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Early Maladaptive Schemas and Aggression in Men Seeking Residential Substance Use Treatment

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Abstract

Social-cognitive theories of aggression postulate that individuals who perpetrate aggression are likely to have high levels of maladaptive cognitive schemas that increase risk for aggression. Indeed, recent research has begun to examine whether early maladaptive schemas may increase the risk for aggression. However, no known research has examined this among individuals in substance use treatment, despite aggression and early maladaptive schemas being more prevalent among individuals with a substance use disorder than the general population. Toward this end, we examined the relationship between early maladaptive schemas and aggression in men in a residential substance use treatment facility ($N = 106$). Utilizing pre-existing patient records, results demonstrated unique associations between early maladaptive schema domains and aggression depending on the type of aggression and schema domain examined, even after controlling for substance use, antisocial personality, age, and education. The *Impaired Limits* domain was positively associated with verbal aggression, aggressive attitude, and overall aggression, whereas the *Disconnection and Rejection* domain was positively associated with physical aggression. These findings are consistent with social-cognitive models of aggression and advance our understanding of how early maladaptive schemas may influence aggression. The implications of these findings for future research are discussed.

Keywords

Aggression; violence; early maladaptive schemas; substance use

Social-cognitive models of aggressive behavior (e.g., Anderson & Bushman, 2002; Berkowitz, 1990; Bushman, 1996) propose that cognitive schemas that are focused on

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negative, hostile, and aggressive scripts are heavily present among aggressive individuals relative to non-aggressive individuals. According to Beck (1967), schemas, either adaptive or maladaptive, are cognitive structures individuals use for coding, screening, and interpreting information that is encountered in the environment. From a social-cognitive standpoint, these cognitive schemas, or aggressive scripts, play an important role in influencing the expression of aggressive behavior (Berkowitz, 1990; Bushman, 1996). For instance, Berkowitz (1990, 1993) put forth a general theory of human aggression that posits that negative affect facilitates higher-level cognitions, such as interpretational biases or causal attributions, which increase anger and decrease adaptive problem solving, thus promoting aggression (Berkowitz, 2001). While individuals may hold specific cognitive schemas related to aggressive behavior, such as the belief that aggression is a useful and acceptable conflict resolution strategy, it is also possible that more general, maladaptive and negative cognitive schemas impact the expression of aggression. Specific to the current study, we examined whether early maladaptive schemas (Young, Klosko, & Weishaar, 2003) were associated with aggression.

Early Maladaptive Schemas

The most commonly used definition of early maladaptive schemas (EMS) is “extremely stable and enduring themes, comprised of memories, emotions, cognitions, and bodily sensations regarding oneself and one’s relationship with others, that develop during childhood and are elaborated on throughout the individual’s lifetime, and that are dysfunctional to a significant degree” (Young et al., 2003, p. 7). Young and colleagues (2003) have theorized that there are 18 individual EMS that can be categorized into five distinct schema domains, including (1) *Disconnection and Rejection* (schemas of emotional deprivation, abandonment, mistrust/abuse, social isolation, and defectiveness), (2) *Impaired Autonomy and Performance* (schemas of failure, dependence, vulnerability, and enmeshment), (3) *Impaired Limits* (schemas of entitlement and insufficient self-control), (4) *Other-Directedness* (schemas of self-sacrifice, subjugation, and approval-seeking), and (5) *Over-Vigilance and Inhibition* (schemas of emotional inhibition, unrelenting standards, negativity/pessimism, and punitiveness).

Briefly, the EMS domain of *Disconnection and Rejection* is characterized by feelings and beliefs that one’s needs for safety, security, respect, and empathy will not be met by other people. This often results in interpersonal relationships that are destructive and contain high levels of criticism and anger. *Impaired Limits* is characterized by difficulties with impulse control, irresponsible behavior, delaying gratification, and cooperating with other people. The *Impaired Autonomy* domain involves beliefs that one will have a difficult time surviving and functioning by themselves, such that they may become overly dependent or enmeshed with other people and may view themselves as a failure. *Over-Vigilance and Inhibition* is focused on suppressing one’s feelings and impulses, high standards of performance, and ethical behavior. According to Young and colleagues (2003), part of this domain is inhibition of anger and aggression, thus, theoretically, individuals high in this EMS domain should report decreased aggression. Lastly, the *Other-Directedness* domain is characterized by an excessive focus on meeting the needs of other people in order to gain approval and emotional connection (Young et al., 2003).

Aside from being central themes through which individuals interpret and respond to stimuli in their environment, EMS are hypothesized to result in high levels of negative affect, dysfunctional behaviors (e.g., substance use, aggression), and interfere with individual's meeting their basic needs of autonomy, self-expression, and connection (Young et al., 2003). Young and colleagues (2003) have proposed that EMS likely underlie the development and maintenance of psychopathology and dysfunctional behavioral patterns, including substance use. Indeed, as related to the population examined in the current study, research has demonstrated individuals in substance use treatment report greater levels of almost every EMS relative to healthy comparisons (Brothie et al., 2004; Roper et al., 2010; Shorey, Stuart, & Anderson, 2013; Shorey, Stuart, & Anderson, in press) and drug and alcohol frequency and problems are positively associated with EMS (e.g., Shorey, Anderson, & Stuart, 2013). Young and colleagues (2003) also postulated that EMS may be associated with aggressive behavior, such that aggression is used as a way to cope with EMS, consistent with social-cognitive theories of aggression. However, only a handful of studies have examined this empirically.

EMS and Aggressive Behavior

Tremblay and Dozois (2009) first examined the relationship between EMS and aggression in a sample of male and female college students. Results demonstrated that EMS which comprise the *Disconnection and Rejection* domain, including abandonment, mistrust/abuse and social isolation, and EMS which comprise the *Impaired Limits* domain, including entitlement and insufficient self-control, were associated with increased trait aggressiveness (a combination of physical aggression, verbal aggression, anger, and hostility). Findings from this study are consistent with extant literature and theoretical conceptualizations which posit that individuals high on these EMS domains may engage in aggressive behavior as a way to cope with the negative emotions associated with these specific EMS domains. The EMS of self-sacrifice and subjugation, which comprise the *Other-Directedness* domain, were negatively associated with trait aggressiveness.

Kachadourian and colleagues (2013) recently examined whether the *Impaired Autonomy* EMS domain was associated with psychological and physical aggression perpetration against an intimate partner among court-referred men in a domestic violence program. Results demonstrated that a higher score on the *Impaired Autonomy* domain was positively associated with psychological and physical aggression perpetration. As previously discussed, *Impaired Autonomy* is associated with dependence or enmeshment on others, thus individuals high on this EMS domain might engage in physical and psychological aggression in order to ensure a continued dependence on intimate partner or close others. This study did not examine the other four EMS domains. Gay and colleagues (2013) also recently demonstrated that the EMS domains of *Disconnection and Rejection* and *Impaired Autonomy* were positively associated with physical dating violence perpetration among college women. The *Other-Directedness* EMS domain was unrelated to aggression perpetration. This study did not examine the EMS domains of *Impaired Limits* or *Over-Vigilance and Inhibition*.

Substance Use and Aggression

In addition to the existing literature that has established a strong relationship between EMS and both substance use and aggression, research has consistently demonstrated a strong link between the frequency of substance use, and substance use problems, and various indicators of aggression (e.g., physical, verbal) in multiple populations, including clinical and college student populations (e.g., Moore, Elkins, McNulty, Kivisto, & Handsel, 2011; Shorey, Stuart, & Cornelius, 2011). Specifically, Chermack and colleagues (2000) demonstrated that the prevalence of partner and non-partner aggression in the 12 months prior to substance use treatment was 57% and 53%, respectively. Additionally, Stuart and colleagues (2013) examined the temporal relationship between substance use and partner violence and found that drug use temporally preceded and increased the odds of partner violence. Thus, it is clear that substance use populations are more likely to have experienced aggression than the general population. Given the strong relationship between EMS and both substance use and aggression, the strong association between aggression and substance use, and social-cognitive theories of aggression, it is likely that EMS domains are significantly associated with aggression among individuals seeking treatment for substance use disorders.

Current Study

In the current study we examined the relationship between EMS domains and different types of aggression (verbal, physical, and attitudinal) in a sample of men in residential substance use treatment. Consistent with social-cognitive theories of aggressive behavior (Berkowitz, 1990), the theoretical conceptualization of EMS (Young et al., 2003), and prior research (e.g., Gay et al., 2013; Tremblay & Dozois, 2009), we hypothesized that (1) the EMS domains of *Disconnection and Rejection*, *Impaired Limits*, and *Impaired Autonomy* would be positively associated with aggression and (2) the EMS domains of *Other-Directedness* and *Over-Vigilance* would be negatively associated with aggression. It was hypothesized *Over-Vigilance and Inhibition* would be negatively associated with aggression given Young and colleagues' (2003) theoretical conceptualization which posit that this EMS domain is associated with ethical behavior and the suppression of emotions and feelings, such as aggression. We also expected these relationships to be present even after controlling for robust predictors of aggression, including antisocial personality features (Crocker et al., 2005), substance use (Stuart et al., 2008), and demographic characteristics (i.e., age and education; O'Leary, 1999). The aforementioned control variables were included in the models given existing literature that has demonstrated robust and significant relationships between these variables and aggression. We did not expect the relationships between EMS domains and aggression to vary depending on the type of aggression examined.

Method

Participants

The sample consisted of 106 male patients and is a subsample of men reported elsewhere (Shorey, Anderson, & Stuart, in press). The primary substance use diagnoses for this sample were alcohol dependence (61.3%), opioid dependence (17%), and polysubstance dependence (4.7%). The remaining diagnoses included a mix of substances (e.g., cocaine

dependence; amphetamine dependence). Racially, the majority of patients were non-Hispanic White (89.6%). The remaining self-reported racial groups were African American (4.7%), Hispanic (2.8%), and “other” (e.g., Indian descent; 2.9%). The mean age of patients was 41.24 ($SD = 11.06$). The mean number of years of education completed by patients was 13.70 ($SD = 2.05$).

Measures

Early Maladaptive Schemas (EMS)—The Young Schema Questionnaire – Long Form, Third Edition (YSQ-L3; Young & Brown, 2003) was used to examine EMS. The YSQ-L3 consists of 232-items. Each question is scored on a six point scale ($1 = \text{completely untrue of me}$; $6 = \text{describes me perfectly}$) where individuals indicate how much each item describes themselves. Responses of 4 or greater on each item contributes to the total score for each specific schema (scores of 1, 2, and 3 are recoded into “0”), as a response of 4 or greater is indicative that a particular item may be relevant to the individual and schema (Young & Brown, 2003). A total score for each early maladaptive schema is obtained by summing the number of responses rated as a 4, 5, or 6. Score ranges for each schema domain are: *Disconnection & Rejection*, 0–408; *Impaired Autonomy and Performance*, 0–282; *Other-Directedness*, 0–246; *Impaired Limits*, 0–155; and *Over-Vigilance and Inhibition*, 0–306 (Young & Brown, 2003). The YSQ-L3 has been subjected to multiple factor structure investigations, with many studies supporting the factor structure of the YSQ-L3 (e.g., Hawke & Provencher, 2012; Saariaho et al., 2009). Moreover, prior research has supported both the validity and reliability (e.g., $\alpha = .88$ to $.95$) of the YSQ-L3 (Cockram, Drummond, & Lee, 2010).

Aggression—The Personality Assessment Inventory (PAI; Morey, 1991) was used to measure aggression. The PAI contains 4 aggression subscales: physical (tendency for physical displays of anger, such as physical fights), verbal (prone to be verbally aggressive [e.g., insulting, threatening] with little or no provocation), attitudinal (easily angered, low anger control, and perceived by others to be hostile), and an overall aggression composite score (the combination of the physical, verbal, and attitudinal subscales). All PAI aggression scores are represented as T scores. The PAI aggression subscales have demonstrated good internal consistency and convergent validity with other commonly used measures of aggression (Crawford et al., 2007; Morey, 1991).

Antisocial Personality—The PAI (Morey, 1991) was also utilized to assess for antisocial personality features. Specifically, we used the PAI Antisocial Features scale, which consists of 24-items and measures various aspects of antisocial personality, including antisocial behaviors, egocentricity, and stimulus seeking (Morey, 1991). The total Antisocial Feature score is represented as a T score. The Antisocial Feature scale had demonstrated good psychometric properties across populations (Morey, 1991; Walters, Diamond, Magaletta, Geyer, & Duncan, 2007).

Alcohol Use—The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Asaland, Babor, de la Fuente, & Grant, 1993) was used to assess alcohol use in the year prior to treatment entry. The AUDIT is one of the most commonly used measures to screen

for problematic alcohol use and contains 10-items. The total AUDIT score therefore represents an indicator of alcohol use and problems. The psychometric properties of the AUDIT have been well document (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

Drug Use—The Drug Use Disorders Identification Test (DUDIT; Stuart, Moore, Kahler, & Ramsey, 2003; Stuart et al., 2004) assessed drug use in the year prior to treatment entry. The DUDIT examines 7 different types of drugs (cannabis, cocaine, hallucinogens, stimulants, sedatives/hypnotics/anxiolytics, opiates, and other substances [e.g., steroids, inhalants]) and contains 14-items. The DUDIT assesses the frequency of drug use and symptoms that may indicate tolerance or dependence, and has demonstrated good psychometric propertires (Stuart et al., 2004). The total DUDIT score can be conceptualized as an indicator of drug use problems.

Procedure

Treatment records from a private substance abuse treatment facility, located in the Southeastern United States, were reviewed for the present study. Patient records from January 2013 to May 2013 were utilized in the current study. To be admitted to the residential program, all patients must have a primary substance use disorder and be approximately 25 years of age or older. After admission, and after medical detoxification (when necessary), patients complete a comprehensive intake assessment, which includes semi-structured interviews and self-report measures (discussed below). Substance use disorder diagnoses are based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision (DSM-IV-TR) criteria (American Psychiatric Association, 2000). Diagnoses are made through the consultation of treatment team members, which includes a licensed psychologist, a psychiatrist, a general physician, and substance abuse counselors. All study procedures were approved by the Institutional Review Board of the last author.

Data Analytic Plan

All statistical analyses were conducted using SPSS version 20.0. To examine whether EMS domains were associated with aggression after controlling for alcohol use, drug use, age, education, and antisocial features, we utilized hierarchical multiple regression analyses. In the first step, alcohol use, drug use, age, education, and antisocial features were entered as predictors of aggression. In the second step, all five EMS domains were added as predictors. This allowed us to examine the extent to which EMS domains added unique variance to the prediction of aggression by examining the change in R^2 from the first to the second model. The relationship between EMS domains and the overall aggression score was examined first. Secondary analyses examined which components of aggression (attitudinal, physical, and verbal) were significantly associated with the EMS domains. Analyses were conducted separately for total aggression, attitudinal, physical, and verbal aggression.

Results

All EMS variables were examined for skewness and kurtosis and all were within normal limits. Additionally, all aggression and substance use variables were normally distributed

with a skew of less than two. Bivariate correlations, means, and standard deviations among study variables are presented in Table 1. With the exception of the EMS domain of *Other-Directedness*, which was unrelated to aggression, all EMS domains were positively and significantly associated with all four indicators of aggression.

We next examined whether EMS domains remained associated with aggression after controlling for age, education, alcohol use, drug use, and antisocial features with hierarchical multiple regression analyses. As displayed in Table 2, for the overall aggression composite score (Table 2), the first model demonstrated education, antisocial features, and alcohol use to be associated with aggression. In the second model, education and antisocial features remained associated with aggression, and the EMS domains of *Disconnection and Rejection*, *Other-Directedness*, and *Impaired Limits* were also associated with aggression. Specifically, the EMS domains of *Disconnection and Rejection* and *Impaired Limits* were positively associated, whereas the *Other-Directedness* domain was negatively associated with aggression.

For physical aggression, results demonstrated education, alcohol use, and antisocial features were associated with aggression in the first model (Table 2). In the second model, education and antisocial features remained associated with physical aggression, and the EMS domains of *Disconnection and Rejection* and *Over-Vigilance* were also associated with aggression. Specifically, *Disconnection and Rejection* was positively associated and *Over-Vigilance* was negatively associated with physical aggression. For verbal aggression, antisocial features and age were associated with aggression in the second model, as was the EMS domain of *Impaired Limits*, such that higher scores on the *Impaired Limits* domain was associated with greater verbal aggression. Analyses for aggressive attitude demonstrated that education, alcohol use, and antisocial features were associated with aggression in the first model. In the second model the only significant predictors of aggressive attitude were the EMS domains of *Other-Directedness* and *Impaired Limits*. Specifically, *Other-Directedness* was negatively associated and *Impaired Limits* was positively associated with aggressive attitude.

Discussion

Overall, findings were consistent with our hypotheses which were based on social-cognitive theories of aggression, and Young and colleagues (2003) theory of EMS, in that the EMS domains of *Disconnection and Rejection* and *Impaired Limits* were associated with various indicators of aggressive behavior. Moreover, these domains remained associated with aggression even after controlling for robust and consistent predictors of aggression, specifically antisocial features, substance use, and demographic characteristics. *Disconnection and Rejection* is often characterized by intense fears of abuse and abandonment, which can result in high levels of anger and aggression as a means to cope with these intense feelings (Young et al., 2003). The *Impaired Limits* domain is characterized, in part, by impulsivity, a very common correlate of aggression in previous research (Stuart & Holtzworth-Munroe, 2005). Future research should therefore examine whether impulsivity mediates the relationship between the *Impaired Limits* domain and aggression perpetration.

It is interesting to note that the *Over-Vigilance and Inhibition* domain was positively associated with aggression in the bivariate analyses, but became negatively associated with physical aggression in the multiple regression analyses, and was unrelated to the other indicators of aggression in the regression models. This may represent a negative suppressor effect (Kline, 2005), indicating that the negative association between *Over-Vigilance and Inhibition* and aggression would not have been identified unless the other EMS domains were controlled for in analyses. These results are consistent with previous research which has demonstrated similar results (e.g., Tremblay & Dozois, 2009). The *Over-Vigilance and Inhibition* domain is, in part, characterized by views that one must suppress feelings and impulses in order to meet high internalized expectations of behavior (Young et al., 2003). The *Other-Directedness* domain was negatively associated with the total aggression score and aggressive attitude, and this EMS domain is characterized by putting the needs, feelings, and desires of other people before the needs, feelings, and desires of the self (Young et al., 2003). Based on social-cognitive theories of aggression, the *Over-Vigilance and Inhibition* and *Other-Directedness* EMS domains should be negatively associated with aggression due to their focus on suppressing feelings and putting other people ahead of oneself, and our findings provided partial support to this hypothesis.

It is important to note, however, that none of the EMS domains were associated with every indicator of aggression in the multiple regression analyses (e.g., *Impaired Limits* was associated with all indicators other than physical aggression; *Over-Vigilance and Inhibition* was only associated with physical aggression). These results suggests a possible difference in the relationship between EMS domains and different forms of aggression, although we are unaware of any theoretical reason to suspect that there would be different relationships between EMS domains and different forms of aggression. It is also worth noting that the EMS domain of *Impaired Autonomy and Performance* was positively associated with each indicator of aggression in the bivariate analyses, but was not associated with aggression in the regression model. This suggests that the *Impaired Autonomy and Performance* EMS domain may not be as robust a predictor of aggression as other EMS domains. Pending replication of these findings in future research, there would be a clear need for additional research in this area, particularly research that examines possible mechanisms responsible for the association between specific EMS domains and aggression.

It should also be noted that antisocial features remained a significant predictor of three out of the four indicators of aggression (total, physical, and verbal) after the EMS domains were entered to the regression model. Previous research has demonstrated that antisocial features are prevalent among substance dependent populations (Grant et al., 2004), are significantly associated with EMS domains in substance dependent populations (Shorey, Anderson, et al., 2014), and are robust predictors of aggression (Jones, Miller, & Lynam, 2011). Thus, it is not surprising that antisocial features were a strong predictor of aggression. Despite the significant relationship between antisocial features and aggression, it is notable that the EMS domains of *Disconnection and Rejection*, *Other-Directedness*, and *Impaired Limits* were all still significantly associated with different indicators of aggression, thus indicating a meaningful and important relationship. Finally, it is worth mentioning that alcohol and drug use were not associated with aggression when the EMS domains were included in the

regression models. As substance use is theorized to only impact aggression under conditions of acute intoxication (Leonard, 1993), this finding is not overly surprising, as we assessed general alcohol/drug use and problems. In all, continued research is needed to replicate and extend these findings, such as by examining whether EMS domains remain associated with aggression after other well-known predictors of aggression are accounted for (e.g., emotion dysregulation; impulsivity).

Directions for Future Research

There are a number of avenues for future research on the relationship between EMS and aggression. Social-cognitive theories propose that aggressive scripts and cognitive schemas enhance the risk for aggression under conditions of negative affect (e.g., anger). Thus, theoretically, EMS should moderate the relationship between negative affect and aggression perpetration, such that the relationship between negative affect and aggression will be enhanced when EMS are high. This possibility should be examined with both distal (i.e., trait anger) and proximal (i.e., state anger) indicators of negative affect, as both have been previously linked with aggressive behavior (e.g., Elkins et al., 2013; Shorey, Seavey, Quinn, & Cornelius, 2013). In addition, this should be examined with a wide range of indicators of negative affect, including anger, irritability, anxiety, and depression, which have all been linked with increased aggression (e.g., Finkel et al., 2009; Shorey, Febres, Brasfield, & Stuart, 2012).

Another interesting avenue for additional research on the relationship between EMS and aggression is whether EMS domains mediate the relationship between witnessing violence in one's family of origin, or being victimized as a child, and future aggression perpetration. Indeed, witnessing violence in childhood and/or being the victim of childhood abuse are robustly associated with an increased risk for perpetrating aggression as an adult (Black, Sussman, & Unger, 2010; Stith et al., 2000). According to Young and colleagues (2003), it is theoretically believed that EMS primarily develop due to traumatic and noxious experiences during childhood, which can include experiences of witnessing or sustaining abuse. Thus, it is theoretically plausible that EMS would mediate the relationship between abuse early in childhood and future aggression perpetration. Indeed, Gay and colleagues (2013) demonstrated that *Disconnection and Rejection* mediated the relationship between childhood emotional abuse and physical aggression perpetration in young adulthood in a sample of female college students. To our knowledge, however, no known research has examined this mediation model among men in treatment for substance use.

Certainly one area for future research is to determine whether clinical interventions aimed at reducing EMS would concurrently reduce aggressive behavior. Schema therapy (Young et al., 2003), which includes cognitive, behavioral, and experiential techniques designed to reduce EMS and associated, problematic coping behaviors (e.g., avoidance, substance use), has demonstrated effectiveness across a wide range of populations and disorders in improving EMS and associated mental health problems (Jacob & Arntz, 2013; Renner, Arntz, Leeuw, & Huibers, 2013; Sempértegui, Karreman, Arntz, & Bekker, 2013). There is also preliminary evidence that schema therapy specific to substance use results in reduced substance use relative to standard treatment (Ball, 2007). Reductions in substance use is

known to concurrently reduce aggression (Stuart et al., 2009). Thus, it seems plausible that schema-specific interventions may be effective in reducing aggressive behavior, although this remains an empirical question at this time.

Limitations

The current study has a number of limitations that could be improved upon in future research. First, the sample was overwhelmingly non-Hispanic Caucasian in ethnicity and it is therefore unknown whether these findings would generalize to more diverse samples of men in substance use treatment. Future research should seek to increase the ethnic diversity of participants. Additionally, the sample consisted of relatively high-functioning patients (e.g., high socioeconomic status, some college education, and relatively low drug use and aggression scores) compared to other substance dependent populations, limiting generalizability of our findings. Generalizability is further reduced due to the treatment seeking nature of the sample, and it would be informative to investigate the associations identified in the current study among individuals with substance abuse problems who are not in treatment, as well as other clinical populations. The treatment facility where charts were reviewed does not conduct structured diagnostic interviews to assess for substance use disorders, thus limiting our confidence in the diagnoses obtained.

In addition, our measure of aggression could be supplemented in future research with more specific aggression measures, such as measures specific to violence against intimate partners and sexual aggression, both prevalent among men in substance use treatment (Stuart et al., 2009). Multi-method studies (e.g., quantitative and qualitative) that do not rely solely on self-report measures should also be conducted. We did not have access to individual items for each self-report measure, only total scores, and thus are unable to report internal consistencies for our sample. We also did not have information on comorbid mental health conditions that may have impacted findings. Our sample size was slightly small and, thus, we were slightly underpowered in our regression analyses. Future research should include larger samples to increase power. Finally, the cross-sectional design precludes any determination of causality among variables, and future research should employ longitudinal designs. That is, it is possible that aggression may reinforce certain EMS domains, and longitudinal research will allow for the examination of this possibility.

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- Aggression is a prevalent problem among men in substance use treatment
- Early maladaptive schemas (EMS) might be related to aggression in this population
- Findings demonstrated EMS to be associated with aggression
- Findings provide support for aspects of social-cognitive theories of aggression

Table 1

Means, Standard Deviations, and Bivariate Correlations among Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Education	---	.04	.06	.02	-.04	-.02	-.01	.08	.00	-.00	-.22*	-.17	-.26**	-.16
2. Age		---	.08	-.44***	-.36***	-.15	-.23*	-.10	-.18	-.23*	-.29***	-.14	-.31**	-.37***
3. Alcohol Use			---	-.39***	.01	.31**	.20*	.18	.16	.23*	.18	.22*	.15	.09
4. Drug Use				---	.43***	.26**	.42***	.24*	.27**	.41***	.27**	.20*	.27**	.29**
5. Antisocial Features					---	.47***	.52***	.34***	.47***	.58***	.57***	.42***	.58***	.55***
6. Disconnection & Rejection						---	.75***	.68***	.79***	.81***	.47***	.45***	.40***	.41***
7. Impaired Autonomy							---	.62***	.55***	.70***	.41***	.40***	.33***	.36***
8. Other-Directedness								---	.70***	.57***	.15	.14	.12	.17
9. Over-Vigilance & Inhibition									---	.73***	.34***	.32**	.25**	.34***
10 Impaired Limits										---	.56***	.52***	.45***	.52***
11. Aggression Total											---	.90***	.89***	.87***
12. Aggressive Attitude												---	.70***	.66***
13. Physical Aggression													---	.69***
14. Verbal Aggression														---
<i>M</i>	13.70	41.20	16.28	8.87	57.67	61.63	22.78	50.06	70.79	32.14	50.60	50.56	52.45	48.72
<i>SD</i>	2.05	11.02	10.48	12.27	12.29	77.13	31.80	40.91	63.26	34.38	12.95	12.91	13.00	10.79

*
 $p < .05$,**
 $p < .01$,***
 $p < .001$

Table 2

Hierarchical Multiple Regression Analyses Predicting Aggression

	Aggression Composite β (SE)	Aggressive Attitude β (SE)	Physical Aggression β (SE)	Verbal Aggression β (SE)
Model 1	$R^2 = .43$ $F(df = 5, 100) = 15.09^{***}$	$R^2 = .27$ $F(df = 5, 100) = 7.53^{***}$	$R^2 = .44$ $F(df = 5, 100) = 16.22^{***}$	$R^2 = .37$ $F(df = 5, 100) = 11.86^{***}$
Education	-.22 (.48)*	-.18 (.54)*	-.26 (.47)**	-.15 (.42)
Age	-.07 (.10)	.05 (.11)	-.09 (.10)	-.17 (.08)*
Antisocial Features	.46 (.09)***	.33 (.10)**	.49 (.09)***	.44 (.08)***
Alcohol Use	.26 (.11)**	.31 (.12)**	.21 (.10)*	.15 (.09)
Drug Use	.15 (.10)	.21 (.12)	.10 (.10)	.09 (.09)
Model 2	$R^2 = .53$ ($R^2 = .10$) $F(df = 10, 95) = 10.69^{***}$	$R^2 = .40$ ($R^2 = .13$) $F(df = 10, 95) = 6.36^{***}$	$R^2 = .51$ ($R^2 = .07$) $F(df = 10, 95) = 10.10^{***}$	$R^2 = .44$ ($R^2 = .07$) $F(df = 10, 95) = 7.61^{***}$
Education	-.19 (.45)**	-.14 (.51)	-.24 (.46)**	-.13 (.41)
Age	-.09 (.09)	.03 (.11)	-.10 (.09)	-.19 (.08)*
Antisocial Features	.36 (.10)***	.17 (.11)	.49 (.10)***	.33 (.09)**
Alcohol Use	.15 (.11)	.16 (.13)	.16 (.12)	.05 (.10)
Drug Use	.06 (.11)	.06 (.13)	.11 (.11)	-.01 (.10)
Disconnection & Rejection	.33 (.03)*	.25 (.03)	.45 (.03)**	.17 (.02)
Impaired Autonomy	-.09 (.05)	.04 (.06)	-.22 (.05)	-.12 (.05)
Other-Directedness	-.24 (.03)*	-.32 (.04)*	-.13 (.04)	-.14 (.03)
Over-Vigilance & Inhibition	-.17 (.03)	-.07 (.03)	-.29 (.03)*	-.11 (.02)
Impaired Limits	.33 (.05)*	.36 (.06)*	.12 (.05)	.37 (.05)*

*
 $p < .05$,**
 $p < .01$,***
 $p < .001$