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The role of risk taking in explaining the link between early maladaptive schemas and aggression

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Abstract

Aggression is a persistent public concern shaped by cognitive and behavioural vulnerabilities that originate in early development. Early Maladaptive Schemas (EMS) represent enduring belief systems formed in childhood that may predispose individuals to aggression, while risk-taking behaviours may function as behavioural pathways through which these cognitive vulnerabilities are outwardly displayed. This study examined the associations between EMS and aggression in an adult sample (Age: $M = 31.67$, $SD = 11.39$) and tested whether risk-tasking mediated these relationships. Using an online survey ($n = 213$), participants completed the Young Schema Questionnaire – Revised, the Buss-Perry Aggression Questionnaire and Domain Specific Risk-Taking scale. Correlation analyses demonstrated EMS were positively associated with aggression. Multiple regression identified four significant predictors: entitlement, insufficient self-control, fear of losing control and defectiveness. Mediation analyses demonstrated risk-taking partially mediated the relationship between each schema and aggression. These findings suggest that EMS function as cognitive vulnerabilities for aggressive behaviour, while risk-taking represents an important behavioural mechanism through which these schemas influence aggression. The results demonstrate the value of examining individual schemas and support the integration of schema theory and risk-taking models in understanding aggression.

Keywords: Aggression; Early Maladaptive Schemas; Mediation; Non-clinical sample; Risk-taking

1. Introduction

1.1. Aggression

Aggression is a prevalent public health concern linked to substantial interpersonal and societal harm, with important undertones of physical based behaviours (1). It is commonly defined as intentional forceful action aimed at harming another person, expressed through verbal, physical or relational forms (2). In the UK, 9.4 million incidents of crime, including aggression, were recorded between 2024 and 2025 (3), with most common types of aggressive behaviour including domestic abuse (4) and harassment (5). However, a large portion of crime goes under-reported as statistics only count victims who report crime (6), suggesting the problem is more prevalent than recorded by authorities (7). The extent of this problem demonstrates the significance of determining underpinning motivators to reduce it and to enable support for both perpetrators and survivors of aggression.

1.2. The General Aggression Model

The General Aggression Model (GAM; 8) has been widely used to explain aggression by integrating cognitive, developmental, social, biological and personality factors. The model suggests that interactions between internal proximal states (cognitions and feelings) and external distal factors (social, environmental and childhood experiences) determine future aggression (8).

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However, GAM has been criticised for its broad, non-specific focus and limited attention to developmental and deeper cognitive structures that reflect a pathway from vulnerability to aggression (9). Although the GAM highlights how situational inputs and person-level factors interact to produce aggression, it does not sufficiently address the developmental origins of these cognitive vulnerabilities or how early interpersonal experiences shape stable belief systems that may predispose individuals to aggression. Early Maladaptive Schemas (EMS) extend the GAM by offering a developmental framework through which early unmet needs and maladaptive beliefs influence behavioural processes described by the GAM. Thus, EMS provide a deeper structure explanation of how aggression may emerge from longstanding cognitive and emotional vulnerabilities rather than only proximal situational triggers. Extensive research has established that aggression in childhood leads to further aggressive behaviours in adulthood (10, 11, 12, 13), suggesting that aggression has early roots. Recent research suggested that aggression is rooted in maladaptive cognitions and behavioural patterns that originate in childhood and adolescence (14). EMS are enduring belief systems that may help better understand how internalised maladaptive beliefs sustain aggression cycles beyond situational triggers (15).

1.3. Schema Theory

Schema theory (16) proposes that individuals develop cognitive frameworks based on previous experiences, which shape perceptions and responses (17, 18). EMS, developed from schema theory, are rigid cognitive-emotional patterns formed in childhood due to unmet emotional needs (19). These schemas shape how individuals interpret interpersonal experiences in adulthood, biasing attention towards threat, rejection or unfairness and prompting maladaptive coping responses. Schema research with forensic populations demonstrated that schemas precede criminal behaviour, may often predict future criminal behaviour (19). Young et al. (20) originally grouped 18 schemas into five domains. However, more recently, Yalcin et al (21) expanded the EMS from 18 to 20 schemas. Specifically, emotional inhibition was separated into emotional constriction (shame-based overcontrol of emotion) and fear of losing control (expectations about emotional loss of control) and punitiveness was divided into self- and other- punitiveness. This allowed for more nuanced examination of specific maladaptive beliefs that may be particularly relevant for aggression, such as capturing aspects of emotional dysregulation associated with reactive aggression (22). See Table 1 for a summary of all domains and their definitions.

Table 1 Early maladaptive schemas individual definitions

Schema Domains	EMS	Explanation
Impaired Limits	Entitlement	Belief that a person is superior to others and is entitled to special rights and privileges
	Insufficient Self-Control	Challenges establishing self-control to achieve goals, coupled with inability to control impulses and urges
Other-directedness	Self-sacrifice	An excessive need or expectation to meet the needs of other at own expense
	Subjugation	Excessive feeling that personal needs and emotions need to be suppressed for fear of negative consequences e.g., resentment
	Approval Seeking	Desire to gain attention and approval of others at the expense of personal sense of self.
Impaired Autonomy	Enmeshment	An inability to form own identity due to the excessive emotional involvement with others caused by the belief that happiness/survival depends on others (usually occurs between child and parent)
	Dependence	Feeling that a person is completely dependent on others and needs others to make everyday decisions
	Failure	A belief that a person is inadequate compared to others
	Vulnerability to Harm	A belief that disaster and danger can occur at any moment
Over-vigilance and Inhibition	Emotional Inhibition	A belief that outward emotional expression can lead to negative consequences

	Emotional Constriction	Feeling shame for having and expressing emotions, causing a person to excessively overcontrol their emotions
	Fear of Losing Control	A feeling that failure to maintain personal control of emotions will cause negative consequences
	Punitiveness	A belief that people who make mistakes should be punished harshly
	Punitiveness (Self)	A self-imposed criticalness for a person's mistakes
	Punitiveness (Other)	A perception that others should be punished for making mistakes
	Unrelenting Standards	A belief that if high standards of behaviour or performance are not met, a person will be harshly criticised
	Negativity	Increased focus on negativity in life and often minimising the positive aspects of life
Disconnection / Rejection	Abandonment	The perception that people will abandon an individual (often themselves)
	Defectiveness	A belief that an individual is fundamentally defective and unlovable
	Emotional Deprivation	The perception that others cannot meet a person's support needs
	Mistrust / Abuse	The perception that people will purposefully manipulate others
	Social Isolation	Feeling of being isolated and not belonging in society

1.4. Early Maladaptive Schemas

The revised EMS schemas have limited research in relation to aggression, and prior work typically focused on schema domains rather than individual schemas potentially obscuring important patterns. Nevertheless, earlier research linked EMS to externalising behaviours, including aggression, in forensic (9) and clinical samples (23). For instance, Shorey et al. (24) found that Disconnection/Rejection was linked to physical aggression, whilst Impaired Limits was linked to verbal aggression. Later research by Van Wijk-Herbrink et al. (23) is one of the few studied that explored the individual schemas, rather than the broad domains. Van Wijk-Herbrink et al. (23) found that abandonment (Disconnection/Rejection domain) and entitlement (Impaired Limits domain) have been associated with perceived unfairness which led to greater aggression. The schemas within the Impaired Limits domain reflect poor behavioural regulation and heightened expectations of preferential treatment, which increase the likelihood of hostile retaliatory responses. On the other hand, Disconnection/Rejection schemas stem from early experiences of insecurity and harm, which contribute to long-term aggressive tendencies (11, 12). Research shows that individuals with stronger rejection-related tendencies are more likely to interpret interpersonal cues as threatening, increasing defensive or retaliatory aggression (23, 24). Although findings are mixed at the individual level, the overall evidence supports the expectation that these beliefs represent cognitive vulnerabilities for aggression.

1.5. Risk-Taking as a Mediator

Although some of the schemas may have a direct relationship with aggression, it could be argued that others follow a mediated pathway. In fact, risk-taking has been widely linked to EMS and aggression (25, 26, 27, 28, 29). Risk-taking is defined as the tendency to engage in behaviours with potential for harm or loss in pursuit of perceived benefits, where impulsivity and substance use are prime examples of such behaviour (25). Research suggests that individuals with higher EMS scores report higher levels of substance and behaviour related risk-taking, conceptualised as maladaptive attempts to regulate unmet emotional needs (30). Marengo et al. (27) found that the Impaired Limits domain and Disconnections/Rejection domains specifically were associated with increased risky behaviours (such as sex and drinking related risky behaviour) and aggression. Furthermore, a more recent study exploring anticipated engagement in risky behaviour, highlighted the specific importance of the Disconnection/Rejection schemas in those behaviours (31). Finally, longitudinal work further indicates that higher risk-taking and sensation seeking are associated with aggression from childhood into adolescence (10). Although existing literature supports the idea that cognitive

vulnerabilities and risky decision-making may operate together to promote aggressive outcomes, the model has never been directly tested.

Together, EMS may act as relatively stable, person-level factors, while risk-taking represents a behavioural pathway through which these schemas translate into aggressive behaviour. The extent to which specific schemas predict aggression, or whether risk-taking mediates these relationships in the general population, remains unclear. Prior research has not tested risk-taking with aggression outcomes explicitly (25, 30, 32), however, a schema-focused approach provides a clearer pathway towards understanding how risk-taking may mediate aggression. Previous research has largely relied on earlier schema measures, examined limited sets of schemas or used specialised samples (e.g. male prisoners, substance-use treatment populations), restricting generalisability.

1.6. Research Gap and Hypotheses

Despite evidence linking EMS and aggression, three critical gaps remain. First, most studies have examined schema domains rather than individual schemas, limiting insight into which specific cognitive patterns most strongly predict aggression. Secondly, research has rarely examined behavioural mechanisms that may help explain how schemas translate into aggressive outcomes, despite theoretical suggestions that behavioural risk-taking may increase schema-driven vulnerabilities. Third, no study has tested whether risk-taking mediates the EMS-aggression pathway using the revised Young Schema Questionnaire – Revised (YSQ-R; 21), which captures newer schema distinctions with greater precision. The present study addresses these gaps by using the updates EMS measure, examining individual schemas and empirically testing risk-taking as a behavioural mechanism linking schemas to aggression.

The current study adopted an exploratory approach to examine how EMS relate to aggression and to examine whether risk-taking behaviour mediates the relationship between EMS and aggression. It is hypothesised that:

- H1. Higher levels of Early Maladaptive Schemas will predict increased aggressive behaviours.
- H2. High risk-taking behaviours will mediate the relationship between Early Maladaptive Schemas and aggression.

2. Material and Methods

2.1. Design and Participation

A cross sectional, correlational survey design was used to examine associations between EMS and aggression and to test risk-taking as a mediator. Data was collected online via Qualtrics using standardised self-report questionnaires. EMS were treated as independent variables, aggression as the dependent variable and risk-taking as a mediator.

A convenience sample of adults was recruited through social media, survey exchange platforms (SurveyCircle and SurveySwap) and word of mouth. Of 227 participants, 213 met the inclusion criteria (aged 18 or over and completeness of measures). Participants were predominantly female (77.5%, n = 165) with 21.6% males (n = 46) and 0.9% preferring not to say (n = 2). The mean age was 31.67 years (SD = 11.39). The sample was ethnically diverse, with the largest group identified as White (62.0%), followed by Asian (21.6%), Mixed (7.5%), Other (5.6%) and Black (3.3%). Most participants had completed higher education (approximately 83% held undergraduate and postgraduate qualifications). Participation was voluntary; participants from survey exchange platforms received points upon completion.

2.2. Measures

2.2.1. Young Schema Questionnaire – Revised (YSQ-R)

EMS were assessed using YSQ-R (21), a 116-item measure of 20 schemas rated on a 7-point Likert scale (1 = completely untrue of me, to 7 = completely true of me). Mean scores were calculated for each schema, with higher scores indicating stronger EMS. The revised scale has demonstrated good (.74) to excellent (.86) reliability and validity in clinical and non-clinical samples (33).

2.2.2. Buss-Perry Aggression Questionnaire (BPAQ)

Aggression was measured using BPAQ (34), a 29-item measure rated on a 5-point Likert scale (1 = extremely uncharacteristic of me, to 5 = extremely characteristic of me). A total mean score was calculated for aggression; higher scores reflected greater aggressive tendencies. Test-retest reliability was found to be good, with scores ranging from .72 to .80 (34, 35)

2.2.3. Domain Specific Risk Taking (DOSPERT)

Risk-taking was measured using DOSPERT (36). The likelihood scale, consisting of 30 items, asked participants how likely they would be to engage in various risky activities on a 7-point scale (1 = extremely unlikely, to 7 = extremely likely). A total mean score was calculated, with higher scores indicating greater propensity for risk-taking. The DOSPERT has shown good internal consistency and robust psychometric properties across diverse samples (37).

2.3. Procedures and Ethical Considerations

The study was approved by the University of Roehampton Forensic Psychology Research Ethics Committee (Ref: 24/25-000004). Prospective participants accessed the survey through a link or QR code and were presented with an information sheet describing the aims, inclusion criteria and potential risks and benefits. Those who consented completed brief demographic questions followed by the YSQ-R, BAPQ and DOSPOERT presented in randomised order to minimise order effects. Participation took approximately 25-30 minutes. No identifying information was collected; responses were stored anonymously using participant numbers on password-protected devices and secure servers.

Given the potentially sensitive nature of questions about childhood experiences, aggression and risk-taking, participants were informed that some items might be uncomfortable and that they could skip questions or withdraw at any time before submitting their responses. A trigger warning was included at the start of the survey and debrief page at the end provided further information about the study and link to mental health support services. Contact details for the researcher were supplied for questions or requests to withdraw data. All procedures adhered to the British Psychological Society (PBS) ethical principle of respect, integrity, responsibility and competence from the Code of Ethics and Conduct (38).

Participants were also asked a brief screening question related to childhood experiences. This item was not included in the statistical analysis because its purpose was to identify potential distress, enable appropriate safeguarding and provide tailored signposting to support services in line with BPS ethical guidelines. The item served a welfare function as its inclusion ensured that participants who disclosed distress could be provided with immediate resources during debrief. No individual responses on this question were retained or analysed for research purposes.

3. Results

3.1. Preliminary Analysis

All scales demonstrated acceptable (α = .695) to excellent (α = .945) internal consistency. The YSQ-R subscales showed strong reliability (α = .813 to α = .945), BPAQ has adequate reliability (α = .742) and DOSPERT demonstrated good reliability (α = .752). Kolmogorov-Smirnov tests indicated that the data was positively skewed across most variables (see Table 2), suggesting that the sample consisted of primarily individuals with lower levels of aggression, risk-taking and EMS.

Table 2 Kolmogorov-Smirnov Test of Normality

Scale	Subscale	*KS* (213)	Sig.
Schemas	Emotional Deprivation	0.096	<.001
	Abandonment	0.088	<.001
	Mistrust	0.096	<.001
	Social Isolation	0.092	<.001
	Defectiveness	0.121	<.001
	Failure	0.115	<.001
	Dependent / Incompetence	0.109	<.001
	Vulnerability to Harm	0.077	0.004
	Enmeshment	0.113	<.001
	Subjugation	0.077	0.004

	Self-sacrifice	0.069	0.017
	Fear of losing control	0.112	<.001
	Emotional Constriction	0.095	<.001
	Unrelenting Standards	0.065	0.029
	Entitlement	0.066	0.026
	Insufficient Self-control	0.079	0.003
	Approval Seeking	0.079	0.002
	Negativity	0.068	0.019
	Punitiveness (Self)	0.109	<.001
	Punitiveness (Other)	0.095	<.001
BPAQ (Aggression)		0.064	0.034
DOSPERT (Risk-taking)		0.107	<.001

3.2. Hypothesis Testing

Spearman's correlation was used to confirm a relationship between the independent and dependent variables. The results showed that aggression was positively associated with all EMS and risk-taking, with medium to large effect sizes. The strongest correlations with aggression were fear of losing control, entitlement, defectiveness, insufficient self-control, mistrust, and negativity. Risk-taking was moderately correlated with aggression. See Table 3 for the full correlation analysis.

Table 3 Spearman's Rho correlation

Variable	**Aggression**	**Risk Taking**
Risk-taking	.357**	-
Negativity	0.532**	0.101
Emotional Deprivation	0.478**	0.244**
Abandonment	0.468**	0.223**
Mistrust	0.551*	0.184**
Social Isolation	0.513**	0.181**
Defectiveness	0.594**	0.292**
Failure	0.440*	0.194**
Dependence/Incompetence	0.527**	0.157*
Vulnerability to Harm	0.517**	0.182**
Enmeshment	0.454**	0.196**
Subjugation	0.400**	0.237**
Self-Sacrifice	0.149*	-0.010
Fear of Losing Control	0.648**	0.227**
Emotional Constriction	0.459**	0.269**
Unrelenting Standards	0.263**	0.071
Entitlement	0.635**	0.241**
Insufficient Self-Control	0.544**	0.195**

Approval Seeking	0.336**	0.164*
Punitiveness (Self)	0.438**	0.165*
Punitiveness (Other)	0.531**	0.165*
Notes: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).		

Multiple linear regression was performed to test the first hypothesis. The analysis assumptions were met as there were no outliers (based on Cook's distance) and no multicollinearity concerns (see VIF in Table 4). Plots also indicated that there are no homoscedasticity and independent errors concerns.

The multiple linear regression analysis was conducted by entering all 20 schemas to identify unique predictors of aggression. The analysis indicated that the Model significantly fit the data (F (20, 192) = 16.073, p <.001, R^2 = .626) and explained 62.6% of the variance in aggression. Out of all schemas, only 4 were significant in predicting aggression: defectiveness, fear of losing control, entitlement and insufficient self-control (Table 4). Entitlement had the greatest impact on aggression, whilst insufficient self-control had the lowest significant impact on aggression. Therefore, the findings partially support the first hypothesis.

Table 4 Multiple linear regression analysis of all 20 EMS and aggression

Coefficients	**Beta**	***t***	**Sig.**	**VIF**
Emotional Deprivation	0.109	1.720	0.087	2.072
Abandonment	-0.015	-0.180	0.857	3.568
Mistrust	0.035	0.440	0.660	3.286
Social Isolation	-0.008	-0.115	0.908	2.709
Defectiveness	0.211	2.392	0.018	3.989
Failure	-0.023	-0.336	0.737	2.322
Dependency / Incompetence	-0.050	-0.614	0.540	3.371
Vulnerability to Harm	0.074	1.158	0.248	2.082
Enmeshment	0.095	1.502	0.135	2.044
Subjugation	-0.081	-1.117	0.266	2.706
Self-Sacrifice	-0.084	-1.497	0.136	1.613
Fear of Losing Control	0.177	2.430	0.016	2.732
Emotional Constriction	-0.105	-1.582	0.155	2.266
Unrelenting Standards	-0.060	-0.974	0.331	1.936
Entitlement	0.330	4.470	<.001	2.793
Insufficient Self-Control	0.172	2.771	0.006	1.981
Approval Seeking	-0.070	-1.101	0.272	2.086
Negativity	0.111	1.325	0.187	3.591
Punitiveness (Self)	-0.010	-0.137	0.891	2.939
Punitiveness (Others)	0.108	1.602	0.111	2.330

To test the second hypothesis, mediation analysis was performed to evaluate the second hypothesis using PROCESS by Hayes (39). Only those EMS that had a significant predictive impact on aggression were included in the mediation analysis. A Spearman's correlation analysis indicated that these schemas correlated with risk-taking (see Table 3). As

such, the conditions for a mediation analysis were met. As outlined above, the assumptions for mediation analysis were met for the four schemas and aggression variables. In addition, the assumptions relating to risk-taking were also met. Cook's distance revealed no outliers and the VIF analysis indicated no multicollinearity. Finally, plots indicated that there are no homoscedasticity concerns and there is independence of errors.

Four mediation analyses were performed, with aggression entered as the outcome variable, risk taking as the mediator, and each schema as the predictor. The mediation analysis indicated that risk-taking partially mediated the relationship between entitlement and aggression (Sobel $z = 2.920$, $p = .003$); insufficient self-control and aggression (Sobel $z = 2.806$, $p = .005$); fear of losing control and aggression (Sobel $z = 2.648$, $p = .008$); defectiveness and aggression (Sobel $z = 2.830$, $p = .004$). The mediation models are summarised in Figures 1-4. These findings partially support the second hypothesis.

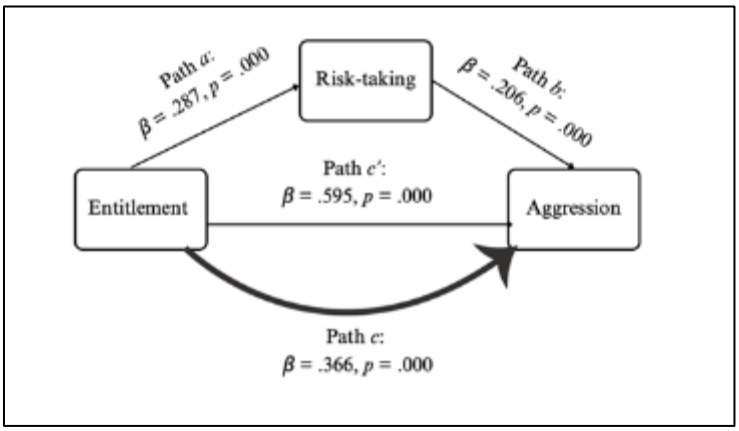

Figure 1 Mediation pathway of Risk-taking between Entitlement and Aggression

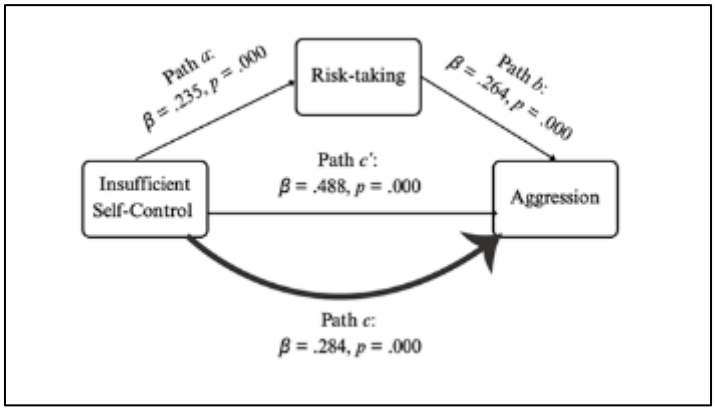

Figure 2 Mediation pathway of Risk-taking between Insufficient Self-Control and Aggression.

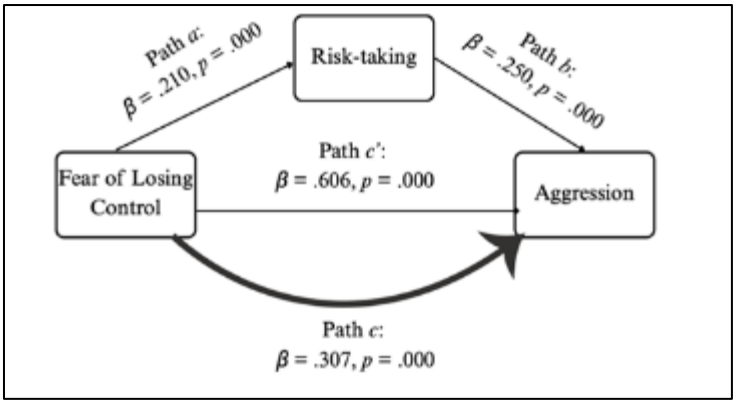

Figure 3 Mediation pathway of Risk-taking between Fear of Losing Control and Aggression.

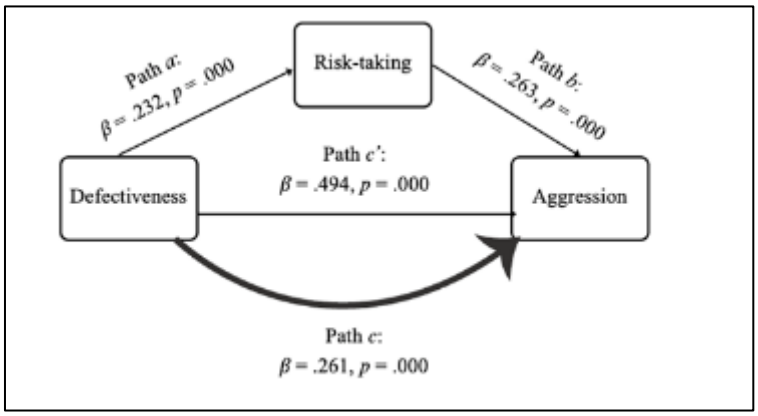

Figure 4 Mediation pathway of Risk-taking between Defectiveness and Aggression.

In all four models, the indirect effect of EMS on aggression through risk-taking was significant as the confidence interval did not include zero. Although the direct paths from entitlement, insufficient self-control, fear of losing control and defectiveness to aggression remained significant, the effects were reduced when risk-taking was included in the models, indicating partial mediation. Full mediation statistics are presented below in Table 5.

Table 5 Direct and indirect effects of 4 EMS on Aggression through Risk-taking

Schemas	**Path**	**Effect (*B*)**	***SE***	**Confidence Interval (*CI*)**		***p***
				Lower Limit	Upper Limit	
Entitlement	*a*	0.209	0.048	0.114	0.304	0.000
	b	0.174	0.044	0.087	0.262	0.000
	c'	0.366	0.032	0.302	0.430	0.000
	ab	0.036	0.021	0.022	0.106	*
Insufficient Self-control	*a*	0.163	0.046	0.071	0.255	0.000
	b	0.223	0.047	0.129	0.318	0.000
	c'	0.284	0.033	0.129	0.318	0.000
	ab	0.036	0.015	0.010	0.069	*
Fear of Losing Control	*a*	0.126	0.040	0.046	0.205	0.002
	b	0.211	0.042	0.128	0.295	0.000
	c'	0.307	0.025	0.257	0.357	0.000

	ab	0.026	0.011	0.006	0.051	*
Defectiveness	*a*	0.145	0.041	0.062	0.228	0.000
	b	0.222	0.047	0.128	0.316	0.000
	c'	0.261	0.029	0.203	0.320	0.000
	ab	0.032	0.013	0.010	0.061	*

*Notes:** PROCESS does not provide a p-value for the indirect effect; significance is inferred when the *CI* does not include zero.

4. Discussion

4.1. Overview

The current study adopted an explored how EMS relate to aggression in a non-clinical adult sample and whether risk-taking mediates this relationship. The first hypothesis was partially supported as higher EMS showed positive associations with aggression at the correlational level. A linear regression analysis found four schemas of entitlement, insufficient self-control, fear of losing control and defectiveness to be predictors of aggression. In line with the second hypothesis, risk-taking partially mediated the association between each of the predictor schemas and aggression. The findings support that EMS may function as cognitive vulnerabilities for aggression and that risk-taking represents one behavioural mechanism through which these vulnerabilities translate into aggressive behaviour.

4.2. EMS as Predictors of Aggression

The regression analysis indicated that entitlement, insufficient self-control, fear of losing control and defectiveness were the strongest predictors of aggression. This pattern is consistent with previous research linking Impaired Limits schemas to externalising behaviour and aggression (23, 24). Entitlement, which reflects beliefs about deserving special treatment and reduced concern for social rules, showed the largest effect on aggression. This aligns with evidence that entitlement, as a maladaptive facet of narcissism, is associated with hostile interpretations, poor frustration tolerance and increased physical aggression (40). Other research has noted that financial entitlement increases aggressive behaviours (41), where economic status has been found to increase an individual's entitlement (42). Within the GAM framework (8), entitlement can be conceptualised as a person-level factor that biases appraisal of interpersonal situations towards perceived provocation, which may heighten aggressive responses. For example, entitlement may bias cognitive comprehension towards perceiving increased provocation, thus increasing aggressive outcomes. This supports the argument that individuals who struggle to regulate impulses may react aggressively when emotionally challenged. Together, these findings reinforce that schemas reflecting weak internal boundaries and difficulty regulating behaviour play a central role in adult aggression. It is important to acknowledge that the measures used in this study assess broad behavioural and cognitive constructs which may not perfectly align onto all theoretical distinctions within aggression research. The BPAQ captures multiple components of aggression including anger and hostility which may reflect emotional reactivity rather than behavioural aggression alone. Similarly, the DOSPERT measures domain-specific risk tendencies that may not fully represent relational or interpersonal risk-taking relevant aggression. The YSQ-R assesses internalised schemas that begin in early development, but the boundaries between schemas involving impulse control (e.g., insufficient self-control) and behavioural tendencies such as risk-taking can conceptually overlap. This overlap does not invalidate the findings but suggests that the mediation effects observed may reflect shared components of behavioural dysregulation rather than completely distinct processes.

Insufficient self-control predicted aggression, reflecting established links between poor behavioural regulation, impulsivity and externalising behaviours (27, 28). Individuals high in this schema may struggle to inhibit aggressive impulses under emotional or situational pressure. Fear of losing control, a schema added in the revised YSQ-R (21), was a significant predictor, suggesting that beliefs about catastrophic consequences of emotional loss of control may be associated with difficulty managing anger. This aligns with work emphasising the role of maladaptive emotion regulation strategies in aggression (14).

Defectiveness, representing feelings of shame, unworthiness and expectation of rejection, was the only Disconnection/Rejection schema that predicted aggression. Although several rejection-related schemas were correlated with aggression (23, 24), their effects did not remain significant during regression analysis, suggesting potential overlap in schema constructs. Defectiveness reflects deep feelings of inadequacy, shame and expectation of rejection. These beliefs may heighten sensitivity to perceived criticism, increasing the likelihood of aggression. Previous research has made associations between aggressive outbursts and low feelings associated with worthlessness (43),

providing partial support for the findings in the current research. It may be possible to understand the relationship between defectiveness and aggression as one that occurs out of self-preservation, where an individual may demonstrate aggressive behaviours due to low internal feelings. Overall, these findings provide partial support for the first hypothesis by showing that EMS are broadly associated with aggression and that schemas related to behavioural control and self-worth are significant. This highlights the value of examining individual schemas rather than domains.

4.3. Risk-taking Mediating the EMS and Aggression Pathway

The mediation analyses demonstrated that risk-taking partially mediated the relationship between entitlement, insufficient self-control, fear of losing control, defectiveness and aggression. Higher schema scores were associated with greater risk-taking which predicted higher aggression. These results suggest that risk-taking functions as a behavioural pathway that increases the impact of certain schemas on aggressive outcomes. Although direct empirical evidence for this pathway is limited, the current findings align with conceptual models suggesting that individuals with unmet emotional needs or negative beliefs about others may engage in risky behaviours as a maladaptive coping strategy (30). Risk-taking exposes individuals to high-arousal or high-conflict situations in which aggression is more likely to occur, and previous research has shown that risk-taking and sensation seeking predict aggressive trajectories from childhood to adolescence (10).

Importantly, the current study improved upon earlier work by Marengo et al. (27), who examined risk-taking and EMS using an older schema measure and a sample with limited age variation. By using the revised YSQ-R and including aggression as a distinct outcome, this study provides a more precise test of the schema-risk-taking-aggression pathway. Entitlement and insufficient self-control may predispose individuals to disregard rules and act impulsively, making engagement in risky situations more likely; in turn, such contexts (e.g., substance use, confrontational social settings) increase opportunities for aggression. For fear of losing control and defectiveness, risk-taking may serve as an avoidant or compensatory coping strategy for underlying emotional dysregulation and shame, which then elevates exposure to conflict or high-arousal situations where aggression occurs. These findings provide empirical support for integrative models in which cognitive vulnerabilities and risky decision-making operate together to promote aggressive behaviour.

A further theoretical consideration is the conceptual similarity between insufficient self-control as a schema and the behavioural expression of risk-taking. Both constructs involve elements of impulsivity and difficulty regulating behaviour. Although DOSPERT risk-taking represents a decision-making tendency and insufficient self-control reflects deeper cognitive and emotional vulnerabilities, these constructs share underlying mechanisms related to behavioural disinhibition. This conceptual overlap may partially account for the significant mediation effects observed. Thus, future research should incorporate behavioural measures of impulsivity to distinctly separate these pathways.

4.4. Theoretical and Practical Implications

Theoretically, the findings support schema theory as a useful framework for understanding aggression, suggesting that schemas that reflect entitlement, loss of control, behavioural dysregulation, situational triggers and defectiveness are key contributors to aggressive behaviour (15, 20). The results extend GAM (8) by highlighting EMS as person-level factors and risk-taking as process-level mechanisms linking schemas to aggressive outcomes. These results highlight risk-taking as a possible behavioural mechanism linking schemas to aggression, suggesting that aggression may occur not only from cognitive biases but from behavioural contexts individuals place themselves in based on their schemas.

Practically, the findings highlight the value of schema focused interventions in reducing aggression. Interventions aimed at modifying risk-taking tendencies, such as impulse control training (44) or decision-making interventions, may decrease aggressive behaviour (e.g., CBT techniques and behavioural regulation training).

4.5. Strengths and Limitations

The current study has several strengths; it obtained a large, diverse adult sample with wide age variability, increasing generalisability compared to earlier studies, which were conducted predominantly with undergraduate samples. The use of the revised YSQ-R allowed to explore individual schemas, provided clarity and specificity than past research, which relied on domain level constructs. All measures demonstrated good re-liability and the analysis allowed identification of unique schema predictors.

However, the study was limited by its cross-sectional design, which prevents a causal conclusion from being drawn about the direction of the relationship observed. Longitudinal research is needed to determine whether schemas and risk-taking predict increased aggression over time. All data were based on self-report measures, which introduces potential bias through social desirability and incorrect recall. The sample was predominantly female, which may restrict

the generalisability to other demographic groups where aggression and EMS can present differently. Aggression and risk-taking may manifest differently across genders and the meaning or expression of aggression in women may differ from men, as men demonstrate greater physical aggression compared to women (45). Future research should aim for more gender-balanced samples and consider gender-specific analyses to examine whether the schema-risk-taking-aggression pathways differ across demographic groups.

A further limitation was that the sample displayed relatively low levels of aggression and risk-taking which restricted the variance. This may have influenced the effect sizes and increased the need to rely on statistical inference to detect subtle associations. Future studies should recruit populations with broader range of behavioural risk including forensic, clinical or justice-involved samples, to test whether the observed pathways generalise to individuals with increased aggression or impulsivity.

Cultural and contextual factors may shape how schemas, risk-taking and aggression interact. Schemas related to self-worth, control or entitlement may be expressed differently across cultures depending on normative expectations around emotional expression, autonomy and social hierarchy. Risk-taking behaviours may also carry different meanings or social consequences across culture groups. Future research should explore these relationships in diverse cultural, clinical and forensic contexts.

4.6. Future Research

Future research should focus on longitudinal studies to establish a pathway of schema activation coupled with risk-taking to aggression. Additionally, neurocognitive and behavioural measures like brain imaging and observations could provide a more objective validation of self-report measures. Lastly, although the current study included a large and culturally diverse sample, greater focus should be placed on conducting research with underrepresented groups (female offenders, juveniles and culturally diverse populations) could improve the applicability of findings.

Given the developmental roots of EMS, integrating attachment-based assessments such as Adult Attachment Interview (AAI) may help with understanding how early relational experiences contribute to the schemas associated with aggression. Combining schema theory with attachment models may strengthen the theoretical understanding of how early experiences shape emotional regulation, risk-taking and aggression.

5. Conclusion

In conclusion, this study contributes to the growing evidence that EMS play a meaningful role in adult aggression and that risk-taking behaviours represent an important pathway through which underlying cognitive vulnerabilities can influence aggressive behaviours. By identifying specific schemas and behavioural mechanisms associated with aggression, the findings offer useful insights for theory development and inform future intervention strategies aimed at reducing aggression in community populations.

Compliance with ethical standards

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Disclosure of Conflict of interest

The authors declare no conflicts of interest.

Statement of ethical approval

The study was conducted in accordance with the Declaration of Helsinki and approved by the Forensic Psychology Ethics Committee of Roehampton University (protocol code 24_25-000004 12 May 2025).

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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