The Predictive Ability of Early Maladaptive Schemas for Aggression
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ABSTRACT. The presence of aggression is an enduring concern that affects many domains of one's life. In those with repeated aggressive behavior, it is especially difficult to treat. Identification and treatment of underlying factors is pivotal to reduce aggression. Schema therapy offers an effective approach to treating these underlying elements, which are conceptualized as early maladaptive schemas (EMS). The confirmation of EMS’ prediction of aggression enables effective identification and treatment through this therapeutic approach. Adult participants completed the Young Schema Questionnaire – S3, Personality Inventory for the DSM-5 – Brief Form, and the Buss Perry Aggression Questionnaire. Results for a general sample of 124 participants supported that total EMS, EMS domains, and personality traits were all predictive of aggression. EMS were the most predictive in the aggression domain of hostility, $R^2 = .37$, $p < .001$. Personality traits were found to be more predictive than EMS for aggression, $R^2 = .76$, $p = .001$. However, the use of schema domains provides a more specific understanding of both the manifestation of aggression and translates directly to treatment through schema theory.

Keywords: early maladaptive schemas, personality traits, aggression, schema therapy

Individuals who exhibit aggression are likely to suffer from impaired behavioral functioning and negatively impact those around them (Gilbert & Daffern, 2011). In fact, aggressive behavior is significantly correlated with increased substance use, involvement in deviant behaviors, and risky sexual practices (Nouvion et al., 2007). Aggressive individuals are more likely to have lower self-worth with higher levels of depressive symptoms (Undheim & Sund, 2010), an increased risk of suicide (Helfritz & Stanford, 2005), and increased engagement in intimate partner violence (Próspero, 2007). Thus, it is important to understand and predict aggression.

Aggression Theory
Aggression is comprised of behaviors that pose significant risk to both the acting individual and those with whom they interact. These can involve physical or emotional harm, increased economic costs, and elevated likelihood of psychological difficulties in victims or witnesses (Flanigan & Russo, 2019). Although multiple approaches to the conceptualization of aggression exist, the most encompassing theory in contemporary research is DeWall et al.’s (2011) General Aggression Model. This model is based on multiple “mini-theories” and combines them into a single framework. It asserts that aggression arises as a result of biological factors, personality development, social processes, cognitive processes, short-term/long-term processes, and decision-making factors. The theory utilizes a three-stage cycle, first identifying the inputs of the person and the situation. This leads to one's present internal state, whether it be cognitive, arousal, or affect. The third stage is the outcome of these processes and the subsequent decision-making process (DeWall et al., 2011).

Other theories place more specific focus on the cognitive development of aggression and are useful for later considerations of intervention. Aggression scripts involve observation and repeated action as children. Through the repetition of aggression, it becomes habituated and more likely to perpetuate. When aggression scripts combine with normative beliefs, the individual
has little consideration that would otherwise lead them to inhibit aggressive behavior (Huesmann & Guerra, 1997).

Buss and Perry’s (1992) four subtrait model of aggression aligns closely with the principles outlined in the General Aggression Model. Buss and Perry (1992) defined and measured aggression as a concept that is comprised of four psychometrically supported subtraits. “Physical and verbal aggression involve hurting and harming others. Anger is comprised of an individual’s affect, which can lead to aggressive acts. Hostility represents the cognitive processes involved in one’s attitude,” which includes the capacity to develop the aforementioned subtraits (Buss & Perry, 1992, p. 457).

Using the General Aggression Model’s three stage cycle, hostility aligns with the first stage, in which the individual has a cognitive interpretation of a situation. Anger aligns with the second stage, where the internal state directly influences action. The third stage is the action itself, which will either be physical or verbal aggression (DeWall et al., 2011). Thus, Buss and Perry’s (1992) four subtrait model of aggression, the theory underlying the Buss Perry Aggression Questionnaire, is the most the appropriate foundation from which to examine the manifestation of aggressive behavior, whether it is physical, verbal, anger, or hostility, to assess risk and further inform behavioral intervention (Archer & Webb, 2006).

The General Aggression Model’s three stages are also related to personality traits, measured with the Personality Inventory for DSM-5 (PID-5-BF), in which the domain of antagonism has been consistently conceptualized with aggression. Antagonism has had significant correlations with aggressive factors of callousness, deceitfulness, hostility, and manipulativeness (Sleep et al., 2020). However, Sleep et al. (2021) assert that aggression is most specific to the factor of hostility alone, when the trait of antagonism is considered to be comprised of the aforementioned factor structure. Also noteworthy for this trait, antagonistic externalizing has been identified to encompass certain aggressive constructs, such as exploitation, anger, oppositionality, rudeness, and poor impulse control (Mullins-Sweatt et al., 2022). The addition of the PID-5-BF to the YSQ-S3 allows for the exploration of relationships between significant personality domains to early maladaptive schemas and aggression. If significant relationships are found involving these personality domains, this adds diagnostic value to the conceptualization of aggression as it relates to personality.

**Early Maladaptive Schemas**

EMS are a useful concept to conceptualize one’s underlying belief systems, as they are related to aggression. They are a central concept within schema therapy; an approach developed by Young (Young et al., 2006). EMS are patterns or fixed belief systems comprised of memories, emotions, cognitions, and sensations. They often develop as the result of negative experiences, typically during childhood or adolescence, and serve to fulfill an “unmet need” related to these experiences. The individual then interprets future situations through the lens of the schema. Maladaptive behaviors develop as the schemas are activated but are not exclusively included within the schema itself (Young et al., 2006). There are eighteen EMS categorized in the domains of disconnection/rejection, impaired autonomy/performance, impaired limits, other-directedness, and overvigilance/inhibition (Young et al., 2006).

Young et al. (2006) identified that certain aggressive behaviors can be influenced, and possibly explained, by certain schemas. Each EMS has three potential coping styles that are important for conceptualizing how aggression can arise. Overcompensation is when the individual fights the schema, doing the opposite of its influence. Surrender is when one gives up and accepts the effects of a schema. Avoidance is when one avoids any situation that would evoke a given schema.

In essence, schema theory is interested in finding the underlying drives that influence the individual’s maladaptive behavior. The theory posits that the recognition of these core belief systems and addressing their initial formations will lead the individual to healthier functioning. Aggression is a form of maladaptive behavior that would benefit from an approach following this model (Young et al., 2006). Schema theory and its use of early maladaptive schemas is a concept that demonstrates efficacy across diverse populations in multiple languages, which has been supported in several studies (Baranoff et al., 2006; Calvete et al., 2013; Corral & Calvete, 2014; Estévez et al., 2016; Masley et al., 2012; Mokhtarinejad et al., 2020; Wells, 2007).

**The Relationship of EMS to Aggression**

Because schema therapy asserts that maladaptive behaviors develop in response to schemas, they can be utilized to gauge the manifestation of these behaviors. Research has supported the role of EMS with maladaptive behavior in a multitude of specific populations. EMS in the disconnection and rejection domain demonstrated significant mediation effects with victims of child sexual abuse and displaced aggression (Estévez et al., 2016). In men seeking residential substance use treatment, EMS in the impaired limits domain were positively correlated with verbal aggression and aggressive attitudes. EMS in the disconnection and rejection domain were positively associated with physical aggression (Shorey et al., 2015).

In individuals diagnosed with borderline personality
disorder, disconnection/rejection EMS predicted increased suicidal ideation, physical aggression, dissociative symptoms, and eating disorders (Frias et al., 2017). Adolescents exposed to family violence were found to exhibit schemas in the domain of disconnection/rejection, which were predictive of dating violence (Calvete et al., 2018).

Research in schema therapy and anger found that EMS of abandonment/instability, mistrust/abuse, all schemas in the disconnection/rejection domain, and entitlement/grandiosity were strong predictors for the development of anger. Abandonment, entitlement, and emotional deprivation were related to behavioral manifestations of anger, and entitlement was also related to cognitive processes. Additionally, insufficient self-control was related to reactivity (Askari, 2018). In this study, entitlement and insufficient self-control were in the composite schema domain. Abandonment and emotional deprivation were in the disconnection/rejection domain.

Past research has supported the connection between EMS and aggression in specific clinical samples, it is unclear if these results extend to a general population. The inclusion of the PID-5-BF adds the ability to compare EMS to personality traits and their subsequent predictability. Confirmation of this application will allow for a much broader use of these concepts.

Assessment of Aggression

The prediction of aggression is a common practice in a variety of settings. In corrections, for example, the prediction of aggression is vital when considering the risk that one poses to the community prior to release, or when setting conditions of bail. In addition, the measurement of aggression occurs in treatment settings to determine the risk posed to others, and it is also commonly required by court order.

Oftentimes to predict aggression, assessments are utilized. There are multiple measures of aggression which vary widely and do not consistently adhere to any singular methodology (Yang et al., 2010). Some measures focus on the recognition of psychological disorders through diagnostic assessments (Berman et al., 1998). Others target instances of past behavior such as the Offender Group Reconviction Scale, Violence Risk Appraisal Guide, Risk Matrix 2000, and Violence Risk Scale. Some measures more heavily rely on the presence of psychopathy such as the Psychopathy Checklist – Revised (Yang et al., 2010). On many of these measures, there is no clear target from which aggression emerges, nor do they apply to a therapeutic framework.

There has been some usage of personality trait measures to predict aggression. Smith et al. (2020) studied intimate partner aggression in newlywed couples utilizing the Personality Inventory for DSM-5 – Brief Form (PID-5-BF). Their results suggested that certain elevated personality traits had an adverse effect for aggression with one's spouse. They specifically cited that women high in the detachment domain and men high in the antagonism domain were likely to benefit from intervention. The PID-5's domain of antagonism has been consistently conceptualized with aggression. It has had significant correlations with aggressive traits of callousness, deceitfulness, hostility, and manipulativeness (Sleep et al., 2020).

The PID-5-BF directly measures maladaptive personality traits from a diagnostic perspective of personality disorders, specifically derived from the DSM-5 Alternative Model for Personality Disorders, which emphasizes a trait-based approach. These various personality traits are grouped into relevant domains, which relate to overarching personality disorders, featuring the domains of negative affect; defined as a wide range of negative emotions, detachment; avoidance of social/emotional experiences, antagonism; behaviors that put one against other people; disinhibition; a focus on immediate gratification, and psychoticism; exhibiting odd or unusual behaviors and/or cognitions (American Psychiatric Association, 2013). The PID-5-BF is regarded as an emerging measure. Although its psychometric properties are considered strong, it is still a new measure that will benefit from further research with varying populations (Krueger et al., 2013). Due to the support for the DSM-5 Alternative Model for Personality Disorders and aggression, the PID-5 provides valuable insights of correlated aggression and traits; however, it does not directly apply to any single therapeutic treatment approach.

Schema theory asserts that maladaptive behaviors develop in response to schemas. Research has supported the role of early maladaptive schemas (EMS) with aggression in a multitude of specific acute populations such as individuals with personality disorders (Frias et al., 2017), individuals with substance use disorders (Shorey et al., 2015; Zamirinejad et al., 2017), victims of childhood sexual abuse (Estévez et al., 2016), adult male prisoners (Dunne et al., 2018b), and those who have been exposed to significant family violence (Calvete et al., 2018). The Young Schema Questionnaire (YSQ-S3; Young, 2019) is a specific tool that allows the measurement of underlying early maladaptive schemas (EMS).

Once specific EMS have been identified, appropriate interventions can be selected within the framework of schema therapy. Schema therapy is a dynamic approach with a wide array of overlap with other intervention strategies (Young et al., 2006). The use of EMS allows
more targeted and individualized treatment for those that demonstrate aggression, as they are a more specific target for intervention, due to their connection with relevant past experiences. This is apparent when EMS are compared to a diagnosis or symptoms, which are more general, especially when being applied to a treatment plan. This will improve treatment for those who have been nonresponsive to typical manualized approaches (Dunne et al., 2018a).

The comparison of EMS to personality traits from the PID-5-BF will provide additional insight into their relationship in terms of their application to aggression. EMS is a theory driven approach to potential underlying causes, whereas the PID-5-BF is diagnostic driven and needs new research to support its utility. Both concepts can be clinically useful when considering aggression in the general population.

**Hypotheses**

The first research hypothesis is that individuals with a higher presence of early maladaptive schemas will demonstrate higher scores on aggression. More specifically, participants with EMS of abandonment/instability, mistrust/abuse, vulnerability to harm/illness, insufficient self-control/self-discipline, subjugation, self-sacrifice, emotional inhibition, and/or punitiveness will demonstrate higher aggression scores than those with other EMS. Abandonment/instability and mistrust/abuse are found in the disconnection/rejection domain, vulnerability to harm in the impaired autonomy domain, and insufficient self-control, subjugation, self-sacrifice, emotional inhibition, and punitiveness in the composite domain. The second hypothesis is that the PID-5 domain of antagonism will demonstrate significant correlations with aggression.

**Methods**

**Participants**

Participants were recruited online from Facebook groups, Amazon Mechanical Turk, and Reddit. Focus was placed on relevant subgroups on each of these platforms, such as dissertation or research focused Facebook groups and subreddits such as r/SampleSize. Participants were recruited voluntarily through a posted description of the study. A prompt stated that they must reside in the United States of America and be able to read English proficiently. Prior to registration, potential participants were presented with an online informed consent and informed that they would have the option to enter a raffle, as a separate webpage, for a $50 Amazon gift card. In total, 203 individuals accepted informed consent and began to complete the offered surveys. Of these participants, 124 participants completed all three measures and were used in the following analyses. An a priori power analysis was conducted using G*Power version 3.1.9.7 (Faul et al., 2007) to determine the minimum sample size required for the two hypotheses. Results indicated the required sample size to achieve 80% power for detecting a medium effect, at a significance criterion of α = .05, was N = 76 for tests of linear regression for the first hypothesis and N = 91 for the second hypothesis. Therefore, the required sample size was exceeded.

Participants were asked to provide their age, gender, level of education, their range of income, and race/ethnicity. The sample included a wide range of ages from 18 to 70 years old (M = 37.74, SD = 11.10). About half of the sample identified as women (49%), half as men (49%), and a single participant identified as nonbinary. For ethnicity, the highest percentage identified as European American (70%). The second highest identified as Asian American (12%), followed by African American (8%), Hispanic (5%), and Native American or Pacific Islander (5%)

**Measures**

**Buss Perry Aggression Questionnaire**

The Buss Perry Aggression Questionnaire is comprised of 29 self-report items that measure four factors consisting of physical aggression, verbal aggression, anger, and hostility. Answers are scored on a 5-point scale. Items relate to general attitudes, hypothetical situations, and one’s past (Buss & Perry, 1992). In this study, Cronbach’s alpha for the 29 BPAQ items was α = .95, indicating excellent reliability. The BPAQ has been shown to be, at minimum, moderately associated with act-based measures of aggression (Archer & Webb, 2006). It is widely used to measure aggression in a multitude of populations, particularly in studies that also examined EMS (Askari, 2018).

**Young Schema Questionnaire**

The most commonly utilized version of the Young Schema Questionnaire is the short-form (YSQ-S3). The YSQ-S3 features 90 items that are scored on a 6-point scale and measure all 18 early maladaptive schemas (Young, 2019). Calvete et al. (2013) studied the YSQ-S3 and found that EMS were significantly correlated with one another. They asserted that alpha coefficients were acceptable excluding the dependence schema. Calvete et al. (2013) critiqued the accuracy of the usage of domains as methods of categorization for EMS. They found consistency only with the disconnection/rejection and impaired autonomy domains. Calvete et al. (2013) suggested that the remaining three domains could be combined into a single, more accurately correlated domain. They concluded that the YSQ-S3 has adequate
structure, consistency, stability, and concurrent validity. The YSQ has been used in multiple studies and is widely regarded as the standard for measuring early maladaptive schemas (Calvete et al., 2013; Corral at al., 2014; Zamirinejad et al., 2018). The YSQ-S3 had good internal consistency for the present study (Cronbach’s α = .73).

To obtain a participant’s total number of schemas present, binary variables were created in accordance with the participant’s score for an individual schema. If this score passed the threshold identified by the YSQ-S3, it was scored as present (Young, 2019). Schema domain variables were also calculated. Three total domains were utilized in accordance with the findings from Calvete et al. (2013) consisting of disconnection/rejection, impaired autonomy, and a composite third domain.

### Personality Inventory for DSM-5
The Personality Inventory for DSM-5 - Brief-Form – Adult (PID-5-BF) includes 25 self-report items scored on a scale ranging from 0 (very false or often false) to 3 (very true or often true). A total item score is obtained by the sum, which represents a total personality pathology score. This total score is intended to be used as an overall screen for personality dysfunction and has been validated as such in previous studies (Combauzier et al., 2018; Fossati et al., 2017; Gomez et al., 2020). Respective item scores are averaged and load to one of five personality trait domains. These domains include negative affect, detachment, antagonism, disinhibition, and psychoticism (Krueger et al., 2013). In this study, the PID-5-BF had a Cronbach’s alpha value of α = .95, indicating excellent reliability.

### Procedure
After review and approval by Rivier University’s Institutional Review Board, participants completed the demographics questionnaire and all surveys online. After completion of these measures, participants were displayed a debriefing page which explained the goal of the study in more detail. At the end of this page, participants had the option to click a link to enter a raffle for a $50 Amazon gift card.

### Results

#### Descriptive Statistics
The sample demonstrated a definite presence of early maladaptive schemas ($M = 7.28, SD = 6.49$). The mean number of early maladaptive schemas was 7.28 out of a maximum of 16 possible. All individual schemas were represented across participants. The sample’s total DSM-5 personality inventory scores were also notable, indicating a moderate presence of personality domains ($M = 2.27, SD = 0.74$). The mean presence of personality domains was just over two out of the five possible domains, with all personality domains evenly represented. Total aggression scores were similarly in the moderate range ($M = 0.55, SD = 0.17$).

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### Table 1

| Correlation Matrix of Means, Standard Deviations, EMS, BPAQ, and PID |
|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                           | M   | SD  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  |
| 1 Total EMS               | 7.28| 0.69| 1.00| 0.52| 0.31| 0.60| 0.60| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.44| 0.48| 0.55|
| 2 BPAQ Physical Aggression| 0.52| 0.19| 0.63| 1.00| 0.35| 0.63| 0.63| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.46| 0.50| 0.55|
| 3 BPAQ Anger              | 0.53| 0.18| 0.56| 0.35| 1.00| 0.63| 0.63| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.46| 0.50| 0.55|
| 4 BPAQ Verbal Aggression  | 0.60| 0.18| 0.54| 0.31| 0.63| 1.00| 0.67| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.46| 0.50| 0.55|
| 5 BPAQ Hostility          | 0.60| 0.19| 0.61| 0.31| 0.63| 0.63| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.46| 0.50| 0.55|
| 6 BPAQ Total              | 0.55| 0.17| 0.66| 0.56| 0.63| 0.63| 0.63| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 7 PID Negative Affect     | 2.51| 0.78| 0.67| 0.67| 0.67| 0.67| 0.67| 0.67| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 8 PID Detachment          | 2.35| 0.81| 0.65| 0.65| 0.65| 0.65| 0.65| 0.65| 0.65| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 9 PID Antagonism          | 2.28| 0.90| 0.70| 0.70| 0.70| 0.70| 0.70| 0.70| 0.70| 0.70| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 10 PID Disinhibition      | 2.16| 0.87| 0.67| 0.67| 0.67| 0.67| 0.67| 0.67| 0.67| 0.67| 0.67| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 11 PID Psychoticism       | 2.28| 0.81| 0.69| 0.69| 0.69| 0.69| 0.69| 0.69| 0.69| 0.69| 0.69| 0.69| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 12 PID Total              | 2.28| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 0.74| 1.00| 0.67| 0.67| 0.56| 0.49| 0.44| 0.46| 0.50| 0.55|
| 13 Disconnection/Rejection Domain | 1.43 | 1.38 | 0.88 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 1.00 | 0.67 | 0.67 | 0.56 | 0.49 | 0.44 | 0.46 | 0.50 | 0.55 |
| 14 Impaired Autonomy Domain | 1.32 | 1.30 | 0.93 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 1.00 | 0.67 | 0.67 | 0.56 | 0.49 | 0.44 | 0.46 | 0.50 | 0.55 |
| 15 Composite Schema Domain | 1.50 | 1.22 | 0.93 | 0.58 | 0.49 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 1.00 | 0.67 | 0.67 | 0.56 | 0.49 | 0.44 | 0.46 | 0.50 | 0.55 |

*Note.* EMS = early maladaptive schema; BPAQ = Buss Perry Aggression Questionnaire; PID = Personality Inventory for the DSM-5. " Indicates significance at the .01 level.
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Correlations
The following analyses are best understood within the full set of bivariate correlations among all the measures, available in Table 1. The data featured linearity of EMS, personality traits, and aggression scores. The sample was normally distributed, which confirmed that the assumptions of the following statistical tests were met. Pearson’s correlation coefficients were conducted with all three measures, using the domains and total scores (see Table 2). Supporting the first hypothesis, total EMS present had a strong correlation with total aggression, \( r(142) = .66, p < .001 \) according to defined ranges identified by Cohen (1988). Similarly, the schema domains of disconnection/rejection, impaired autonomy, and the composite domain all had strong correlations with total aggression.

The second correlational analysis compared total EMS with PID-5-BF domains (see Table 3). The total of EMS present had strong correlations with all five PID-5-BF domains. The PID-5-BF domains had stronger correlations with BPAQ total aggression scores than with schema domains. Supporting the second hypothesis, total PID-5-BF scores had higher correlations with BPAQ total aggression, \( r(126) = .88, p < .01 \), and was also stronger than total EMS present, \( r(135) = .66, p < .01 \).

Tests of Regression
To control for the possibility of Type I error, the Holm-Bonferroni method (Holm 1979) was utilized. The first hypothesis involved total EMS scores with total aggression and aggression domains as well as with schema domains and the same aggression variables. The results found that adjusted values of significance necessitated the elimination of a significant finding for the schema domain of impaired autonomy with verbal aggression.

The total number of EMS present significantly predicted total aggression scores, \( \beta = .02, t(115) = 9.53, p < .001 \). A significant proportion of variance was explained by total EMS, \( R^2 = .44, F(1, 115) = 90.78, p < .001 \). Concerning specific domains of aggression, total EMS present was significantly predictive of anger, hostility, verbal, and physical aggression. This was in support of the research hypothesis.

Multiple linear regressions were conducted with three domains of early maladaptive schemas. EMS domains were significantly predictive of total aggression scores and explained a higher proportion of variance than total EMS present, \( R^2 = .51, F(3, 88) = 29.96, p < .001 \). The domain of impaired autonomy had moderate partial correlations, \( r(88) = .40, p < .001 \), and was a significant predictor.

EMS domains and the aggression domain of anger were significant but less predictive than total aggression scores, \( R^2 = .42, F(3, 95) = 23.08, p < .001 \). Impaired autonomy was similarly significant. EMS domains and hostility were significant and more predictive than total aggression scores and the other aggression domains, \( R^2 = .53, F(3, 97) = 35.91, p < .001 \). All three of the EMS domains were significant. EMS domains and physical

### TABLE 2

<table>
<thead>
<tr>
<th>Disconnection &amp; Rejection Domain</th>
<th>MD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Deprivation</td>
<td>1.55</td>
<td>1.66</td>
</tr>
<tr>
<td>Abandonment</td>
<td>1.55</td>
<td>1.69</td>
</tr>
<tr>
<td>Mistrust</td>
<td>1.39</td>
<td>1.52</td>
</tr>
<tr>
<td>Isolation</td>
<td>1.50</td>
<td>1.65</td>
</tr>
<tr>
<td>Defectiveness</td>
<td>1.28</td>
<td>1.58</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Impaired Autonomy/Performance Domain</th>
<th>MD</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>Failure</td>
<td>1.39</td>
<td>1.61</td>
</tr>
<tr>
<td>Incompetence</td>
<td>1.29</td>
<td>1.53</td>
</tr>
<tr>
<td>Vulnerability</td>
<td>1.25</td>
<td>1.47</td>
</tr>
<tr>
<td>Enmeshment</td>
<td>1.20</td>
<td>1.52</td>
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<table>
<thead>
<tr>
<th>Composite Schema Domain</th>
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<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Subjugation</td>
<td>1.41</td>
<td>1.45</td>
</tr>
<tr>
<td>Self-Sacrifice</td>
<td>1.66</td>
<td>1.57</td>
</tr>
<tr>
<td>Emotion Inhibition</td>
<td>1.56</td>
<td>1.52</td>
</tr>
<tr>
<td>Unrelenting Standards</td>
<td>1.90</td>
<td>1.60</td>
</tr>
<tr>
<td>Entitlement</td>
<td>1.46</td>
<td>1.47</td>
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<tr>
<td>Insufficient Self-Control</td>
<td>1.30</td>
<td>1.44</td>
</tr>
<tr>
<td>Recognition-Seeking</td>
<td>1.45</td>
<td>1.55</td>
</tr>
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<td>Pessimism</td>
<td>1.53</td>
<td>1.54</td>
</tr>
<tr>
<td>Self-Punitiveness</td>
<td>1.44</td>
<td>1.51</td>
</tr>
<tr>
<td>EMS Total</td>
<td>7.28</td>
<td>6.49</td>
</tr>
</tbody>
</table>

Note. EMS = early maladaptive schema

### TABLE 3

<table>
<thead>
<tr>
<th>Personality Inventory for DSM-5</th>
<th>MD</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Negative Affect</td>
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</tr>
<tr>
<td>Detachment</td>
<td>2.35</td>
<td>0.81</td>
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<tr>
<td>Antagonism</td>
<td>2.28</td>
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<tr>
<td>Disinhibition</td>
<td>2.15</td>
<td>0.87</td>
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<tr>
<td>Psychoticism</td>
<td>2.28</td>
<td>0.81</td>
</tr>
<tr>
<td>PID_Total</td>
<td>2.28</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Note. DSM-5 = Diagnostic and Statistical Manual of Mental Disorders – 5th Edition; PID = Personality Inventory for the DSM-5.
aggression was significant and similarly as predictive as anger, $R^2 = .42, F(3, 94) = 22.98, p < .001$. Impaired autonomy was the only significant domain. EMS domains and verbal aggression was significant but less predictive, $R^2 = .29, F(3, 96) = 13.00, p < .001$, and no domain was individually significant.

The second hypothesis, tested for Type I error, involved the total PID score with total aggression and PID domains with total aggression. The adjusted values for significance mandated the elimination of both the PID domains of psychoticism and detachment with total aggression.

Linear regression was run with the total scores on the PID-5-BF and total aggression scores. Total PID-5-BF was significantly predictive of total aggression scores, $\beta = .20, t(108) = 18.82, p < .001$. It explained the highest proportion of variance of any other total score variable $R^2 = .77, F(1, 108) = 354.12, p < .001$.

Multiple linear regression was also run with the PID-5-BF domains. The domains were significant and explained a slightly higher proportion of variance than total PID-5-BF scores, $R^2 = .77, F(5, 104) = 69.17, p < .001$. Negative affect and dis inhibition were significant. This was not in support of the hypothesis, in which antagonism was cited to be a significant predictor.

**Discussion**

The initial research hypothesis stated that individuals with higher presence of EMS will demonstrate higher scores on aggression. Results supported that higher scores on both total EMS and EMS domain scores were predictive of increased aggression scores on the BPAQ. This finding is consistent with Dunne et al. (2018b), who also supported that total EMS present was significantly correlated with increased aggression, although their study was focused on a more specific sample of male prisoners. Due to most studies utilizing schema domains in their analyses, three domains were tested in the present study: impaired autonomy, disconnection/rejection, and a composite domain. All three schema domains were significant with hostility. Impaired autonomy was significant with the remaining domains of anger, physical, and total aggression scores. According to the theory, “impaired autonomy includes the schemas of dependence, vulnerability to harm, enmeshment/undeveloped self, and failure to achieve” (Young et al., 2006, p. 14–15).

It is difficult to directly compare the use of schema domains in this research to previous studies for multiple reasons. Previous studies have focused on more specific populations; this sample is intended to be a measure of a general population. Most studies have also used all five schema domains, whereas only three domains were used for this sample. This is due to following the recommendations of Calvete et al. (2013), in which adequate consistency was found only for disconnection/rejection and impaired autonomy/performance.

Considering these factors, previous research asserted that the disconnection/rejection domain was the most prevalent domain with samples of victims of child sexual abuse, men seeking residential treatment, and adolescents exposed to family violence and manifestations of aggression in the form of displaced aggression, physical aggression, verbal aggression, and dating violence respectively (Calvete et al., 2018; Estévez et al., 2016; Frías et al., 2017; Shorey et al., 2015). None of these previous studies cite the prevalence of the impaired autonomy/performance domain as significant with a form of aggression. This may support that individuals in a general sample are more likely to exhibit aggression when their ability to function is threatened, whether it is a perception of survival or to succeed in life. Impaired autonomy/performance often has its origin in an enmeshed childhood, with the child’s confidence being consistently decreased. It can also arise when a child is subjected to constant overprotection or is seldom reinforced for performing well as an individual (Young et al., 2006). Regarding this domain’s origins, aggression is a logical outcome for many, as frustration will likely manifest as a product of a lack of confidence in one’s own abilities. As this belief worsens, it can feed into the perceptions of survival and success. It is possible that the specific samples in these previous studies had more uniform presentations of EMS due to being grouped by specific situations or experiences.

**Comparisons With the PID-5-BF**

The PID-5-BF explained higher proportions of variance over total EMS and schema domains, suggesting that the PID-5-BF is more predictive. PID-5-BF domains of negative affect and disinhibition were significant. This finding was somewhat surprising, as the personality trait of antagonism includes the description “behaviors that put an individual at odds with other people” and “callous antipathy towards others.” However, the remainder of the definition includes descriptions that are more consistent with narcissistic presentations such as “exaggerated sense of self-importance and a concomitant expectation of special treatment” and “encompassing both unawareness of others’ needs and feelings, and a readiness to use others in the service of self-enhancement” (American Psychiatric Association, 2013, p. 770). By these descriptions, those who score highly on antagonism may be demonstrating factors that disrupt their interactions with others, but that do not commonly rise to a level that would be considered aggressive. Sleep et al. (2021)
affirmed these factors of antagonism as not inherently aggressive, including grandiosity, suspiciousness, lack of empathy, and manipulativeness. They asserted that hostility was the most significant factor related to aggression, which is only part of this framework. Similarly, when considering the externalized constructs of antagonism, many do not involve aggression, such as distrust, entitlement, arrogance, inattention, and alienation (Mullins-Sweatt et al., 2022).

Antagonism is unlikely to lead to significant impulsivity or experience activating emotion, as is seen in the related domains on the BPAQ. Negative affectivity is a logical domain for a relationship to aggression as its definition includes "frequent and intense experiences of high levels of a wide range of negative emotions," (American Psychiatric Association, 2013, p. 770). One of these cited emotions is anger, which is inherently aggressive. It also includes other emotions that could quickly lead to aggression, such as shame and anxiety. Disinhibition is another sensical relationship, due to its impulsivity, focus on immediate gratification, and its lack of focus on future consequences (American Psychiatric Association, 2013).

Comparisons With Prior Research
The sample of this study was intended to be general American adults with no particular grouping of psychiatric disorders or histories of trauma. Other studies focused on more clinically specific populations.

For example, Frias et al. (2017) conducted a study of individuals diagnosed with borderline personality disorder. Their sample featured a significant presence of various diagnoses, including eating disorders, substance use disorder, major depression, and posttraumatic stress disorder. Their presence of EMS was far greater than in this study. This is consistent with schema theory, which holds that those with more pathological presentations will have a higher prevalence of EMS (Young et al., 2006). Interestingly, this sample's lowest EMS was the same: enmeshment/undeveloped self ($M = 1.2, SD = 1.52$). Self-sacrifice was the second most prevalent in this study's sample ($M = 1.66, SD = 1.57$). This supports that, although actual scores are significantly different, individual EMS prevalence remains similar across different populations.

Other studies utilizing the Buss Perry Aggression Questionnaire are also important for comparison. Lin et al. (2016) used a sample which was mostly men (72%). They excluded participants with diagnoses of psychiatric disorders. They found notably lower aggression scores than this study. These values were likely lower due to the elimination of those with known psychiatric disorders, although this study did not seek to omit these individuals.

Limitations
There are several limitations to consider in relation to these findings. This study sought to utilize a representative general sample of adults in the United States. Although all ages were represented between 18 and 70, most participants were between the ages of 30–40 with a median age of 35. As such, this sample had fewer individuals on the younger and older ends of the age range.

For race/ethnicity, the sample was generally aligned with the U.S. census for individuals identifying as European American. The sample was over-representative for those identifying as Asian American at 12%, with the U.S. Census (2020) reporting this population at 5.4%. Individuals identifying as either African-American (8%) or Hispanic (5%) were underrepresented, well below the U.S. Census (2020) findings of 12.7% African-American and 17.6% Hispanic. Future research should seek to obtain samples more representative of African-American and Hispanic populations.

Of further concern, the manner by which data was collected was entirely online in a digital survey format. This method introduced the potential for a technology barrier, meaning those less familiar with online survey platforms were less likely to find this study. The use of Amazon Mechanical Turk, Reddit, and Facebook compounds these concerns, due to the requirement for potential participants to be active users of these platforms to have a significant likelihood of recruitment. The majority of participants were recruited through Amazon Mechanical Turk. Although Amazon did not explicitly provide total demographic data on this participant pool, it is likely that this population is further limited to those more familiar with online technologies, beyond what would be expected from individuals recruited through only social media. Further research should consider these implications and ideally recruit with a traditional approach as well as offering paper surveys.

Although still significant with a variety of variables, verbal aggression was often the lowest when compared to other domains of aggression. Items loading for verbal aggression, on the Buss Perry Aggression Questionnaire, have the potential to have varying interpretations between individuals. Some items could be interpreted as more of a thought process that one expresses minimally such as the item “I often find myself disagreeing with people,” (Buss & Perry, 1992). When compared to other domains, verbal aggression appears to be the most susceptible to interpretive variation between individuals.

The selection of the PID-5-BF merits some examination. The PID-5-BF is a well-supported measure of personality domains; however, it is limited due to its brevity in terms of specificity. The Personality Inventory for DSM-5 Faceted Brief Form (PID-5-FBF)
is a more specific tool which measures a wider range of personality traits. It features scores for 25 personality trait facets measured with a total of 100 items. The Personality Inventory for DSM-5 (PID-5) measures both the personality facets and personality domains, but is significantly longer with 220 items (American Psychiatric Association, 2013). The utilization of these measures would provide a more specific and complete picture of the role of personality traits in terms of their correlation to EMS and their predictive ability with aggression. These more complex measures were not selected for this study due to concerns with their length introducing an increased amount of survey fatigue. Future research could benefit from studying these relationships separately or splitting the measures into multiple sessions.

**Implications for Clinical Practice**

The Personality Inventory for DSM-5 – Brief Form is an ideal measure to predict aggression from underlying traits. This can be used effectively for risk assessment, where the practitioner seeks to also develop a detailed profile of an individual's personality. This is especially valuable when compared to more traditional risk assessments, in which there is only focus on past behavior and/or more specific traits.

Although personality traits had a stronger predictive ability, the use of EMS carries a significant benefit in that they directly translate to a therapeutic modality, schema therapy. Ultimately, assessing for aggression and its origins is ideally only the first task towards minimizing the individual’s aggression. The identification of specific EMS allows the practitioner a targeted approach towards empirically supported interventions that will reduce aggression at its source. Practitioners can teach the effects of individual schemas, use experiential exercises, help clients to adjust their schema responses, or even use schema modes to improve the effects of the identified EMS (Young et al., 2006).

Many previous studies focused on EMS in specific clinical populations and specific maladaptive behaviors. This study confirmed that EMS are still prevalent in a general sample of adults and that they are useful for their role in the predictability of aggression. By extension, this supports that schema therapy interventions are an effective approach for aggressive individuals.

**References**


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