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The Impact of Intimate Partner Violence on Negative Affect: The Mediating Role of Adult Attachment

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ABSTRACT

Intimate Partner Violence (IPV) is a major public issue. However, data on the emotional impact of IPV is limited and the mechanisms involved are poorly explored. Accordingly, the present study aimed to assess the effect of IPV experiences on negative affect, exploring the mediating role of adult attachment (anxiety and avoidance). A total of 599 participants ($M_{\text{age}} = 28.01$; $SD = 7.81$) were recruited. The following self-reports were used: Conflict Tactic Scale-Short form; Experience in Close Relationships Scale; Positive and Negative Affect Schedule. Direct and indirect effect of IPV on negative affect were tested through a mediation analysis. IPV experiences resulted not directly associated with negative affect. However, an indirect relationship emerged mediated by attachment anxiety and avoidance. These findings highlight the emotional impact of IPV experiences, emphasizing the role of deactivating and hyperactivating strategies of the attachment system.

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Intimate Partner Violence (IPV) is a major public health issue that refers to any behavior intended to cause physical, psychological, or sexual harm to a partner or ex-partner (WHO, 2022). Data shows that 26% of women worldwide and 25% in Europe report having experienced at least one act of IPV in their lifetime (WHO, 2022). According to some data from national studies conducted within the general population, IPV also appears to be prevalent in the male population and among same-sex couples (Smith et al., 2018; Walters et al., 2013).

Numerous studies have highlighted the potential negative consequences of IPV on wellbeing and on negative affect (Taccini & Mannarini, 2024a, 2024b). More specifically, people who experience IPV have a higher risk of self-harm and injury, chronic conditions (e.g., headaches, insomnia, pelvic pain), gastrointestinal and gynecological symptoms, depression, anxiety and post-traumatic stress disorder, as well as negative affect such as anger, shame, fear, concern for one's own safety, and distress more generally

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(Campbell, 2002; Leemis et al., 2022; Lutgendorf, 2019; C. M. Spencer et al., 2024; C. N. Spencer et al., 2023). Although the impact of IPV on experienced negative affect has been widely confirmed in the literature, the mechanisms involved in this relationship are less investigated (Smagur et al., 2018) and the need to explore the mediators of this association is emphasized (Costa & Botelho, 2021), also to provide useful guidance for services and clinicians by identifying psychological and relational processes amenable to intervention.

In this context, adult attachment can help clarify the processes involved in the relationship between IPV and negative affect (Zhang et al., 2022). Adult attachment refers to the romantic bond between partners that promotes physical closeness and emotion regulation in stressful situations (Hazan & Shaver, 1987). Relationships characterized by caregivers' availability and responsiveness allow individuals to develop a secure attachment and mature emotion regulation strategies that are accompanied by a positive representation of self and others. Conversely, relationships characterized by caregiver unresponsiveness lead the individual to develop an insecure attachment and secondary emotion regulation strategies (i.e., hyperactivating and deactivating strategies) associated with negative representations of self and others (Mikulincer & Shaver, 2003; Mikulincer & Shaver, 2005, 2007a). According to Mikulincer and Shaver (2005, 2007b), these secondary strategies of emotion regulation, and the functioning of the adult attachment system more in general, can be analyzed on the basis of two dimensions: anxiety and avoidance. Higher levels of attachment anxiety tend to involve separation anxiety and hypervigilance toward the partner and possible signs of abandonment, as well as a tendency to hyperactivate the attachment system with high reactivity to frustration and an intense expression of attachment needs. Higher levels of attachment avoidance are instead associated with discomfort with closeness and fear of intimacy, as well as a tendency to deactivate the attachment system by favoring interpersonal and emotional distance and limiting the emergence of attachment needs in an attempt to protect against rejection and frustration.

While secure attachment and the associated emotion regulation strategies, as reported in several studies (Crow et al., 2021; Gander et al., 2022; Gause et al., 2022), can be useful in modulating the negative effects of stressful and traumatic conditions (Bowlby, 1982; Mikulincer & Shaver, 2007b) and also serve as a protective factor against IPV experiences (C. M. Spencer et al., 2021), adverse relational experiences characterized by the caregiver's unavailability – such as violence in intimate relationships – may contribute to the development of secondary emotion regulation strategies (hyperactivating and deactivating strategies). These, in turn, can negatively impact the emotional experience of the individuals involved and their ability to manage stressful situations. On the one hand, IPV experiences have been found to be positively associated with both attachment anxiety and avoidance (Costa & Botelho, 2021; Hellemans et al., 2015; Kuijpers et al., 2012; Smagur et al., 2018). Hellemans et al. (2015)

found that in women, both physical and psychological IPV were positively related to attachment anxiety and avoidance, whereas in men, attachment avoidance was positively related to both physical and psychological IPV, while attachment anxiety was only associated with psychological IPV. In a recent study by Smagur et al. (2018), IPV experiences increased the level of attachment insecurity (i.e., a latent variable with two indicators: attachment anxiety and avoidance), which in turn positively predicted depressive symptoms. These data are confirmed by recent systematic reviews and meta-analyses (Cataudella et al., 2023; C. M. Spencer et al., 2021; Velotti et al., 2018), which identified a significant, albeit small, effect of IPV on attachment, with more consistent and robust results for attachment anxiety than for avoidance. In particular, the meta-analysis by C. M. Spencer et al. (2021), which included 33 studies, found that IPV experiences were positively related to both attachment anxiety and avoidance with a small effect size ($r = .21$ and $r = .17$, respectively). Similarly, the meta-analysis by Cataudella et al. (2023) found a positive association between IPV experiences and attachment anxiety and avoidance, with a small effect size that varied slightly depending on the form of IPV considered ($r = .23$ for generic IPV; $r = .18$ for physical IPV; $r = .24$ for psychological IPV; $r = .25$ for sexual IPV).

Several studies (Armitage & Harris, 2006; Caldwell & Shaver, 2012; Hainlen et al., 2016; Molero et al., 2017; Sadava et al., 2009; Schiffrin, 2014; Sheinbaum et al., 2014) showed that insecure attachment increases the perception of negative affect, although mixed results emerged when differentiating for gender (men vs women) or attachment dimensions (anxiety vs avoidance). Molero et al. (2017) found that attachment anxiety was associated with negative affect in both men and women, while attachment avoidance was positively associated with negative affect only in women. In the study by Schiffrin (2014), only attachment anxiety was associated with negative affect, while attachment avoidance was not. Nonetheless, a recent meta-analysis by Zhang et al. (2022) seems to support a relationship between insecure attachment and affect, identifying a negative effect, albeit small of attachment anxiety and avoidance on negative affect. It is possible to hypothesize a complex relationship between IPV experiences, adult attachment, and negative affect, in which experiences of IPV increase both attachment anxiety and avoidance levels, which in turn increase negative affect. To our knowledge, there are no studies that have investigated this hypothesis, research that have assessed the effects of IPV on health more generally seem to point in this direction. Some studies highlight the mediating role of insecure attachment in the relationship between IPV and symptoms of depression (Smagur et al., 2018) and PTSD (Costa & Botelho, 2021). Further data are needed to understand the emotional impact of IPV, and the mechanisms involved.

Accordingly, the present study aims to investigate the relationship between the experience of IPV and negative affect by examining the mediating role of

attachment anxiety and avoidance. The results may provide useful insights into understanding the emotional impact of IPV experiences and the psychological processes involved and provide data that may be useful in the clinical setting to develop health promotion interventions addressed to people who experienced IPV.

Hypotheses

H1: Experiences of IPV may be associated to negative affect;

H2: Experiences of IPV may be associated to adult attachment;

H3 Adult attachment may be associated to negative affect;

H4: Adult Attachment may mediate the association between experiences of IPV and negative affect.

Method

Procedure

This study is part of a larger research project aimed at exploring factors associated with experiences of IPV in people with different sexual orientations (i.e., heterosexual, gay, lesbian, and bisexual people). Participants were recruited through Snow-Balling Sampling (Sedgwick, 2013) through the contacts of researchers and various social media (e.g., Facebook, WhatsApp etc.). Data collection was conducted online from September 2021 until April 2022. A total of 608 participants were recruited.

Inclusion criteria for the group of people with an experience of IPV were the following: (A) being over 18 years old; (B) being native Italian speakers; (C) being in an intimate couple relationship; (D) having experienced at least one episode of IPV during the past year. The experience of violence was screened using the Conflict Tactic Scale-2 (CTS; Straus & Douglas, 2004) – the most famous psychometric instrument specifically created for screening the experience of violence in intimate relationships (see instrument section).

Inclusion criteria for the group of people without an experience of IPV (Control Group) were the following: (A) being over 18 years old; (B) being native Italian speakers; (C) being in an intimate couple relationship; (D) not having an experience of IPV during the past year as emerged from the CTS2 (Straus & Douglas, 2004). The exclusion criteria consisted of the following: (D)

inability to complete the assessment procedure due to illiteracy or (E) inability to complete the questionnaires due to cognitive and/or vision impairments.

Participants willingly volunteered and provided their consent by signing consent forms. The study procedures are in accordance with the ethical standards of APA and the 1964 Declaration of Helsinki. The research project had received prior approval from the Ethics Committee of the University of Turin (Protocol number:0429348).

Participants

A total of 608 participants (see Table 1) met the eligibility criteria and were initially recruited for the current research project; however, 9 were excluded due to incomplete responses, resulting in a final count of 599 participants. Among these, 322 had experienced IPV in the previous year, while 277 did not (Control Group).

For the group of participants with experience of IPV (Mean Age = 28.01; SD = 7.81), 220 were women, and 102 were men. Age data was missing for seven participants. Among them, 187 identified as heterosexual, 23 as lesbians, 45 as gay, 30 as bisexual, and 29 preferred not to provide information on their sexual orientation, with data missing for 8 participants. In terms of education, 9 had a middle school degree, 123 had a high school degree, 124 had a bachelor's degree, 51 held a master's degree, and 6 had a doctoral degree, with data

Table 1. Demographic information.

	Participants <i>with</i> experience of IPV (<i>N</i> = 322)	Control Group (<i>N</i> = 277)
Age (Mean(SD))	28.01(7.81)	28.69 (9.07)
Gender		
Women	220	192
Men	102	85
Sexual orientation		
Identified as heterosexual	187	149
Identified as lesbians	23	32
Identified as gay	45	41
Identified as bisexual	30	30
Preferred not to provide information on their sexual orientation	29	18
Education		
Middle school degree	9	3
High school degree	123	98
Bachelor's degree	124	118
Master's degree	51	37
Doctoral degree	6	7
Working status		
Students	193	172
Freelancers	22	27
Employed	89	70
Unemployed	14	7
Retired	2	1
Homemakers	2	–

SD = Standard Deviation.

missing for 9 participants. Regarding their working status, 193 were students, 22 were freelancers, 89 were employed, 14 were unemployed, 2 were home-makers and 2 were retired.

For the Control Group (Mean age = 28.69, SD = 9.07), 192 were women, and 85 were men. Age data was missing for three participants. Among them, 149 identified as heterosexual, 32 as lesbians, 41 as gay, 30 identified as bisexual, and 18 preferred not to provide information on their sexual orientation, with data missing for 7 participants. In terms of education, 3 had a middle school degree, 98 had a high school degree, 118 had a bachelor's degree, 37 had a master's degree, and 7 had a Ph.D., with data missing for 14 participants. Concerning their working status, 172 were students, 27 were freelancers, 70 were employed, 7 were unemployed, and 1 was retired.

Measures

The following information was gathered: gender, age, sexual orientation, educational attainment, working status, socioeconomic status.

Experience of violence in the last year

To assess the occurrence of violence, the Conflict Tactic Scale-Short form (CTS2S; Straus & Douglas, 2004) was employed. Participants rated items on an 8-point Likert scale (0 = "Never happened;" 1 = "Happened only once in the previous year;" 2 = "Happened twice in the previous year;" 3 = "Happened 3–5 times in the previous year;" 4 = "Happened 6–10 times in the previous year;" 5 = "Happened 11–20 times in the previous year;" 6 = "Happened more than 20 times in the previous year;" and 7 = "It did not happen in the previous year, but it did happen before"). Following the scoring instructions by Straus and Douglas (2004), participants' responses from 1 to 6 were recorded as 1 to indicate experiencing violence in the past year, and responses of 0 and 7 were recorded as 0 to signify no experience of victimization in the last year. The scores were then summed, resulting in two categories: 0 (no experience of IPV) and 1 (experience of IPV in the previous year). Reliability was not calculated, following the guidelines of the questionnaire's authors (Straus & Douglas, 2004).

Adult attachment

The Experience in Close Relationships Scale-12 (ECR-12) (Brennan et al., 1998; Lafontaine et al., 2016) was utilized to assess adult attachment (i.e., anxiety and avoidance attachment). Respondents answered on a 7-step Likert scale, where a score of 1 corresponds to "strongly disagree," and

a score of 7 corresponds to “strongly agree.” The ECR-12 exhibited strong internal consistency for both the anxiety dimension (Cronbach’s Alpha = 0.85) and avoidance (Cronbach’s Alpha = 0.86) (Brugnera et al., 2019).

Positive and negative affect

The Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988) is a scale comprising various words that describe feelings and emotions. It includes two subscales: one assessing positive affect and the other measuring negative affect. Each item is rated on a five-point Likert Scale, ranging from 1 = “Very Slightly or Not at all” to 5 = “Extremely.” The questionnaire presented good internal reliability: $\alpha = .72$ for positive affect and $\alpha = .83$ for negative affect (Terracciano et al., 2003).

Data analysis

Data analysis was conducted on R software (R Core Team, 2014, 2017). The packages implemented were the following: lavaan (Rosseel, 2012; Rosseel et al., 2015), psych (Revelle, 2018), and tidyverse (Wickham et al., 2019), magrittr (Bache & Wickham, 2022), dplyr (Wickham et al., 2023).

Descriptive statistics were performed. In this regard, preliminary analyses were performed before testing the mediation model (Hayes, 2022). Correlation values were examined to identify potential issues associated with multicollinearity. The Spearman correlation coefficient was employed. Correlation values higher than $|0.80|$ suggested the presence of multicollinearity (Hayes, 2022; Tabachnick & Fidell, 2014).

A mediational analysis with observed variables was conducted to investigate the direct effect of one predictor – Experience of IPV (measure with CTS) – on PANAS subscale of negative affect and their indirect effect through Anxiety and Avoidance subscales. The maximum likelihood (MLM) estimator was used to perform the statistical analyses and the Satorra-Bentler scaled χ^2 (Satorra & Bentler, 2001) was used to evaluate whether the model fit the data.

Sample size determination

Given the statistical analysis outlined in the present study (refer to the Statistical Analysis section), the sample size was predetermined. The “n: q criterion” was employed, where n represents the number of participants in the study, and q the number of free model paths (Kline, 2016). To meet the minimum sample size, Kline (2016) suggests a minimum of 30 participants per path (i.e., 30:1), resulting in a total of 240 participants.

Results

Preliminary analysis

Descriptive statistics were conducted (See Table 2). Moreover, to explore potential relationships among the variables within the mediation model, correlation analyses were performed using the Spearman correlation coefficient (See Table 3). None of the correlations surpassed the pre-established threshold, signifying the absence of multicollinearity. This laid the groundwork for subsequent statistical analyses to be carried out (Kline, 2016; Preacher & Hayes, 2008).

Mediation model

The mediation model provided satisfying goodness-of-fit indices: $\chi^2_{SB}(1) = 3.818$; $p = .051$; CFI = 0.982; RMSEA = 0.074 90%CI[0.000;0.159]; $p_{\epsilon \leq .05} = 0.206$; SRMR = 0.030. The findings (refer to Tables 3–4 and Figures 1–2) show that the direct effect of “Experience of IPV (X) (path a11: $\beta(SE) = 1.958(0.498)$; $p < .001$; 95%CI[0.982;2.935]; $\beta^* = 0.157$)” on Avoidance Attachment (M1a) is statistically significant. In addition, the direct effect of “Experience of IPV (X) (path a13: $\beta(SE) = 2.173(0.671)$; $p = .001$; 95%CI[0.858;3.487]; $\beta^* = 0.131$)” on Attachment Anxiety (M1b) is statistically significant.

The direct effects of “Avoidance Attachment (M1a) (path b11: $\beta(SE) = 0.198(0.041)$; $p < .001$; 95%CI[0.117;0.279]; $\beta^* = 0.174$)” and of “Attachment Anxiety (M1b) (path c11: $\beta(SE) = 0.361(0.031)$; $p < .001$; 95%CI[0.300;0.422]; $\beta^* = 0.420$)” on Negative Affect (Y_2) are statistically significant. The cumulative R^2 for the negative outcome variable stands at 22%.

Table 2. Descriptive statistics.

	Mean	Standard Deviation	Skewness	Kurtosis
Attachment Avoidance	12.35	6.217	1.235	1.432
Attachment Anxiety	24.07	8.256	-0.142	-0.640
Positive Affect	32.045	6.686	-0.350	0.011
Negative Affect	22.091	7.143	0.489	-0.363

Table 3. Correlation analysis.

	Experience of IPV	Attachment Avoidance	Attachment Anxiety	Positive Affect	Negative Affect
Experience of IPV	–				
Attachment Avoidance	0.176**	–			
Attachment Anxiety	0.135**	0.181**	–		
Positive Affect	-0.048	-0.293**	-0.291**	–	
Negative Affect	0.140**	0.280**	0.442**	-0.417**	–

Table 4. Mediation model coefficients.

	β^*	β (SE)	95% CI [L-U]	z-value
Outcome: Attachment Avoidance (M1a)	0.157	1.958(0.498)	[0.982;2.935]	3.930***
Experience of IPV (X) → Attachment Avoidance (M1a)				
Outcome: Attachment Anxiety (M1b)	0.131	2.173(0.671)	[0.858;3.487]	3.240***
Experience of IPV (X) → Attachment Anxiety (M1b)				
Outcome: Negative Affect (Y)	0.051	0.731(0.522)	[-0.291;1.753]	1.402
Experience of IPV (X) → Negative Affect (Y ₂)	0.174	0.198(0.041)	[0.117;0.279]	4.807***
Attachment Avoidance (M1a) → Negative Affect (Y)				
Attachment Anxiety (M1b) → Negative Affect (Y)	0.420	0.361(0.031)	[0.300;0.422]	11.563***
Effect of X on Y via M1a	0.027	0.388(0.127)	[0.139;0.637]	3.058**
Effect of X on Y via M1b	0.055	0.784(0.254)	[0.286;1.282]	3.086**
Total Effect of the Model	0.134	1.903(0.580)	[0.767;3.040]	3.281***

* $p < .050$; ** $p < .010$; *** $p < .001$.

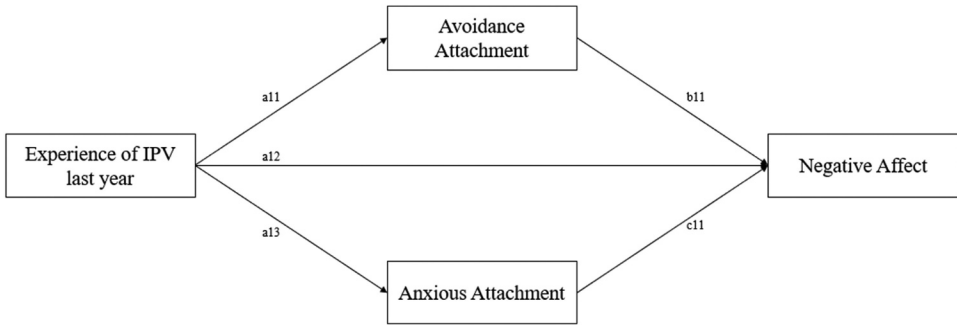


Figure 1. Theoretical Mediation model Proposed.

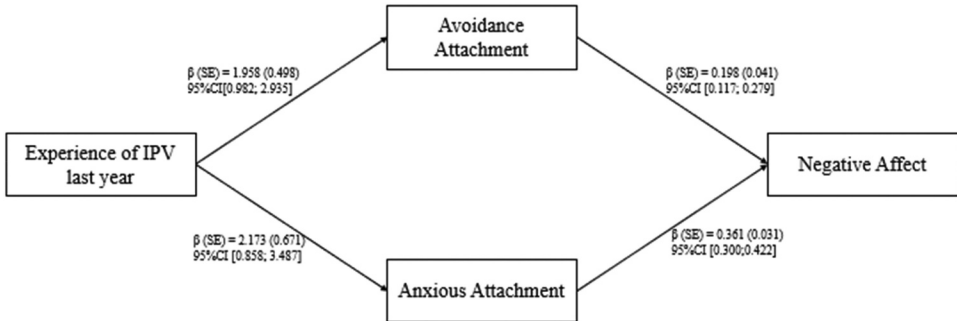


Figure 2. Final Path Model. Note: β = unstandardized regression coefficient; SE = standard error; 95%CI = 95% confidence interval.

Discussion

The aim of the present study was to investigate the emotional impact of IPV experiences in a general population sample and to explore the mediating role of adult attachment (anxiety and avoidance). Although the hypothesized

mediation model was intended to test the direct and indirect effect of IPV experiences on negative affect, we also tested the relationship between experiences of violence and positive affect at the bivariate level. Correlation analyses showed no significant relationship between the two variables, suggesting that experiences of violence do not influence perceived positive affect. However, further studies should investigate this relationship, since adverse experiences such as violence in intimate relationships can have a detrimental impact on wellbeing not only increasing negative affect but also decreasing the perception of positive affect. This is particularly noteworthy considering that, as proposed in Watson and Tellegen's (1985) two-dimensional model, positive and negative affect should be understood as distinct dimensions that can predict partially different negative health outcomes (Watson et al., 1988).

Regarding the results of the mediation model, in contrast to H1, the results emerged seem to suggest that IPV experiences did not directly impact negative affect. In line with H2, experiences of IPV were positively associated with attachment avoidance and anxiety. These findings are consistent with data from previous studies (e.g., Hellemans et al., 2015; Velotti et al., 2018) and seem to suggest that experiences of IPV affect attachment system functioning and increase the use of secondary strategies of hyperactivation and deactivation of the attachment system aimed at defending against frustration caused by the unavailability of attachment figures. From this perspective, IPV experiences appear to take the form of adverse relational conditions that may, at least in part, influence attachment system functioning and representations of self and others by promoting negative expectations about attachment figures' availability, sensitivity, and responsiveness.

According to H3, both attachment avoidance and attachment anxiety were associated with negative affect, and consistent with H4, IPV experiences had an indirect influence on negative affect via adult attachment. Specifically, IPV experiences appear to increase levels of attachment anxiety and avoidance, which in turn increase perceptions of negative affect. In this sense, the aversive and potentially traumatic experience of violence by an attachment figure (the partner) seems to contribute to negative representations of the self and the other, and – probably for defensive purposes – to increase the use of hyperactivation and deactivation strategies of the attachment system, which negative impact on perceived affect. In this regard, and in line with attachment theory (Mikulincer & Shaver, 2005, 2007a), higher levels of attachment anxiety would be associated with increased vulnerability to signs of abandonment and disruption of the attachment relationship, as well as negative self- and others-representations, and this appears to translate into increased vulnerability to negative affect. These findings are consistent with the literature on this topic (Zhang et al., 2022) and extend these considerations to the context of couple violence.

Attachment avoidance also appears to influence emotional experience. Higher levels of attachment avoidance are associated with discomfort with closeness and fear of intimacy (Mikulincer & Shaver, 2005). Although the use of strategies to deactivate the attachment system should, at least at a conscious level, reduce the emergence of one's attachment needs and affectivity more in general, it is possible that such strategies, which have proved adaptive during development, may prove ineffective in later stages. When it comes to dealing with frustration, deactivation strategies of the attachment system may deprive the individual of the necessary support and emotional closeness needed to find containment in times of distress and alleviate frustration, such as after experiences of IPV (Mikulincer & Shaver, 2014; Mikulincer et al., 2003). As suggested by Mikulincer and Shaver (2014), people with high levels of attachment avoidance may not be able to deactivate their attachment system to the point where they no longer feel the lack of supportive relationships. This appears to have a negative impact on the emotional experience of such individuals in terms of perceived negative affect.

Conclusion

Results seem to indicate that, at least in the present sample that is from the general population, IPV experiences present an indirect relationship with perceived negative affect through adult attachment. In fact, IPV experiences, probably for defense purposes, appear to increase levels of attachment avoidance and anxiety and the tendency to use the related secondary strategies of regulation of the attachment system, which in turn influences perceived negative affect. This not only underscores the indirect negative emotional impact of IPV experiences, but also seems consistent with recent studies emphasizing the mediating role of attachment in the relationship between IPV experiences and well-being more in general (e.g., symptoms of depression and PTSD; Costa & Botelho, 2021; Smagur et al., 2018).

Considering the negative impact on health and psychopathological symptomatology given by a high perception of negative affect, the results of the present study provide useful information for understanding the emotional impact of IPV experiences, while providing clinical evidence of psychological and relational processes amenable to treatment. Following IPV experiences, intervening on representations regarding self and others and the development of more mature and functional strategies to regulate interpersonal distance and emotions could be useful to reduce the emotional impact of IPV experiences and increase well-being more in general, also considering the protective effect of secure attachment strategies of affect regulation on the impact of distress and traumatic experiences (Crow et al., 2021; Mikulincer & Shaver, 2007b). Interventions informed by attachment theory and targeting people who have experienced IPV could be useful for promoting health in this population.

Limitations and future directions

The present study has some limitations. First, it is a cross-sectional study that does not allow conclusions to be drawn about the assumed causal direction. Future studies with a longitudinal design are needed to further investigate our preliminary findings.

Second, the sample is drawn from the general population and most participants are university students. This limits the generalizability of the findings obtained. Future research should replicate the present model in clinical samples or in samples from shelters and anti-violence centers to support our findings and their clinical utility.

Third, the present study focused specifically on the emotional impact of IPV experiences and the mediating role of adult attachment. Future studies should examine the role of adult attachment, taking into account other indicators of well-being such as depressive, anxiety, and PTSD symptoms as well as suicide risk, further exploring the factors mediating between IPV experiences and negative health outcomes. Indeed, identifying psychological and relational factors and processes involved in this association that are amenable to treatment is necessary at the clinical level to reduce the negative impact of violent experiences (Mannarini et al., 2013). Furthermore, although the preliminary results of the correlational analyses conducted in this study do not show a significant relationship between IPV experiences and positive affect, future studies should further investigate this hypothesis in order to gain a more comprehensive understanding of the emotional impact of couple violence and the psychological mechanisms involved.

Finally, although the present sample is heterogeneous in terms of sexual orientation, it would be important to examine our model by distinguishing between heterosexual and same-sex couples; given the specificities of IPV in same-sex relationships, this would have particular theoretical and clinical value (Santoniccolo et al., 2021; Trombetta & Rollè, 2022).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethical standards and informed consent

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study. The research project had received prior approval from the Ethics Committee of the University of Turin (Protocol number: 0429348).

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