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Emotion Dysregulation as a Potential Risk Marker for Victim- Perpetrator Involvement in Intimate Partner Violence in Mental Disorders

Ina Kuschel

i.kuschel@med.uni-frankfurt.de

Goethe University Frankfurt, University Hospital

Linda C. M. Wilkin-Krug

Julius-Maximilians-University Würzburg

Christian Schmahl

Central Institute of Mental Health

Ute Habel

RWTH Aachen University

Andreas Reif

Goethe University Frankfurt, University Hospital

Catherine V. Barnes-Scheufler

Goethe University Frankfurt, University Hospital

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Abstract

Background.

Intimate partner violence (IPV) is common and disproportionately affects individuals with mental disorders. Emotion dysregulation, a difficulty observed across different mental disorders, has been associated with IPV and may help explain IPV across diagnostic categories rather than being specific to individual disorders. Most individuals involved in IPV take on both roles of victimisation and perpetration, a role overlap associated with substantially more severe violence than unidirectional IPV. Identifying markers that distinguish this victim-perpetrator overlap from victim-only involvement is, therefore, critical for targeted prevention and intervention. As part of the Transregional Collaborative Research Centre (TRR) 379, this study examined emotion dysregulation as one such underlying transdiagnostic mechanism.

Methods.

In this cross-sectional study, 128 participants (96 patients suffering from mental disorders and 32 healthy controls) were recruited. IPV involvement was assessed using the UN Multi-Country Study tool and emotion dysregulation with the Difficulties in Emotion Regulation Scale (DERS-36). Overall IPV involvement, potential markers for IPV perpetration, and differences in emotion dysregulation across IPV roles were examined using regression models and an ANCOVA, respectively. Finally, a mediation analysis tested whether impulse control difficulties accounted for part of the association between psychiatric status and victim-perpetrator overlap.

Results.

Patients reported overall significantly higher IPV involvement than healthy controls (B = 4.39, SE = 1.41, p = .002). Emotion dysregulation significantly predicted IPV perpetration across all participants, with the subscale “impulse control difficulties” emerging as the dominant predictor (β = .58). IPV roles did not differ significantly in emotion dysregulation at the total score level but differed significantly at subscale level. Mediation analysis indicated a significant indirect effect of mental disorders on victim-perpetrator overlap via impulse control difficulties.

Conclusion.

These findings suggest that distress-related difficulties with impulse control, rather than broader emotion dysregulation, may represent a transdiagnostic mechanism underlying the co-occurrence of IPV victimisation and perpetration. This mechanism may be particularly relevant in individuals with mental disorders and warrants further investigation in prospective studies. Given the cross-sectional design,

longitudinal research is needed to establish the temporal and potentially causal relationships between these factors.

Background

Intimate Partner Violence (IPV) describes a pattern of physical, sexual, or psychological harm inflicted by a current or former partner (1). According to recent prevalence data, more than half of German men (51%) and women (58%) have at some point in their lives experienced IPV, with psychological violence (e.g. humiliation, intimidation, threats) being the most prevalent manifestation, followed closely by physical violence (2). Experiencing IPV as a victim has consistently emerged as a predictor of IPV perpetration (2, 3), an etiological pattern captured by the idea that violence begets violence (4). Research has, however, traditionally focused on unilateral conceptualisations of IPV, meaning that one partner is injuring the other (5).

This approach fails to capture the full complexity of IPV involvement, which can instead be conceptualised across four distinct roles: no involvement, victim-only, perpetrator-only, and victim-perpetrator. Increasingly, research suggests that individuals involved in IPV are more likely to occupy the victim-perpetrator role, experiencing and perpetrating IPV, than to be exclusively victims or perpetrators (6, 7). Victim-perpetration overlap is not only more prevalent than unilateral involvement, violent events also tend to occur more frequently within a given relationship and are associated with substantially more severe injuries, with a 4.9-fold greater injury rate reported in the literature (8–10).

This pattern of heightened severity is not confined to violence within a single relationship, commonly referred to as mutual violence (8). Similar findings have been reported in studies that classified individuals as victim-perpetrators without determining whether victimisation and perpetration occurred within the same relationship. Here, victim-perpetrators were approximately three times more likely to sustain an IPV-related injury than individuals classified solely as victims or perpetrators (11, 12), underscoring the significance of the victim-perpetration overlap irrespective of relational context.

Individuals with a history of psychiatric symptoms report even higher lifetime IPV rates than national surveys representing the general population, reflecting a relationship between IPV and adverse mental health outcomes (13–15). In line with this, experiences of IPV have been linked to a range of psychiatric diagnoses, including posttraumatic stress disorder (PTSD), depression, anxiety, insomnia and substance use (16–20). However, previous IPV experiences not only contribute to adverse mental health consequences, individuals with mental disorders also appear to be more vulnerable to becoming IPV victims, as well as perpetrators (21, 22). Also, mental disorders do not appear to be specific to a single IPV role. Indeed, depression, anxiety, PTSD, antisocial personality disorder, and borderline personality disorder have all been significantly associated with both IPV victimisation and perpetration (23). This association across multiple psychiatric diagnoses highlights IPV involvement as a transdiagnostic issue, supporting a focus on shared markers across diagnostic boundaries.

Given the increased danger of injury of the victim-perpetrator IPV role, investigating markers underlying this specific role is clinically warranted. An increasing number of studies have examined the victim-perpetration overlap (4, 24), seeking to identify which behavioural features distinguish the different roles in IPV involvement. Tillyer and Wright found that victim-perpetrators shared more characteristics with perpetrator-only individuals (e.g. negative temperament, substance abuse), while the victim-only group appeared most distinct (24). Given that victimisation is itself a well-established predictor of subsequent perpetration (2), this raises an important question: What distinguishes those who solely experience IPV as a victim from those who are classified as a victim-perpetrator?

The Research Domain Criteria (RDoC) framework (25) was developed to capture psychopathology dimensionally, cutting across traditional diagnostic categories in favour of transdiagnostic mechanisms. Within this framework, research has converged on the idea that core psychological mechanisms, such as deficits within cognitive control, underlie violent behaviour (26, 27). One such mechanism, emotion dysregulation, has been proposed as an additional domain of the RDoC framework (28). However, given that a strict separation between domains is itself somewhat artificial, we treat emotion dysregulation as part of the cognitive control domain for the purposes of the present study (29).

Emotion dysregulation has consistently received empirical support as a correlate of IPV perpetration across various diagnoses (30–34). As a transdiagnostic construct, evidence suggests that it may serve as a better predictor for IPV perpetration than categorical psychiatric diagnoses (35). However, not every subscale of emotion dysregulation appears equally relevant. Using the Difficulties in Emotion Regulation Scale (DERS-36) across different types of IPV, Blinton et al. found that subscales more closely related to impulse control and impulsive behaviour were significantly associated with IPV, suggesting that a subscale-level approach may be more informative when investigating emotion dysregulation (36). Difficulties in emotion regulation are not unique to perpetration, they have also been observed among individuals who experience IPV victimisation, alongside poorer impulse control (37, 38). Given that victimisation itself is a predictor of perpetration (2), this pattern raises the possibility that emotion dysregulation is not only present in victims and perpetrators separately but may also characterise those who occupy both roles simultaneously, a question the present study aims to address more directly.

Within the association of emotion dysregulation and the IPV victim-perpetration overlap, biological sex differences appear ambiguous: While sex did not moderate the relationship between emotion regulation subscales and psychological IPV in some studies (31), other studies reported that only men involved in bidirectional IPV showed a significantly reduced capacity to regulate emotions relative to those with no IPV involvement and identified sex-dependent predictors (39, 40). Given mixed evidence, the potential moderating role of sex is explored further in the present study. Despite growing evidence that victim-perpetrators represent a clinically distinct and high-risk group, markers that differentiate them from victim-only individuals remain poorly understood, particularly within transdiagnostic samples (41). The present study addresses both gaps by examining emotion dysregulation and IPV in a transdiagnostic psychiatric sample, and testing both a moderation of sex and a mediation pathway from psychiatric status to victim-perpetration overlap.

Based on the literature, the following hypotheses were formulated. First, individuals with mental disorders were expected to show higher overall IPV involvement than healthy controls (H1). Second, current levels of emotion dysregulation were expected to be associated with IPV perpetration across all participants (H2). Third, IPV roles were expected to differ in emotion dysregulation, with victim-perpetrators expected to show the most pronounced impairments, particularly relative to victim-only individuals (H3). Biological sex differences were additionally explored within H2 and H3, given mixed evidence in the literature regarding their moderating role. Finally, going beyond the comparison of IPV roles and emotion dysregulation in H3, emotion dysregulation's facet *impulse control difficulties* was expected to mediate the relationship between psychiatric status and victim-perpetrator overlap (H4), thereby linking H1 and H3 and testing whether a shared, transdiagnostic mechanism, rather than psychiatric diagnosis itself, underlies IPV involvement.

MEthods

Study Framework

This study was conducted within Transregional Collaborative Research Centre (TRR) 379 "Neurobiopsychology of Aggression: A transdiagnostic approach in mental disorders" (funded by the German Research Foundation, DFG). The "Q01" subproject is the central recruitment platform within the TRR, encompassing clinical interviews, self-report questionnaires, imaging data and bio samples. Present analyses draw on a subset of the Q01 assessment battery (42) relevant to emotion dysregulation and IPV, supplemented by an additional IPV measure. The study employed a cross-sectional, between-subjects design. All data were recorded and managed using the Electronic Data Capture System "secuTrial®" (43).

Study Procedure

Potential participants were screened for in- and exclusion criteria prior to enrolment. Upon meeting eligibility criteria, participants received a full explanation of the study protocol and provided written informed consent prior to any assessment. The first appointment comprised a standardised diagnostic interview, during which diagnoses were established and previously given diagnoses were validated. Axis I diagnoses were assessed and confirmed using the structured clinical interview for mental disorders "Mini-DIPS" (44), and Axis II diagnoses using the International Personality Disorder Examination (IPDE) (45). Upon completion of all study components, participants received a financial reimbursement.

Participants

This study included 128 participants recruited at the Department of Psychiatry, Psychosomatics and Psychotherapy in Frankfurt. Inclusion criteria were age between 18 and 40 years, and the ability to provide written informed consent and comply with the study protocol. Exclusion criteria comprised

mental retardation, severe somatic or neurological disorders, and dementia. The patient sample consisted of 96 individuals with mental disorders, of whom 26 were inpatients primarily recruited from acute, psychosis, and substance misuse wards, and 70 were outpatients recruited via flyers distributed across psychiatric outpatient services and substance misuse treatment facilities. Patients reported a mean age of diagnosis onset of 18.1 years (*SD* = 5.7) and rated their current symptom severity as moderate to considerable on average (*M* = 4.2, *SD* = 1.4), on a 7-point self-report scale ranging from 1 (not at all ill) to 7 (extremely severely ill). A transdiagnostic approach was adopted, encompassing participants across all major diagnostic categories except for organic mental disorders (F0). Diagnostic categories reported in Table 1 reflect primary diagnoses only, an overview of comorbidities is provided in the additional file 1 (Table S1). Personality disorders (*n* = 19) consisted of borderline personality disorder (*n* = 12), anankastic (obsessive-compulsive) personality disorder (*n* = 4), anxious (avoidant) personality disorder (*n* = 2), and paranoid personality disorder (*n* = 1).

Healthy controls (*n* = 32) were recruited and screened for the absence of current or past mental disorders. Despite best efforts, healthy controls were significantly younger than patients on average, while the groups did not differ in sex distribution, years of education and socio-economic variables such as the annual household net income. Age was therefore included as a covariate in all analyses involving group comparisons. Detailed demographic and clinical characteristics of both groups are presented in Table 1. Most participants were classified as having no IPV involvement, followed by victim-perpetrators (Fig. 1a), predominantly within the externalising cluster (Fig. 1b). The distribution of sample characteristics across the different IPV roles is included in the additional file 1 (see Table S2).

Table 1
Demographic Data of Patients and Healthy Controls

Variable	**Patients (*n* = 96)**	**Healthy Controls (*n* = 32)**	***p*-value**
Age	29.2 (5.2) Range: 20–41	25.1 (3.7) Range: 20–34	< .001***
Sex			0.217
Male	39 (41%)	17 (53%)	
Female	57 (59%)	15 (47%)	
Years of Education	16.7 (3.8)	16.7 (4.4)	0.677
Employment Status			0.123
Employed	62 (66%)	25 (81%)	
Unemployed	32 (34%)	6 (19%)	
Household Income			0.289
Under 12.000 € per year	27 (28%)	5 (16%)	
12.000–54.000€	46 (48%)	20 (63%)	
Over 54.000 € per year	22 (23%)	7 (22%)	
Relationship Status			0.488
Single	35 (37%)	18 (56%)	
Relationship/Married	60 (63%)	14 (44%)	
Diagnostic Category			
Personality Disorder	19 (20.0%)	0 (0%)	
Depression	18 (19.0%)	0 (0%)	
ADHD	14 (15.0%)	0 (0%)	
Schizophrenia	11 (12.0%)	0 (0%)	
Anxiety Disorder	10 (11.0%)	0 (0%)	
PTSD / cPTSD	9 (9.6%)	0 (0%)	

Note. ADHD = attention-deficit/hyperactivity disorder; PTSD = posttraumatic stress disorder; cPTSD = complex posttraumatic stress disorder; OCD = obsessive-compulsive disorder. Age and years of education are reported as *M* (*SD*), all other variables are reported as *n* (%). Percentages are reported within groups. * $p < .05$. ** $p < .01$. *** $p < .001$.

Variable	Patients (*n* = 96)	Healthy Controls (*n* = 32)	*p*-value
Bipolar Disorder	5 (5.3%)	0 (0%)	
Substance UseDisorder	3 (3.2%)	0 (0%)	
OCD	3 (3.2%)	0 (0%)	
Insomnia	2 (2.1%)	0 (0%)	

Note. ADHD = attention-deficit/hyperactivity disorder; PTSD = posttraumatic stress disorder; cPTSD = complex posttraumatic stress disorder; OCD = obsessive-compulsive disorder. Age and years of education are reported as *M* (*SD*), all other variables are reported as *n* (%). Percentages are reported within groups. * $p < .05$. ** $p < .01$. *** $p < .001$.

Note

(a) IPV role distribution overall. (b) Distribution within clusters. Diagnoses were grouped as follows: Externalising (ADHD, personality disorder, substance use disorder), Internalising (depression, anxiety disorder, PTSD, bipolar disorder, obsessive-compulsive disorder, insomnia), Psychotic Spectrum (schizophrenia spectrum disorders).

Materials

IPV Assessment. IPV involvement was assessed using the adapted German version of the UN Multi-Country Study tool (2, 46), a self-report instrument measuring lifetime exposure to intimate partner violence across four subcategories: psychological (5 items), physical (3 items), sexual (4 items), and economic IPV (3 items), each assessed for both victimisation and perpetration. Items were rated on a Likert scale ranging from 0 (“none”) to 3 (“often”). For the present study, an overall lifetime IPV score was computed by summing across all four subcategories, separately for victimisation and perpetration, to capture the full range of IPV experiences rather than restricting the construct to a single subtype. Internal consistency varied across subtypes in the original validation (2), ranging from α = .51 to .88. Following the severity classification approach developed for psychological IPV items in the WHO Multi-Country Study (47, 48), which distinguishes acts occurring more than once (reflecting at least moderate intensity) from isolated or absent occurrences, we applied an analogous threshold to the four-point scale. Item scores of 2 ("occasionally") or higher were classified as reflecting at least moderate severity. Based on this threshold, participants were classified into four IPV roles: Perpetrator-only, victim-only, victim-perpetrator, no involvement.

Emotion Regulation. The Difficulties in Emotion Regulation Scale (DERS-36)(49) is a 36-item self-report measure assessing six dimensions of emotion dysregulation: lack of emotional awareness, lack of emotional clarity, difficulties controlling impulsive behaviour when distressed, difficulties engaging in goal-directed behaviour when distressed, non-acceptance of negative emotional responses, and limited

access to regulation strategies. Items are rated on a 5-point Likert scale, with higher scores indicating greater difficulties in emotion regulation. The total score and subscale scores were used in all primary analyses, given evidence that facet-level analyses with the DERS-36 may reveal more specific associations with outcomes than total scores alone (36). In the present study, the German adaptation by Ehring et al. was used (50). Psychometric properties of the German version were evaluated in adolescent samples, demonstrating excellent internal consistency in both a healthy control sample (Cronbach's α = .91) and a clinical sample (Cronbach's α = .95)(51). It should be noted that the psychometric properties reported for the German version are based on adolescent samples, and their generalisability to the present adult psychiatric sample should be interpreted with appropriate caution.

Aggression. Life History of Aggression (LHA)(52, 53) is a self-report measure assessing lifetime aggressive behaviour as a relatively stable, trait-like tendency expressed through actual behaviours over time. It consists of three subscales: aggression, antisocial behaviour, and self-directed aggression, with all 11 items rated on a 5-point scale. Given the focus of the present study on aggression toward other persons, the self-directed aggression and antisocial behaviour subscale were excluded on conceptual grounds. Therefore, only the aggression subscale, which showed good internal consistency (α = .81)(54), was retained. This subscale was included as a covariate in supplementary sensitivity analyses, in which all main models were re-run controlling for general trait aggression (see additional file 1). These analyses aimed to test whether the observed associations of emotion dysregulation with IPV extend beyond IPV specifically or instead reflect general trait aggression.

Demographics & Environmental Factors. Sociodemographic information was collected using a semi-standardised medical history interview together with the German Center for Mental Health's (DZPG) minimum data set (MDS)(55), covering age, sex, education, employment status, psychiatric history and symptom severity. Biological sex was assessed via self-report of birth-assigned sex rather than gender, as sex-specific moderation analyses were planned a priori and required a binary biological classification. Sex, psychiatric status, yearly net household income, employment status and years of education were investigated as covariates of interest based on their established associations with IPV involvement reported in the literature (39, 56).

Statistical analyses

Power analyses for each planned statistical test were conducted using GPower version 3.1 (57), with a power of 1-β = .80 and an alpha level of α = .05. The largest sample size requirement was derived from H2, a hierarchical multiple regression assuming a medium effect size of $f^2 = 0.20$, yielding a minimum required total sample size of $N = 114$. The current sample consists of N = 128 complete cases, meeting this requirement. All analyses were conducted in RStudio version 4.5.2 (58).

Prior to hypothesis testing, assumptions underlying each planned parametric analysis were examined. Where heteroscedasticity was present, ordinary least squares estimates were retained and heteroscedasticity-consistent standard errors (HC3)(59) were computed using the sandwich package

(60) and evaluated via lmtest::coeftest (61) for all regression analyses. For H4, bootstrapped mediation with 5,000 simulations and percentile confidence intervals was used given non-normality of residuals. Covariates of interest (sex, psychiatric status, years of education, annual net income, employment status) were examined empirically for associations with both the grouping variable and the dependent variables and were retained where they reached significance. Age was included as a covariate in all analyses given that IPV involvement is assessed as a lifetime occurrence and was, therefore, expected to accumulate with age.

For H1, a linear regression with HC3 errors was conducted to compare overall IPV involvement (i.e., combined perpetration and victimisation scores) between patients and healthy controls. Overall IPV involvement served as the dependent variable, with psychiatric status (binary coded as patients versus healthy controls) entered as the independent variable of interest alongside age and sex as covariates.

To investigate the association between emotion dysregulation and IPV perpetration (H2), a hierarchical regression was used, with total IPV perpetration score as the dependent variable and emotion dysregulation entered as a predictor. Age was entered in Block 1, followed by emotion dysregulation (DERS-36 total score) in Block 2. Sex was dummy-coded (0 = male, 1 = female) and examined as a moderator in Block 3 by adding an interaction term between sex and the emotion dysregulation total score. R^2 change was evaluated via *F*-tests for each block transition. At the subscale level, all six DERS subscales were screened for their association with IPV perpetration using Spearman correlations, with a false discovery rate (FDR)(62) correction applied across the six subscale comparisons, accounting for the increased risk of false positives when testing multiple related subscales simultaneously.

Two subscales, “difficulties controlling impulsive behaviour when distressed” (impulse control difficulties) and “limited access to emotion regulation strategies” (lack of emotion regulation strategies), remained significant after correction and were carried forward into a parallel three-block regression model with the same structure. Given that these subscales were selected based on their association with perpetration in the same sample, the standardised coefficients were additionally evaluated using bias-corrected and accelerated (BCa) bootstrap resampling (2,000 resamples; boot package)(63, 64). Because LHA and IPV perpetration assess conceptually related behaviour, exploratory regressions examined whether the association between impulse control difficulties and IPV perpetration reflected general trait aggression rather than IPV-specific processes.

With respect to H3, an ANCOVA was carried out comparing the four IPV roles (victim-only, perpetrator-only, victim-perpetrator, none) on emotion dysregulation (DERS-36 total score), controlling for age, psychiatric status and household income. A moderation of sex was examined by adding an interaction term between IPV role and sex. Bonferroni-corrected pairwise post-hoc comparisons were conducted using estimated marginal means. The impulse control difficulties subscale, which emerged as significant in the FDR-corrected Kruskal-Wallis screening, was additionally carried forward as the dependent variable in a parallel ANCOVA using the same covariate structure.

Lastly, a mediation analysis was conducted to examine whether impulse control difficulties mediated the relationship between psychiatric status and victim-perpetrator role membership (H4). Victim-perpetrator overlap was operationalised as a binary outcome variable (victim-perpetrator vs. all other groups). Two linear regression models were specified: A linear mediator model predicting impulse control difficulties from psychiatric status, age, and sex, and a binomial generalised linear model (GLM; logit link) predicting victim-perpetrator overlap from psychiatric status, impulse control difficulties, age, and sex, as the outcome variable was binary. Indirect effects were estimated using nonparametric bootstrapping with 5,000 simulations and percentile confidence intervals via the mediation package in R (65). Sensitivity analyses were conducted using the 'medsens' function to evaluate the robustness of the indirect effect to unmeasured confounding. As this function requires a probit link, a probit specification of the outcome model was used for this analysis only. All tests were evaluated at a significance threshold of $\alpha = .05$.

RESULTS

The linear regression for H1 revealed psychiatric status as a significant predictor of IPV involvement, with patients reporting significantly higher overall IPV involvement than healthy controls ($B = 4.39$, $SE = 1.41$, $p = .002$). The model explained 9.8% of the variance in overall IPV involvement ($R^2 = .098$), supporting H1. Sex also showed a significant association with IPV involvement, with women reporting higher scores than men ($B = 3.39$, $SE = 1.36$, $p = .014$). Age was not significantly associated with overall IPV involvement ($B = 0.08$, $SE = 0.17$, $p = .620$).

For H2, emotion dysregulation was tested as a predictor of IPV perpetration using a hierarchical regression. Age alone already explained a significant amount of variance in perpetration ($F(1, 126) = 5.07$, $p = .026$). Adding emotion dysregulation significantly improved model fit ($\Delta R^2 = .045$, $F(1, 125) = 6.23$, $p = .014$), with higher levels of emotion dysregulation associated with greater perpetration ($\beta = .213$). Sex did not moderate this association ($\Delta R^2 = .015$, $F(2, 123) = 1.03$, $p = .360$).

At the subscale level, a parallel model including impulse control difficulties and lack of emotion regulation strategies, the two subscales most strongly associated with perpetration in the correlation screening (Fig. 2), explained substantially more variance than the total score model ($\Delta R^2 = .210$, $F(2, 124) = 17.68$, $p < .001$). Impulse control difficulties emerged as a strong, dominant predictor ($\beta = .576$, $p < .001$; 95% CI [.370, .778]), while lack of emotion regulation strategies did not reach significance ($\beta = -.159$, $p = .141$). Age no longer significantly predicted perpetration once impulse control difficulties was included. Sex again did not moderate this association ($\Delta R^2 = .016$, $F(3, 121) = 0.87$, $p = .457$). A robustness check confirmed that this association held at subscale level, when additionally controlling for psychiatric status (see additional file 1).

To examine whether impulse control difficulties are specifically linked to IPV perpetration, or whether they more broadly reflect general aggression proneness given their correlation with LHA, we conducted three exploratory regressions. Impulse control difficulties remained a significant predictor of IPV perpetration when controlling for LHA ($B = 0.18$, $p = .001$), but no longer significantly predicted LHA once

IPV perpetration was included as a covariate (B = 0.19, p = .106). The effect of impulse control difficulties on IPV holds independently of general aggression, whereas its effect on general aggression appears to depend on IPV. However, when both predictors were entered simultaneously, impulse control difficulties and LHA each remained significant predictors of IPV perpetration (B = 0.176, p = .001, and B = 0.124, p = .001, respectively), indicating that LHA explains additional, independent variance in IPV perpetration beyond impulse control difficulties. We additionally re-tested all hypotheses (H1-H4) controlling for LHA to evaluate whether our main findings held beyond this overlap (see additional file 1). Together with the finding that impulse control difficulties emerged as the strongest predictor of IPV perpetration at the subscale level, H2 is therefore supported, and this association appears specific to IPV rather than reflecting general aggression proneness alone.

Note

Values show Spearman correlations, used to screen candidate subscales for the multivariable regression model reported in the main text. DERS = Difficulties in Emotion Regulation Scale. Subscale labels are abbreviated as follows: Lack of Emotional Awareness = Lack of Emotional Awareness; Lack of Emotional Clarity = Lack of Emotional Clarity; Goal-Directed Behaviour Difficulties = Difficulties Engaging in Goal-Directed Behaviour When Distressed; Emotion Acceptance Difficulties = Non-Acceptance of Negative Emotional Responses; Lack of Emotion Regulation Strategies = Limited Access to Emotion Regulation Strategies; Impulse Control Difficulties = Difficulties Controlling Impulsive Behaviour When Distressed. *P*-values were FDR-corrected across the six comparisons. * $p < .05$. ** $p < .01$. *** $p < .001$.

Regarding H3, emotion dysregulation did not differ significantly across IPV roles at the total score level when controlling for age, sex, psychiatric status and household income ($F(3, 121) = 1.82$, p = .149, partial η^2 = .05). Psychiatric status was the strongest covariate ($F(1, 121) = 26.86$, $p < .001$, partial η^2 = .20), while age, sex and household income were not significant. No moderation of sex was found ($F(3, 118) = 1.33$, p = .339).

At the subscale level, a follow-up ANCOVA confirmed a significant effect of IPV role on impulse control difficulties ($F(3, 121) = 7.48$, $p < .001$, partial η^2 = .17), controlling for psychiatric status, sex, age and household income. Psychiatric status remained a significant covariate ($F(1, 121) = 11.30$, p = .001, partial η^2 = .10). No moderation of sex was found. Victim-perpetrators showed the highest adjusted scores on impulse control difficulties, followed by perpetrators, victims and the no involvement group. Pairwise post-hoc comparisons confirmed that victim-perpetrators scored significantly higher than the no involvement group (p = .042), and all other contrasts were non-significant after Bonferroni correction. Table 2 provides descriptive severity scores across IPV roles.

Taken together, these findings partially support H3: IPV roles did not differ in emotion dysregulation at the total score level but did differ significantly in impulse control difficulties, with victim-perpetrators showing significantly more pronounced difficulties than individuals with no IPV involvement. Sex did not moderate these relationships at either level of analysis.

Table 2
IPV and Emotion Dysregulation Severity by IPV Role

Measure	Victim (*n* = 31)	Perpetrator (*n* = 5)	Victim-Perpetrator (*n* = 42)	No Involvement (*n* = 50)	*p-value*
IPV Total Score	7.5 (6.8)	3.8 (1.3)	14.2 (10.2)	0.5 (0.8)	< .001***
IPV Victimisation Score	6.9 (6.8)	0.6 (0.5)	9.7 (8.6)	0.3 (0.5)	< .001***
IPV Perpetration Score	0.6 (0.5)	3.2 (1.1)	4.5 (2.9)	0.2 (0.4)	< .001***
DERS-36 Total	92.7 (28.7)	87.0 (33.4)	96.9 (33.5)	84.7 (23.5)	.065
Impulse Control Difficulties	11.3 (5.0)	13.6 (4.6)	14.9 (5.7)	10.0 (4.3)	< .001***
Lack of Emotion Regulation Strategies	20.7 (7.8)	19.4 (8.2)	22.1 (9.0)	18.0 (7.7)	.058
LHA Aggression Score	7.9 (5.7)	10.6 (3.0)	11.3 (5.3)	5.9 (5.5)	< .001***

Note. Values are *M* (*SD*). DERS-36 = Difficulties in Emotion Regulation Scale. LHA = Life History of Aggression. *P*-values reflect unadjusted Kruskal-Wallis tests comparing IPV roles and do not control for covariates; inferential comparisons controlling for age, sex and psychiatric status are reported in the main text (H1–H3). * $p < .05$. ** $p < .01$. *** $p < .001$.

A mediation analysis examined whether impulse control difficulties mediated the relationship between psychiatric status and victim-perpetrator overlap, controlling for age and sex. Psychiatric patients scored significantly higher on the impulse control difficulties subscale compared to healthy controls ($B = 3.52$, $SE = 0.86$, $p < .001$), and the subscale in turn significantly predicted victim-perpetrator overlap after controlling for psychiatric status ($B = 0.14$, $SE = 0.04$, $p < .001$). The indirect effect of psychiatric status on victim-perpetrator overlap through impulse control difficulties was significant (ACME = 0.090, 95% CI [.035, .158], $p < .001$), whereas neither the direct effect (ADE = 0.033, 95% CI [-.157, .233], $p = .736$) nor the total effect (0.122, 95% CI [-.068, .310], $p = .208$) reached significance (Fig. 3), a pattern consistent with indirect-only mediation (66). These findings provide support for impulse control difficulties as a mechanism linking psychiatric status to victim-perpetrator overlap. A sensitivity analysis indicated that the indirect effect would be nullified by an unmeasured confounder correlating at $\rho = .30$ with both impulse control difficulties and victim-perpetrator overlap.

Note

Path coefficients for the mediation of the relationship between psychiatric status and victim-perpetrator overlap by impulse control difficulties. The indirect effect (ACME) was significant. Model controls for age

and sex. * $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

The present study aimed to identify if deficits in emotion dysregulation, as part of the RDoC domain cognitive control, differentiate victim-perpetrators from other IPV roles within a transdiagnostic sample of patients suffering from mental illnesses. This focus was motivated by evidence that victim-perpetrator overlap is both more prevalent and more severe than unilateral involvement, particularly among psychiatric populations (7, 8). Overall, our findings indicate that the subscale "difficulties controlling impulsive behaviour when distressed" (impulse control difficulties) from the DERS-36 significantly differentiates between the different IPV roles and shows an indirect pathway linking psychiatric status to victim-perpetrator overlap, while broader, total-score measures of emotion dysregulation did not reliably distinguish groups.

Consistent with our first hypothesis, patients showed significantly higher overall IPV involvement than healthy controls, and women were more likely to be involved than men. Notably, diagnostic categories did not significantly differ in their IPV roles, consistent with a transdiagnostic understanding of IPV involvement (see additional file 1, Table S2). Emotion dysregulation significantly predicted IPV perpetration at total score level, supporting the assumption that difficulties regulating emotional responses contribute to IPV perpetration. Consistent with prior evidence, that subscale-level analyses may better capture predictors of IPV perpetration than total scores (36), the subscale “impulse control difficulties” emerged as a substantially stronger predictor, and exploratory analyses further suggested that this effect was specific to IPV rather than reflecting general trait aggression.

This same domain-specific pattern held when examining what differentiates the IPV roles: Only impulse control difficulties, not the DERS total score, distinguished between groups, with victim-perpetrators showing the most pronounced difficulties. Notably, victim-perpetrators also showed descriptively the highest scores across most other measures assessed in this study (see Table 2), reinforcing their status as the most severely affected group overall, although impulse control difficulties was the only measure to statistically differentiate the four roles. Taken together, these findings suggest that global emotion dysregulation may be less informative than the specific subscale of impulse control difficulties, in relation to shaping which role an individual occupies within IPV involvement.

A striking aspect across our analyses was the consistently strong effect of psychiatric status, alongside our finding that individuals with mental disorders were far more often involved as victims and/or perpetrators than those without a diagnosis. We, therefore, examined whether impulse control difficulties mediate the relationship between psychiatric status and victim-perpetrator overlap. We found a significant indirect effect of psychiatric status on victim-perpetrator overlap via impulse control difficulties, whereas neither the direct effect nor the total effect reached significance. Although this pattern does not conform to the classic definition of partial mediation, requiring a significant total effect, Zhao et al. proposed that a significant total effect is not a precondition for establishing a mediation, only

the indirect effect needs to be significant (66). This suggests that impulse control difficulties fully account for the pathway identified here, with no evidence of an additional direct pathway linking psychiatric status to victim-perpetrator overlap. This finding aligns with the broader picture of IPV perpetration research indicating that underlying mechanisms, rather than diagnosis alone, drive perpetration risk (35).

This study advances existing research by not only examining markers for perpetration or victimisation independently, but by first identifying a marker for perpetration and then testing whether the same one can differentiate an IPV role that occurs far more frequently and carries far more detrimental consequences than unilateral IPV (8–10). However, to our knowledge, few studies have examined whether emotion dysregulation and its specific domains can differentiate between IPV roles, contributing to a better understanding of the victim-perpetrator overlap. This gap may partly reflect the broader heterogeneity of violent behaviour and mental disorders, with most clinical research focusing on specific mental disorders rather than transdiagnostic markers that cut across diagnostic boundaries (41).

In terms of IPV prevention, this distinction has important clinical implications. Prevention efforts should not focus solely on reducing perpetration but also on preventing victimisation, as victimisation itself predicts perpetration (2) and was the most prevalent form of IPV in the present study. Rather than treating perpetration and victimisation as separate prevention targets, interventions should aim to prevent individuals from entering either role in the first place. This suggests a shift from responding only after IPV has occurred to identifying individuals with elevated risk factors beforehand as part of secondary prevention. This implication may be particularly relevant within psychiatric populations, as this study identified impulse control difficulties as a marker underlying the association between psychiatric disorder and IPV. Transdiagnostic intervention approaches have demonstrated effectiveness in reducing IPV outcomes (67–69), and impulse control difficulties may represent a particularly promising target within this framework. Supporting the feasibility of targeting this marker specifically, a randomised controlled trial found that an internet-delivered cognitive behavioural therapy incorporating emotion-regulation training significantly reduced emotional abuse in relationships (70). Furthermore, pharmacological interventions, such as stimulants and non-stimulants used to treat symptoms of ADHD, have been shown to normalise emotion dysregulation, with effect sizes ranging from small (atomoxetine, $d = 0.24$) to medium (lisdexamfetamine, $d = 0.5$)(71–74). Moreover, antidepressants reduced emotional reactivity in mood-related regions such as the amygdala, hippocampus, and cingulate cortex, which was proposed to translate into improved emotion regulation skills in adults with depression (71, 75). Building on this evidence, interventions targeting impulse control difficulties may provide a transdiagnostic route to IPV prevention by addressing a shared underlying process rather than diagnosis-specific symptoms.

We additionally investigated sex differences in all analyses, since the research base on this matter seems ambivalent. Historically, unilateral IPV research indicated a male-perpetrator/female-victim asymmetry, whereas bidirectional IPV appears to be more evenly distributed (6, 11). Prior research investigating the victim-perpetrator overlap indicated that emotional dysregulation was more of a

dominant risk factor for men than for women, while decreased satisfaction of social support was a predictor for women in the victim-perpetrator role (39). However, we were unable to replicate this pattern, as none of the sex interaction terms reached significance, nor did sex emerge as a significant main effect on emotion dysregulation itself.

One notable limitation of this study concerns the directionality and timing of the study design. The present study is cross-sectional, and the IPV questionnaire captures lifetime occurrences of victimisation and perpetration. This makes it impossible to determine whether individuals were first victims and later became victim-perpetrators, or the reverse. It is similarly unknown whether victimisation and perpetration occurred within the same relationship or across different relationships. Although prior research has documented the severity of the IPV victim-perpetrator overlap without always clarifying whether it occurred within a single relationship, and our own data likewise indicated greater harm associated with the victim-perpetrator role regardless of relationship context, this remains a limitation to the generalisability of our findings. Longitudinal designs would be particularly valuable, both to clarify the temporal ordering of victimisation and perpetration and to test etiological accounts, which posits that individuals first observe and later replicate IPV behaviour (4). Identifying whether victims commonly go on to become perpetrators over time would highlight a distinct high-risk group warranting targeted intervention.

A further limitation is the small size of the perpetrator-only group (n = 5), which limits the precision of comparisons involving this role in particular. This small group size could potentially reflect a social desirability bias, in which individuals who perpetrate IPV may be inclined to also endorse victimisation items, framing their own aggression as defensive rather than unprovoked (2), which would classify them as victim-perpetrators rather than perpetrators-only. To counteract the low threshold for endorsement inherent in the instrument's psychological IPV items (e.g., "Have you ever insulted your partner in a relationship?"), we deliberately applied a stricter, severity-based threshold (see Methods) rather than classifying any endorsement above zero as indicative of IPV involvement. Despite this more conservative approach, the perpetrator-only group remained small, suggesting that social desirability bias may persist even under stricter classification criteria.

The IPV questionnaire captured lifetime occurrences, whereas the emotion dysregulation scales were assessed as current symptoms. This raises the possibility that we underestimated the strength of these associations, as some individuals may have been classified as victim-perpetrators based on events that occurred years earlier and no longer show corresponding elevations in emotion dysregulation symptoms. However, given the relatively young average age and restricted age range of our sample (M = 28.1, SD = 5.2, range = 20–41), the time elapsed between lifetime IPV involvement and the current assessment is likely limited for most participants, reducing the risk that outdated events drive higher current emotion dysregulation scores. This may also explain why age itself showed no meaningful relationship with IPV perpetration scores in our analyses, contrary to the assumption that greater cumulative lifetime exposure would increase perpetration risk with age. Nonetheless, future research

with a broader age range, or with relationship duration and number as an explicit covariate, may help clarify whether age-related exposure effects emerge under different sampling conditions.

Lastly, although impulse control difficulties emerged as a robust predictor across models, the overall variance explained remained modest in several analyses (e.g., $R^2 = .10$ for the H1 total involvement model), indicating that a substantial portion of variance in IPV involvement remains unaccounted for by the markers examined here. This is consistent with the multifactorial nature of IPV, which likely involves additional psychological, relational, and situational factors not captured in the present model and could therefore be subject to future investigations. Notably, general trait aggression (LHA) also independently predicted IPV perpetration in exploratory analyses, suggesting that general aggression-related mechanisms may account for some of this unexplained variance, a possibility that is subject to future research.

CONCLUSIONS

This study is of particular relevance as it distinguishes victim-perpetrators, a group that occurs frequently and is associated with increased violence severity, from individuals with unilateral or no IPV involvement. Within a transdiagnostic psychiatric sample, greater difficulties in general emotion regulation were associated with increased IPV perpetration. A specific subscale of emotion dysregulation, namely difficulties controlling impulsive behaviour when distressed, distinguished victim-perpetrators from other IPV roles. This same subscale also showed an indirect pathway linking psychiatric status to victim-perpetrator overlap, a phenomenon that has gained increasing clinical attention given its association with severe violent outcomes. These findings point to a specific, modifiable mechanism, rather than psychiatric diagnosis itself, as a promising target for future prevention and intervention efforts.

Abbreviations

IPV
Intimate Partner Violence
PTSD
Posttraumatic Stress Disorder
cPTSD
Complex Posttraumatic Stress Disorder
ADHD
Attention-deficit/hyperactivity Disorder
OCD
Obsessive-Compulsive Disorder
RDoC
The Research Domain Criteria Model
DERS-36

Difficulties in Emotion Regulation Scale
H1
Hypothesis One
H2
Hypothesis Two
H3
Hypothesis Three
H4
Hypothesis Four
TRR
Transregional Collaborative Research Centre
M
Mean
SD
Standard Deviation
DZPG
German Center for Mental Health
IPDE
International Personality Disorder Examination
impulse control difficulties subscale
"difficulties controlling impulsive behaviour when distressed" subscale from the DERS-36
Mini-DIPS
Diagnostisches Kurz-Interview bei psychischen Störungen

Declarations

Ethical approval and consent to participate

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. Hospital Frankfurt approved all study procedures (experiment number 2024-2195).

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during this study are available from the corresponding author on reasonable request.

Competing interests

Christian Schmahl is Chief Editor of *Borderline Personality Disorder and Emotion Dysregulation*. The authors declare no other competing interests.

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Authors’ contribution

All authors made substantial contributions to the conception or design of the work, or the acquisition, analysis or interpretation of data. Authors AR, UH, CVB-S and IK designed the experiments. Authors IK and CVB-S acquired the data. Author LCMW-K provided and adapted the German-language intimate partner violence assessment and advised on IPV measurement and psychometric interpretation. Author IK analysed the data, undertook the literature searches and wrote the first draft of the manuscript. All authors contributed to and revised the manuscript. All authors read and approved the final manuscript.

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Figures



Figure 1

IPV Role Distribution Overall and within Diagnostic Clusters

Note. (a) IPV role distribution overall. (b) Distribution within clusters. Diagnoses were grouped as follows: Externalising (ADHD, personality disorder, substance use disorder), Internalising (depression, anxiety disorder, PTSD, bipolar disorder, obsessive-compulsive disorder, insomnia), Psychotic Spectrum (schizophrenia spectrum disorders).

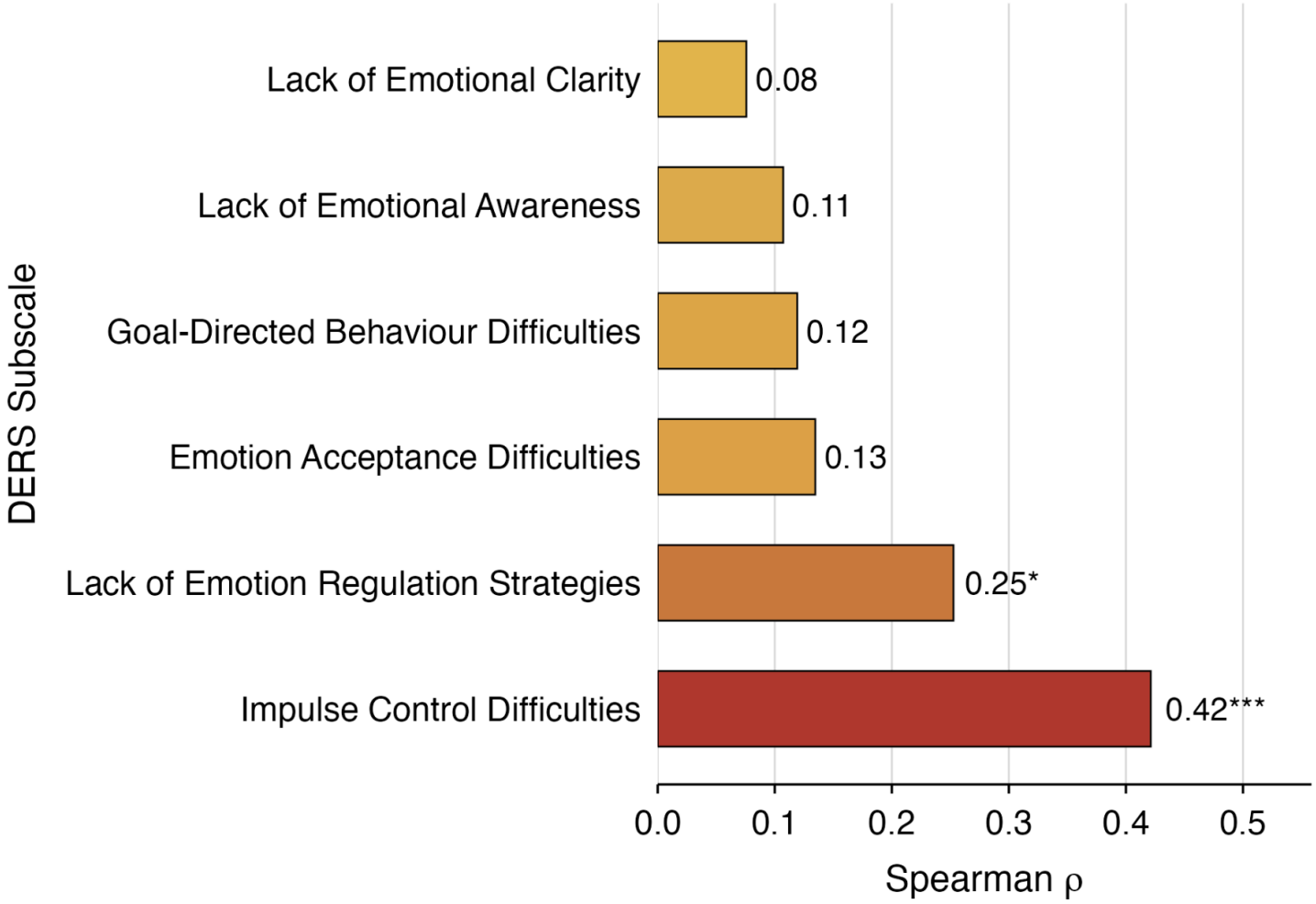


Figure 2

Spearman correlations between DERS subscales and IPV perpetration

Note. Values show Spearman correlations, used to screen candidate subscales for the multivariable regression model reported in the main text. DERS = Difficulties in Emotion Regulation Scale. Subscale labels are abbreviated as follows: Lack of Emotional Awareness = Lack of Emotional Awareness; Lack of Emotional Clarity = Lack of Emotional Clarity; Goal-Directed Behaviour Difficulties = Difficulties Engaging in Goal-Directed Behaviour When Distressed; Emotion Acceptance Difficulties = Non-Acceptance of Negative Emotional Responses; Lack of Emotion Regulation Strategies = Limited Access to Emotion

Regulation Strategies; Impulse Control Difficulties = Difficulties Controlling Impulsive Behaviour When Distressed. *P*-values were FDR-corrected across the six comparisons. * $p < .05$. ** $p < .01$. *** $p < .001$.

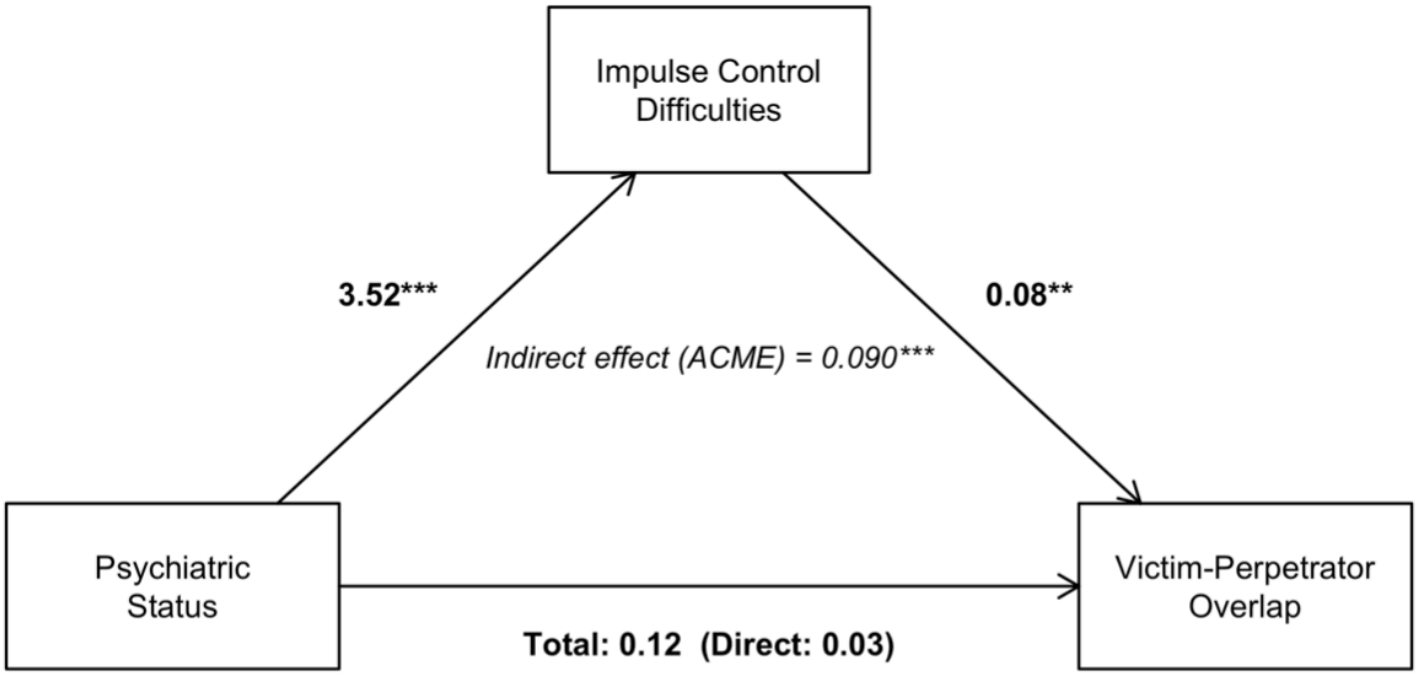


Figure 3

Indirect Effect of Psychiatric Status on Victim-Perpetrator Role via Impulse Control Difficulties

Note. Path coefficients for the mediation of the relationship between psychiatric status and victim-perpetrator overlap by impulse control difficulties. The indirect effect (ACME) was significant. Model controls for age and sex. * $p < .05$. ** $p < .01$. *** $p < .001$.

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