domains of personality most robustly linked to aggression and antisocial behavior (Miller & Lynam, 2001). At the facet level, these positive expectancy factors bore the largest relations to the personality facets previously identified as the most important predictors of aggression (Hyatt et al., 2020; Jones et al., 2011; Vize et al., 2018). In other words, individuals who tend to be aggressive and relatively antagonistic expect more positive intrapersonal and interpersonal consequences after engaging in aggressive behavior. Moreover, results from the aggression discounting measure in Study 3 suggest that individuals with more positive aggression expectancies tend to prefer to inflicting more severe aggression in the long term rather than inflicting more mild aggression in the short term. This is consistent with laboratory work by West and colleagues (2022) and presents an interesting nuance to the general pattern observed in the literature that externalizing behavior is generally related to the preference for immediate-but-lesser reward, particularly when the reward is secondary (e.g., money instead of a desired substance; Odum et al., 2020). This difference may be due to part, to aggressive behavior's potential to be linked to primary (i.e., response expectancies; "it will feel good") as well as secondary (i.e., outcome expectancies; "I will appear more dominant to others") rewards. We believe that clarifying the behavioral economics of aggression across contexts is an important avenue for future research, and we believe that subjective value of aggression-related rewards will be a key construct to consider.

The negative expectancy factors generally exhibited smaller effect sizes with the criteria. For instance, although the *Harm to Self* exhibited positive relations to neuroticism in Studies 4 and 5, as well as the facets self-consciousness and depression, the effects were small to medium in magnitude. Moreover, the *Harm to Victim* scale exhibited an inconsistent pattern of relations with the positive expectancy scales and with the external criteria. For example, this subscale

demonstrated a medium, positive relation ( $r = .17$ ) to agreeableness in Study 4, but a small, negative relation to agreeableness ( $r = -.08$ ) in Study 5. Of note, the final *Harm to Victim* scale displayed positive (albeit small-to-medium) associations with aggressive behavior, which makes conceptual sense (i.e., more aggressive individuals tend to expect that behaving aggressively will meaningfully impact the target of their aggression). Overall, though, this puzzling pattern of results suggests that more work is needed before the nomological network of this subscale is well-established. One potential consideration is the role of efficacy, which is also a major component of Social Learning Theory and may represent a confound or unexamined moderator of these relations. For example, consider the *Harm to Victim* item “The other person will really suffer” – endorsement of this expectancy is likely related to one’s own sense of capability to inflict harm on the victim, especially in the case of physical aggression. Thus, individuals are likely considering several factors when interpreting and responding to this item: both their own empathic sense of how much an aggressive behavior will subjectively impact the victim, as well as their own ability to bring about such harm. Indeed, a relatively consistent finding across studies was *Harm to Self* was positively related to the tendermindedness facet of agreeableness, suggesting that this subscale is capturing this type of interpersonal concern. However, given that efficacy is clearly an important variable to consider for certain forms of aggression, we viewed this as an important area to clarify with future research<sup>5</sup>.

### **Theoretical Considerations**

The current results can be viewed from several theoretical perspectives. First, the finding

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<sup>5</sup>Although we considered this issue from the outset of this measure development project, we found it difficult to write items that separated these constructs that were not long-winded and meaningfully changed the prompt (e.g., “if I aggress against another person and I am effective at harming them, then the other person will really suffer”) or counterfactual (e.g., “if I was able to aggress against another person effectively, then the other person would really suffer”).

that positive aggression expectancies are positively related to aggression is consistent with the tenets of social learning theory that types of expectancies are important precipitants of social behavior. Moreover, the AEQ reflects the response vs. outcome distinction that is prevalent in expectancy research on other externalizing behaviors like substance use, with the *Positive Intrapersonal* and the *Harm to Self* subscales representing aggression response expectancies (i.e., consequences for the individual who is aggressing) and the *Positive Interpersonal* and *Harm to Victim* subscales representing outcome expectancies (i.e., consequences to others). Although the data used here are cross-sectional in nature, the current results suggest that positive expectancies, rather than negative expectancies, may be more potent predictors of future behavior (Treloar et al., 2015), which consistent with findings from the substance use literature.

Second, although the links between antagonism and related complex personality profiles (e.g., psychopathy, narcissism) and aggression are well-established, the intermediary psychological links between these distal temperamental tendencies and the behavioral manifestation of this harmful outcome are largely unknown, although several have been proposed for antagonism (e.g., situation selection, Bresin et al., 2015; c.f. Vize et al., 2020). The current results suggest that these expectancies may be one avenue by which these traits are related to aggression, and Identification of such links is a pressing need for personality science (Fleeson et al., 2015). This framework is also consistent with the GAM, which posits that more distal person-level factors are linked to engagement in aggressive behavior, in part, via cognitive routes. The links between antagonistic personality traits and the AEQ suggest that expectancies are likely one route that precedes aggressive behavior in adults.

### **Limitations and Future Directions**

Despite some evidence of validity, there are several limitations of this work to note and

future directions needed to continue to investigate the psychometric properties of the AEQ. First, all of the studies conducted with the AEQ herein used predominantly white, American adults recruited from Amazon's MTurk or an undergraduate institution. Although there is a value in this data collection platform (if the appropriate validity measures are in place), the AEQ should be examined in samples with greater demographic diversity. Given the nature of the AEQ, studies on specific populations that have significant history with behaving aggressively (e.g., incarcerated violent offenders) would be informative. We hypothesize that these individuals would expect more positive consequences and less negative consequences (i.e., have higher positive expectancy scores and lower negative expectancy scores) than other populations, and this type of evidence would also be an additional piece of evidence in favor of the validity of the AEQ. Second, although we have proposed a model in which individual differences in aggression expectancies predict aggression, the cross-sectional nature of the current data is a limitation that precluded tests of directionality. In fact, consistent with the notion that expectancies are learned components of social cognition that begin early in life, there is likely bidirectionality to consider (i.e., one's experiences with aggression shape one's expectancies and vice versa). Future studies could track changes in aggression expectancies over the course of development, and it may be especially beneficial to examine how direct and indirect experiences with aggressive behavior impact these expectancies.

Third, while we assessed many of the person-level risk factors for aggression in the framework of the GAM, a major limitation is that we did not collect data on many elements of the Social Information Processing Model (e.g., hostile attribution bias). We believe future research that explores the interrelations between the different stages of this model, especially as they dynamically unfold over time, is a critical next step for this line of research. Relatedly, the

description of social scripts provided by Huesmann (1998) – a script “suggests what events are to happen in the environment, how the person should behave in response to these events, and what the likely outcome of those behaviors would be” (p. 15) – indicates that there is some clear conceptual overlap between these constructs. One possibility is that expectancies are a subcomponent of social scripts, analogous to their role in the Social Information Processing Model, but it is also possibility that their similarities are so extensive that they are empirically isomorphic (i.e., “jingle jangle” fallacy). We encourage conceptual work disentangling these constructs and empirical work comparing their relations to aggressive behavior.

Fourth, we did not examine any of the various contextual factors that may lead to differential activation of aggression expectancies. Although an expectancy model portrays aggression as the outcome of a “cold” decision making process, it may be better described as a “hot” process that often occurs in an acute negative emotional state such as anger or fear (see Crick et al., 1994). These affective states may lead one to anticipate more positive rather than negative expectancies. Future research on the ways in which affective context influences aggression expectancies is needed, and this work would be especially valuable if it incorporated state measures of aggression expectancies and aggressive behaviors to help understand the interplay of these constructs over time.

Finally, a current limitation of this work is that there is no investigation of its clinical utility, and we encourage future research on the AEQ in clinical settings. If aggression expectancies predict aggression and can be altered through intervention (e.g., via cognitive restructuring), this could serve as a useful intervention module for clinicians to use with aggressive or hostile individuals. There is analogous research on substance use expectancies (e.g., Cruz et al., 2002) that suggests that expectancies can be altered through intervention,

concordant with changes in behavioral indices like initiation and escalation of substance use (Treloar et al., 2015). In addition to providing a framework for exploring a client's beliefs about aggression, the AEQ could prove useful as an assessment tool for tracking treatment progress.

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Table 1

Condensed aggression expectancy themes from preliminary surveys with sample items

<b>Positive Expectancies</b>	<b>Sample Item</b>	<b>Negative Expectancies</b>	<b>Sample Item</b>
<i>Counter/prevent attack</i>	“People will learn that there are costs to messing around with me.”	<i>Formal punishment</i>	“I will get in trouble with an authority figure.”
<i>Gain social capital</i>	“I will gain the respect of those around me.”	<i>Physical harm to self</i>	“I will get beaten up.”
<i>Emotion/tension release</i>	“I will feel better after releasing my anger.”	<i>Physical harm to others</i>	“I may seriously hurt the other person.”
<i>Positive feelings</i>	“It will make me feel good about myself.”	<i>Emotional harm to self</i>	“I would feel like a jerk afterwards.”
<i>Achieving a goal</i>	“I’ll get what I want from others.”	<i>Emotional harm to others</i>	“The other person will feel emotionally upset.”
<i>Justice</i>	“I will be punishing someone who deserves to be punished.”	<i>Damage to relationships</i>	“People close to me (e.g., my friends and family) would be disappointed in me.”
<i>Demonstrate efficacy</i>	“Others will see what I’m capable of doing.”	<i>Increased likelihood of future harm</i>	“I will have to watch my back in the future.”

Table 2

## Study 1 Item Loadings for Final Version of AEQ

<i>Positive Intrapersonal Items (4.1)</i>	<i>4.1</i>	<i>4.2</i>	<i>4.3</i>	<i>4.4</i>
1. Later on, I will be happy that I did so.	<b>.57</b>	.07	-.18	.07
2. I will be doing it because it's the right thing to do.	<b>.86</b>	-.06	.07	-.13
3. I will feel that I acted in the name of justice.	<b>.69</b>	.08	.07	-.05
4. It will feel good.	<b>.46</b>	.20	-.16	.05
<i>Positive Interpersonal Items (4.2)</i>	<i>4.1</i>	<i>4.2</i>	<i>4.3</i>	<i>4.4</i>
5. I will appear more dominant to others.	.03	<b>.72</b>	.05	-.09
6. Others will learn not to mess with me.	.09	<b>.77</b>	.04	<-.01
7. Others will see what I'm capable of.	.07	<b>.67</b>	-.02	<-.01
8. They will be afraid of me in the future.	-.03	<b>.51</b>	.03	.34
<i>Harm to Self Items (4.3)</i>	<i>4.1</i>	<i>4.2</i>	<i>4.3</i>	<i>4.4</i>
9. I will be vulnerable to retaliation.	-.05	.08	<b>.81</b>	-.10
10. I will get hurt.	.01	-.10	<b>.57</b>	.18
11. I will have to watch my back in the future.	.01	.17	<b>.76</b>	.05
12. I will get into trouble.	-.06	-.12	<b>.54</b>	.19
<i>Harm to Victim Items (4.4)</i>	<i>4.1</i>	<i>4.2</i>	<i>4.3</i>	<i>4.4</i>
13. The other person will really suffer.	-.12	.10	.04	<b>.58</b>
14. I may seriously hurt the other person.	-.13	.06	.12	<b>.60</b>
15. I will negatively affect their quality of life.	-.13	-.01	-.02	<b>.68</b>
16. I will harm the other person's reputation.	.18	-.06	.11	<b>.51</b>

Note: factor loadings >.40 are **bolded**.

Table 3

Standardized CFA factor loadings in Study 2 and 3 and relation to preliminary survey themes

Aggression Expectancy Item	$\lambda / \lambda$	SE / SE	Themes
<i>Positive Intrapersonal Items</i>			
1. Later on, I will be happy that I did so.	.64 / .75	.06 / .06	<i>Positive feelings; Emotion/tension release</i>
2. I will be doing it because it's the right thing to do.	.78 / .61	.05 / .07	<i>Justice; Achieving a goal</i>
3. I will feel that I acted in the name of justice.	.80 / .70	.05 / .06	<i>Justice; Achieving a goal</i>
4. It will feel good.	.65 / .72	.06 / .06	<i>Positive feelings; Emotion/tension release</i>
<i>Positive Interpersonal Items</i>			
5. I will appear more dominant to others.	.64 / .71	.06 / .05	<i>Establish dominance; Gain social capital</i>
6. Others will learn not to mess with me.	.77 / .73	.06 / .05	<i>Establish dominance; Counter/prevent attack;</i>
7. Others will see what I'm capable of.	.84 / .76	.05 / .05	<i>Demonstrate efficacy; Gain social capital</i>
8. They will be afraid of me in the future.	.52 / .77	.07 / .05	<i>Demonstrate efficacy; Counter/prevent attack;</i>
<i>Harm to Self Items</i>			
9. I will be vulnerable to retaliation.	.73 / .63	.06 / .07	<i>Immediate retaliation; Increased likelihood of future harm</i>
10. I will get hurt.	.68 / .70	.07 / .06	<i>Physical harm to self; Emotional harm to self</i>
11. I will have to watch my back in the future.	.71 / .68	.06 / .06	<i>Increased likelihood of future harm</i>
12. I will get into trouble.	.70 / .69	.06 / .06	<i>Formal punishment</i>
<i>Harm to Victim Items</i>			
13. The other person will really suffer.	.80 / .75	.06 / .06	<i>Physical harm to others; Emotional harm to others</i>
14. I may seriously hurt the other person.	.45 / .65	.07 / .06	<i>Physical harm to others; Emotional harm to others</i>
15. I will negatively affect their quality of life.	.70 / .64	.06 / .06	<i>Physical harm to others; Emotional harm to others</i>
16. I will harm the other person's reputation.	.72 / .72	.06 / .06	<i>Physical harm to others; Emotional harm to others</i>

Note: SE = standard error; values from before the slash are standardized factor loadings from Study 6, and values after the slash are from Study 7.



Table 4

## Study 2 factor interrelations and relations to FFM domains

	4.1	4.2	4.3	4.4
4.1 <i>Positive Intrapersonal</i>	-			
4.2 <i>Positive Interpersonal</i>	<b>.40*</b>	-		
4.3 <i>Harm to Self</i>	<b>-.33*</b>	.11	-	
4.4 <i>Harm to Victim</i>	<b>-.33*</b>	.10	<b>.57*</b>	-
Neuroticism	.10	.11	.14	-.02
Extraversion	-.04	-.07	-.19*	.06
Openness	-.16*	-.12	-.11	.02
Agreeableness	<b>-.32*</b>	-.18*	.14	.17*
Conscientiousness	<b>-.26*</b>	-.10	.01	.08

Note: N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; bivariate relations > .20 are **bolded**; \* indicates  $p < .005$ .

Table 5

Study 3 factor interrelations, intraclass correlations, and relations to external criteria

	4.1	4.2	4.3	4.4
4.1 <i>Positive Intrapersonal</i>	-	.74	-.01	.45
4.2 <i>Positive Interpersonal</i>	<b>.47*</b>	-	-.05	.49
4.3 <i>Harm to Self</i>	-.06	<b>.26*</b>	-	.49
4.4 <i>Harm to Victim</i>	.02	<b>.43*</b>	<b>.62*</b>	-
<hr/>				
BPAQ Physical Aggression	<b>.44*</b>	<b>.37*</b>	-.04	.09
BPAQ Verbal Aggression	<b>.30*</b>	<b>.32*</b>	.05	.16*
BPAQ Anger	<b>.29*</b>	<b>.27*</b>	.04	.08
BPAQ Hostility	.19*	<b>.21*</b>	<b>.20*</b>	.17*
DAQ Angry Rumination	<b>.36*</b>	<b>.27*</b>	.17*	.19*
DAQ Behavioral Displaced Aggression	<b>.26*</b>	<b>.22*</b>	.08	.12
DAQ Revenge Planning	<b>.46*</b>	<b>.33*</b>	-.02	.06
Neuroticism	.05	.02	.17*	.06
Extraversion	<.01	.15	-.09	.03
Openness	-.05	-.03	.18*	.11
Agreeableness	<b>-.31*</b>	<b>-.33*</b>	.03	-.08
Conscientiousness	-.14	-.11	-.08	-.08
SRP Interpersonal Manipulation	<b>.41*</b>	<b>.39*</b>	-.03	.12
SRP Callous Affect	<b>.36*</b>	<b>.36*</b>	-.12	.11
SRP Erratic Lifestyle	<b>.29*</b>	<b>.30*</b>	-.03	.09
SRP Criminal Tendencies	.11	.04	-.17*	-.05
Sadism	<b>.47*</b>	<b>.40*</b>	.03	.15*
Cognitive Empathy	-.02	.08	.06	.09
Affective Resonance	<b>-.29*</b>	<b>-.21*</b>	.15*	-.01
Affective Dissonance	<b>-.43*</b>	<b>-.37*</b>	.02	-.13
ACQ Aggression Discounting	<b>-.23*</b>	<b>-.20*</b>	.07	<.01

Note: values below the diagonal are bivariate relations, values above the diagonal are intraclass correlations; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; bivariate relations > .20 are **bolded**; \* indicates  $p < .005$ .

## Appendix A

## Aggression Expectancy Questionnaire

People often behave in certain ways because they expect a certain consequence to occur. For example, you may eat a snack because you expect the consequence will be that you feel less hungry afterwards. Below is a series of statements about **possible consequences of being aggressive**. Please respond on a 1-5 scale to indicate how likely you think each consequence is for you.

**1 = Very unlikely** (i.e., It is very unlikely that this will happen if I behave aggressively).

**2 = Somewhat unlikely**

**3 = Neither likely or unlikely**

**4 = Somewhat likely**

**5 = Very likely** (i.e., It is very likely that this will happen if I behave aggressively).

*If I am aggressive towards other people, then I expect that...*

1. Later on, I will be happy that I did so.
2. I will be doing it because it's the right thing do.
3. I will feel that I acted in the name of justice.
4. It will feel good.
5. I will appear more dominant to others.
6. Others will learn not to mess with me.
7. Others will see what I'm capable of doing.
8. They will be afraid of me in the future.
9. I will get into trouble.
10. I will be vulnerable to retaliation.
11. I will get hurt.
12. I will have to watch my back in the future.
13. It will cause the other person pain.
14. I may seriously hurt the other person.
15. I will harm the other person's reputation.
16. I will negatively affect their quality of life.

Scoring:

Positive Intrapersonal = (AEQ1 + AEQ2 + AEQ3 + AEQ4)/4

Positive Interpersonal = (AEQ5 + AEQ6 + AEQ7 + AEQ8)/4

Harm to Self = (AEQ9 + AEQ10 + AEQ11 + AEQ12)/4

Harm to Other = (AEQ13 + AEQ14 + AEQ15 + AEQ16)/4