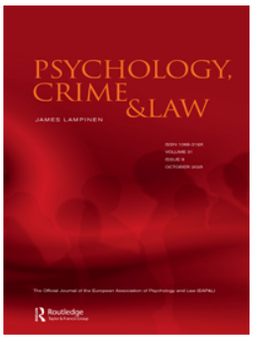

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Exploring social, motivational, and cognitive factors in female-perpetrated interpersonal violence: a study of community-based UK women

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ABSTRACT

This study explores various social, motivational, and cognitive factors associated with female-perpetrated interpersonal violence, with social role theory and relational-cultural theory as key theoretical frameworks. A community sample of 219 adult women in the UK completed a survey combining retrospective and current self-report surveys, including experiences of victimization, delinquency, peer pressure, gang affiliation, social status, empathy, impulsivity, and moral disengagement. Hierarchical regression analyses were employed to establish relationships between such factors and interpersonal violence during adolescence. Findings revealed that retrospective delinquency and victimization during adolescence were the strongest predictors of self-reported interpersonal violence. Notably, a moderated mediation revealed that perspective-taking was significantly weakened among women with higher levels of self-reported delinquency during adolescence, suggesting that delinquent behavior may override empathic functioning. Implications include the importance of interventions that target both victimization and delinquent behaviors early in development, as well as the need for approaches that address cognitive processes (e.g. empathic functioning) among girls and women. Future research should utilize longitudinal designs to clarify the developmental trajectory of these associations and to inform tailored prevention strategies.

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Female interpersonal violence; social role theory; relational-cultural theory; victim-offender overlap

Introduction

Violence and delinquency have traditionally employed a male-centric perspective, which emphasizes the involvement of young men (Young et al., 2007). Though women and girls have always been involved in violence and delinquency (Schwartz & Steffensmeier, 2012), research has not adequately observed levels of women and girls' violent behavior, particularly when compared to the scope of research that exists on violence among men and boys. A comprehensive examination of adolescent female aggression in the United

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States, revealed a prevalence rate of 15.5% (Cotter & Smokowski, 2017). Spanning the years from 1985–2009, there was a notable shift in the reported delinquency cases. Female-involved delinquency cases increased by 86%, surpassing the 17% increase observed in male cases in the United States (Cotter & Smokowski, 2017). Despite this, research on violence is focused on males, and little is known about the motivators for female-perpetrated interpersonal violence. To that end, the current study examined social factors, motivational factors, and cognitive justifications that play a role in female-perpetrated interpersonal violence in the UK.

Note on terminology

Before we embark on the review of relevant literature, we must be clear about what is meant when using the term *interpersonal violence*. Interpersonal violence involves the intentional use of physical force or power against other persons by an individual (Mock et al., 2017). Interpersonal violence may also be physical, sexual, or psychological (Mock et al., 2017). We will mainly refer to the term *interpersonal violence* for consistency in the current study, unless a different term is necessary for the information being presented.

Theoretical background

The literature surrounding females who engage in interpersonal violence posits the relational-cultural theory and social role theory as key theoretical frameworks. Relational-cultural theory, developed by Jean Baker Miller, suggests that girls are socialized according to gender expectations. In Jean Baker Miller's (1976) work, *Toward a New Psychology of Women,* the notion that girls' and women's development hinges on interpersonal relationships was introduced. From a young age, girls are socialized to prioritize empathy and interpersonal relationships. Throughout adolescence, these aspects of a girl's life become even more important, contributing to the formation of personal identity (Crick & Zahn-Waxler, 2003; Zahn-Waxler & Polanichka, 2004). This theory also argues that women and girl's relationships can serve as strengths for growth and development (Covington, 2008; Jordan & Hartling, 2002). Thus, positive relationships serve as promotive factors by reinforcing empathy, emotional regulation, and a sense of belonging, all of which are protective against aggressive or violent behavior. Conversely, relational disconnection – through neglect, trauma, or betrayal – disrupts healthy development, potentially leading women and girls to seek maladaptive forms of connection through aggression (Covington, 2008; DeHart, 2008).

Social role theory is supplementary to relational-cultural theory by providing additional insights into the significance of relationships for women and girls. According to social role theory, aggression is considered a behavior influenced by social norms and status (Eagly, 1987; Eagly et al., 2000). More specifically, gender norms for men and women are distinct, with norms for women prioritizing caring and communal traits (e.g. pleasantness, sensitivity, interpersonal relationships; Eagly, 1987). In contrast, male norms emphasize agentic characteristics, promoting achievement and assertiveness. While agentic characteristics align with aggressiveness, communal characteristics do not (Eagly, 1987). For example, girls who are socialized in environments that reward assertiveness (e.g. male peer groups) may adopt more agentic behaviors to adapt to social norms in that

environment. In these contexts, negative or high-risk relationships may encourage aggression. Taken together, these theories suggest that supportive, prosocial relationships serve as buffers against female aggression, while negative social environments can foster violent behavior. This will be further addressed in the following literature review.

Risk factors for female-perpetrated interpersonal violence

Although the current study employed a sample of adult women, participants were asked to retrospectively report on experiences during adolescence (ages 12–18 for delinquency, gang membership, and general victimization; from age 16 for sexual victimization) and secondary school (e.g. social status and peer pressure questionnaire). Accordingly, the literature review places strong emphasis on adolescent female risk factors for interpersonal violence to align with the developmental period under investigation. However, given that the sample comprises adult women, we also integrated research on adult female perpetrators-including both community and forensic samples, where relevant. This dual focus allows for a robust understanding of the factors associated with female-perpetrated interpersonal violence across the lifespan.

The literature on women and girls engaging in interpersonal violence identifies various correlates such as peer group associations (Haynie et al., 2007; Miller & Brunson, 2000; Peterson et al., 2001; Peterson et al., 2018), peer influences (Barlas & Egan, 2006; Cotter & Smokowski, 2017; Mundt et al., 2017; Wallace, 2017), victimization experiences (Abel, 2001; Babcock et al., 2003; Bottos, 2007; DeKeseredy, 2000; De La Rue et al., 2014; Henning et al., 2003; Sutton, 2017), psychological factors (e.g. status, moral disengagement, attitudes towards criminals and associates, Bandura et al., 1996; Barchia & Bussey, 2011; Borg & Hermann, 2023; Gendreau et al., 1997; Hubbard & Pratt, 2002; Jackson, 2009; Miller & Brunson, 2000; Paciello et al., 2008; Somma et al., 2022), emotional processes (e.g. guilt, shame, fear of crime, and empathy; Jackson, 2009; Jolliffe & Farrington, 2004; Plant et al., 2000; Shah, 2015; Spruit et al., 2016), and impulsivity-aggression dynamics (Bottos, 2007; Henning et al., 2003; Leenaars, 2005; Vazsonyi et al., 2006). These factors exert independent influences on interpersonal violence and occasionally work together to facilitate it.

Social risk factors

Peer influences

Of particular interest are findings which suggest that females involved in male-majority and mixed gender peer groups have higher levels of delinquency and offending (Haynie et al., 2007; Miller & Brunson, 2000; Peterson et al., 2001; Peterson et al., 2018). This is consistent with the expectations outlined by social role theory (Eagly 1987; Eagly et al., 2000). Girls may initially adhere to societal expectations, acquiring communal traits and behaviors. However, when girls associate closely with male peers, who tend to embody more agentic characteristics, there may be a social influence towards adopting aggressive behaviors aligned with these characteristics. As per social role theory, individuals strive to attain status and recognition within societal roles. Girls who associate with male peer groups might therefore perceive adopting delinquent behavior as a means of gaining respect and acceptance with male-dominated social groups.

Various studies utilizing school samples shed light on peer influences acting as a contributing factor for knife-carrying specifically (Barlas & Egan, 2006; Cotter & Smokowski, 2017; Mundt et al., 2004; Wallace, 2017). This evidence aligns with relational-cultural theory, shedding light on how this theory intersects with social expectations, impacting girls' aggression. Relational-cultural theory posits that girls develop their personal identity through interpersonal relationships. Peer groups represent an important aspect of these interpersonal relationships during adolescence. Thus, girls may be strongly influenced by group dynamics in their pursuit of identity and connection. Adolescents, particularly girls, are influenced by their peer groups, potentially leading to higher levels of delinquency. While associations with such peer groups may initially contribute to delinquent behavior, these influences may change as girls develop. For some, involvement in delinquency may represent a desire to gain status and respect among male peers. However, over time girls may begin to realign with feminine gender norms, placing importance on prosocial relationships. This shift may help to account for earlier desistence observed in Wong's (2012) research and suggests that changing interpersonal relationships may function as a protective factor against continued delinquency.

Delinquency

Delinquency, defined as actions by minors that breach the law, has been shown to have the following consequences: First, early onset of delinquency predicts later offending. Second, there is evidence of significant continuity of criminal behavior, such that young people involved in more serious crimes are more likely to become adult offenders. And third, a small percentage of chronic juvenile offenders are responsible for a large portion of all crimes (Sladky et al., 2014). As mentioned previously, research by Wong (2012) highlights that girls peak earlier in terms of delinquency but also desist more quicky than boys. This pattern may reflect broader gendered socialization processes wherein girls are encouraged to adhere to relational and communal traits. These norms may subsequently promote desistence by discouraging further involvement in delinquent behavior and emphasizing the importance of prosocial relationships.

Victimization

Research on adult women who perpetrate violence consistently indicates a heightened likelihood of prior exposure to trauma, including childhood experiences of witnessing or enduring violence (Babcock et al., 2003; Bottos, 2007; DeKeseredy, 2000). Other studies have similarly found that women who engage in violent behavior often report histories of sexual abuse and psychological trauma (Abel, 2001; Henning et al., 2003). For many of these women, violence may emerge as a coping mechanism or a means of reclaiming control in the aftermath of victimization. Among younger populations, evidence suggests that girls involved in gangs are more likely to have experienced interpersonal violence, often joining gangs in search of protection or belonging (Sutton, 2017). De La Rue and colleagues (2014) found that experiences of sexual abuse and familial conflict were significant predictors of gang affiliation among girls. Social role and relational-cultural theories emphasize the importance of social norms and interpersonal relationships. However, exposure to violent upbringings may disrupt the development of healthy relationships. Consequently, women who have experienced physical and sexual abuse may internalize trauma through violent behavior, using such behavior as a means of

coping or asserting control. In the same way, girls may seek alternative sources of connection, either within the context of gangs or other delinquent activities. Thus, girls may nurture interpersonal dynamics, potentially manifesting as interpersonal violence as they adapt to the expectations of gangs.

Motivational factors

Fear of crime and status

Motivational factors such as fear of crime, as well as status, play significant roles in understanding motivators of female-perpetrated interpersonal violence. In his 2009 study, Jackson operationalized fear of crime as an emotional response to interpersonal crimes (e.g. mugging or assault). Notably, Jackson (2009) found that females reported higher levels of fear of personal crime compared to males, a discrepancy that is attributed to perceived vulnerability and lower perceived control. In other words, women reported feeling less physically capable of defending themselves, and this partially explained women's heightened levels of fear for interpersonal crimes such as mugging or assault (Jackson, 2009). Thus, females may perceive the likelihood of victimization as higher for themselves and for their social group (Jackson, 2009). Building on this, the current study shifts the focus, investigating fear of crime not merely as an emotional response but as a potential predictor of female-perpetrated interpersonal violence. Furthermore, Miller and Brunson (2000) highlighted status as a predominant theme among females involved in male gangs. The emergence of status can be scrutinized through the perspectives of social role theory. Social role theory illuminates the association of status with girls who are involved in weapon carry by highlighting the conformity to agentic norms, particularly within male-dominated environments. Thus, girls in these environments may experience conflict between adhering to communal or agentic traits, inherently adopting behaviors associated with status attainment and gaining respect among male peers.

Cognitive justifications

Empathy and impulsivity

Empathy, the ability to understand others' thoughts and emotions (Davis, 2018), is linked to reduced aggression and criminal behavior (Jolliffe & Farrington, 2004). Women tend to show higher levels of empathy (Shah, 2015), possibly influenced by the communal traits emphasized in social role theory. Furthermore, impulsive aggression, characterized by a loss of control, is correlated with serious delinquency. Women's violent acts are often reactive and impulsive (Warren et al., 2005). Research supports this, as findings from Vazsonvi and colleagues (2006) observed that impulsivity predicts delinquency for girls. However, for girls, this relationship was dependent on neighborhood context (Vazsonyi et al., 2006). Further research which examined samples of incarcerated women highlighted difficulties with emotional regulation as a risk factor for offending (Bottos, 2007). Henning and others (2003) and Leenaars (2005) corroborated this finding, observing heightened impulsivity levels among violent female offenders.

Moral disengagement and attitudes towards criminals

Moral disengagement and attitudes towards criminals do not seem to directly align with social role and relational cultural theory. However, these constructs are crucial for

understanding female-perpetrated interpersonal violence. Moral disengagement (Bandura et al., 1996; Barchia & Bussey, 2011; Paciello et al., 2008; Somma et al., 2022) and attitudes towards criminals (Borg & Hermann, 2023; Hubbard & Pratt, 2002) provide significant insights into the mechanisms underlying such behaviors. Research by Hubbard and Pratt (2002) found that a history of antisocial attitudes, associations with antisocial peers, and engagement in antisocial behavior are linked to delinquency in girls. This suggests that the social environment and personal attitudes play a pivotal role in shaping delinquent behavior among girls. Interestingly, research on public attitudes toward crime also suggests that women generally hold harsher views toward criminal behavior than men (Borg & Hermann, 2023). While not focused on offenders, these findings may offer insight into how community women who engage in interpersonal violence interpret or morally evaluate their actions. A separate study by Somma et al. (2022) examined a large sample of community-based women and found that traits such as vulnerable and grandiose narcissism, machiavellianism (a manipulative personality; Paulhus & Williams, 2002), and psychopathy were all linked to higher levels of dispositional aggression and self-reported deviant behavior. Such traits were in turn associated with cognitive processes such as proneness to fantasy and ideas of reference (e.g. belief that a neutral event has personal meaning; Freeman et al., 2021) (Somma et al., 2022). This is crucial to consider for the present study, suggesting that community-dwelling women with higher levels of these traits may be more likely to justify aggressive behavior through self-focused thinking or antagonistic interpersonal styles. Taken together, this evidence highlights how psychological mechanisms – such as moral disengagement- contribute to female-perpetrated interpersonal violence. Furthermore, Paciello et al. (2008) found that children with high levels of moral disengagement entering adolescence displayed more violent behavior than those with lower levels of moral disengagement. Moreover, Australia-based research by Barchia and Bussey (2011) highlighted the interplay between moral disengagement and low collective efficacy beliefs. They discovered that lower collective efficacy beliefs regarding the ability of students and teachers to prevent peer aggression were associated with more frequent aggression, with this association being stronger at higher levels of moral disengagement. Given these findings, examining moral disengagement and attitudes towards criminals is essential for understanding female-perpetrated interpersonal violence.

Emotional responses

Guilt and shame

Guilt and shame are self-conscious emotions linked to various behaviors, including offending and delinquency (Spruit et al., 2016). Guilt involves negative feelings about specific actions, while shame relates to negative evaluations of oneself (Else-Quest et al., 2012). Guilt is often evoked within interpersonal contexts and subsequently intersects with empathic function (Tangney, 1991). Additionally, women are often stereotyped as experiencing more guilt and shame than men (Plant et al., 2000). Spruit and colleagues (2016) found that higher levels of self-conscious emotions are related to lower levels of delinquency. Notably, guilt observed a stronger negative correlation ($r = -.278$) with delinquency, compared to shame ($r = -.130$) indicating that guilt plays a more effective role as a protective factor for such behavior. Within social role theory, the link between

guilt and empathic function further reinforces the importance of interpersonal relationships, a fundamental aspect of this theory. In the context of relational-cultural theory, higher levels of guilt may facilitate positive relationship dynamics, acting as a deterrent against interpersonal violence.

Current study

The factors discussed- victimization, delinquency, peer influences, status, fear of crime, impulsivity, empathy, moral disengagement, attitudes towards criminals, guilt, and shame- do not operate in isolation but rather interact and influence each other in complex ways. This merits the need for a comprehensive understanding of the multifaceted nature of female-perpetrated interpersonal violence. To gain insight as to why women engage in this type of behavior, it was important for the authors to assess these themes in the present study. While gang membership is not the central focus of the present study, it was included as one of several social risk factors. Prior research indicates that girls may seek out gang affiliation as a coping response for trauma or to gain protection and belonging (De La Rue et al., 2014; Sutton, 2017). Importantly, many gangs operate as male-majority or mixed-gender peer groups, and extensive research has shown that girls embedded in such groups are more likely to engage in delinquent and violent behaviors (Haynie et al., 2007; Miller & Brunson, 2000; Peterson et al., 2001; Peterson et al., 2018). As such, including gang membership alongside other social predictors allows for a more comprehensive analysis of the factors contributing to female-interpersonal violence. The overarching aim of this study is to examine the social factors, motivational factors, and cognitive justifications associated with interpersonal violence among community-based women in the United Kingdom. The hypotheses for the present study were as follows:

1. Women who self-report perpetrating acts of interpersonal violence will be more likely to report past victimization and delinquency experiences, susceptibility to peer pressure, and association with street gangs.
2. Women who self-report engaging in interpersonal violence will be more likely to endorse importance of social status. Additionally, these women will report higher levels of fear.
3. Women who self-report perpetrating acts of interpersonal violence are more likely to exhibit heightened impulsivity, increased moral disengagement, and stronger criminal attitudes and associations.
4. Women who self-report perpetrating acts of interpersonal violence are more likely to experience higher levels of shame and guilt.

Method

Participants

Demographics

Our study focused exclusively on individuals meeting the inclusion criteria of identifying as female, aged 18 and over, and a resident of the UK. Due to the above inclusion criteria, three participants were excluded from the analysis. Specifically, two participants

identified as non-binary, and another identified as male. The final analysis included 219 participants. The mean age of the sample was 39.7 years (SD = 12.78, range = 20–81). Most of the sample was White at 88.2% *(n* = 194). 4.5% of the sample was Black/African/Caribbean *(n* = 10). Four participants (1.8%) were of Mixed/two or more backgrounds. Two participants (.9%) were Arab/others. Two other participants (.9%) responded that they would 'prefer not to say'.

The study comprised of 122 participants (55.5%) who were in full-time work, 40 (18.2%) were in part-time work, 7 (3.2%) were seeking work, 10 (4.5%) were retired, 8 (3.6%) were permanently unable to work because of long-term sickness/disability, 12 (5.5%) were going to school or college full-time, 12 (5.5%) were looking after the home/family, and 9 (4.1%) were other. For education, 1.4% of our sample were in some secondary education *(n* = 3*),* 15.5% completed secondary school *(n* = 34*),* 15.9% completed vocational or Similar *(n* = 35*),* 7.3% were at one time enrolled in some university but did not complete their degree *(n* = 16*),* 43.6% completed a University Bachelor's Degree *(n* = 96*),* 15.5% completed a graduate/professional degree *(n* = 34*),* and .9% preferred not to say *(n* = 2).

Measures

In this study, we employed both retrospective and current self-report measures to assess various factors. Participants were instructed to recall experiences from specific developmental periods for certain instruments. The Youth Survey: Eurogang Program of Research (Weerman et al., 2009) subscales (delinquency, victimization, gang membership) focused on experiences between ages 12–18. The Sexual Experiences Survey- Tactics First Revised (SES-TFR; Hermann et al., 2018) assessed sexual victimization experiences from age 16 onwards. The Social Status Questionnaire (South & Wood, 2006) and Peer Pressure Questionnaire (Saini, 2016) required participants to reflect on their time in secondary school. All other measures, including those assessing impulsivity, empathy, moral disengagement, attitudes towards criminals, fear of crime, and post-offense emotional responses were designed to capture current attitudes/emotions.

The Youth Survey: Eurogang Program of Research (Weerman et al., 2009)

This is a comprehensive scale of 89 items. This instrument is designed to assess gang membership according to the Eurogang definition. The instrument is also intended to identify those who do and do not belong to a gang, according to the Eurogang definition. For this study, we only used the items that make up the delinquency, victimization, and gang membership subscales. These are listed and described below. Because *Eurogang Youth Survey* items are targeted towards youth and our study used an adult sample, we asked for participants to reflect back to a time when they were a teenager (ages 12–18).

Crimes against a person (Interpersonal violence subscale)

Interpersonal violence, the primary dependent variable in this study, was measured using a three-item subscale from the general delinquency section of the Eurogang Youth Survey. All responses were measured by a 5-point Likert scale ranging from 'never', 'once or twice', '3–5 times', '6–10 times', and 'more than 10 times'. This subscale is comprised of the following items: 'Thinking back to when you were a teenager (between ages

12–18), how often have you (1) hit someone with the idea of hurting them', (2) 'attacked someone with a weapon', and (3) 'used a weapon to get money or other things'. Responses were measured on a 5-point Likert scale ranging from 'never' to 'more than 10 times'. Individual scores from these items were summed to provide a total score ranging from 3 to 15, with higher scores indicating more frequent involvement in interpersonal violence. Previous reliability analysis by Esbensen and Weerman (2005) observed an alpha coefficient of .42 (α = .42). Internal consistency for this subscale was relatively lower in our sample (α = .38).

General delinquency

The delinquency subscale was divided into three subgroups in accordance with Esbensen and Weerman's (2005) work: minor offending, property offending, and crimes against a person (interpersonal violence). All responses were measured on the same 5-point Likert scale as described above. Minor Offending was measured by two items: 'Thinking back to when you were a teenager (between ages 12–18), how often have you avoided paying for something, such as movies, bus, or underground rides' and 'purposely damaged or destroyed property that did not belong to you'. Property offending consisted of four items (e.g. 'stolen or tried to steal something worth less than £50'; 'stolen or tried to steal something worth more than £50'; 'stolen or tried to steal a motor vehicle'; 'one into or tried to go into a building to steal something'). An overall delinquency score was calculated by summing the responses to all 16 delinquency items, including those from the minor offending, property offending, and crimes against a person subscales. This provided a total measure of each participant's self-reported delinquent behavior during adolesence. The crimes against a person subscale (also referred to as interpersonal violence) was also used independently as the primary outcome variable in our analyses, due to its high prevalence in the sample. Previous reliability analysis for overall delinquency revealed a good internal consistency (α = .82). Our reliability analysis for the delinquency scale revealed a similar internal consistency (α = .79). Additional reliability analyses on the various subscales indicated low to moderate internal consistency; minor offending (Esbensen & Weerman, 2005), (α = .45) and property offending (Esbensen & Weerman, 2005), (α = .61). . We found relatively similar reliability analyses of .58 (α = .58) for property offending and .37 (α = .37) for minor offending.

Gang membership

The items that are necessary to create a measure of gang membership consistent with the Eurogang Definition were used to assess gang membership. Group affiliations were measured first; for example, 'In addition to any such formal groups, some people have a certain group of friends that they spend time with, doing things together or just hanging out When you were a teenager (between ages 12–18) did you have a group of friends like that?'. Those who responded with 'yes' completed follow-up questions assessing gang membership. This method captures the core elements of the Eurogang definition as outlined by Weerman and colleagues (2009): (1) youthfulness (e.g. all members of the group were under the age of 25); (2) durability (e.g. the group had been together for more than three months); (3) street-orientation (e.g. responding 'yes' to the item 'Does this group spend a lot of time together in public places like the park, the street, shopping areas, or the neighborhood?'); (4) group criminality (e.g. responding

'yes' to the items 'Is doing illegal things accepted by or okay for your group?'); and ('Do people in your group actually do illegal things together?'). Each of these components were scored as a binary variable (0 = criterion not met, 1 = criterion met). Final gang membership scores were then calculated as the sum of these four components, resulting in a score range of 0–4, reflecting the total number of criteria each participant's group met. Higher scores indicated stronger alignment with the Eurogang definition of gang membership.

General victimization

Victimization was measured by four items from the *Youth Survey*. Responses were measured on a 5-point Likert scale ranging from 'never', 'once or twice', '3–5 times', '6–10 times', and 'more than 10 times'. The victimization items also asked for participants to reflect to a time when they were teenagers (between ages 12–18). Items included 'when you were a teenager (between ages 12–18) have you been hit by someone trying to hurt you?', 'had someone used a threat, a weapon or force to get money or things from you?', 'been attacked by someone with a weapon or by someone trying to seriously hurt or kill you?' and 'had some of your things been stolen?'. Responses to these items were summed to create a total victimization score with scores ranging fro 0–20. with higher scores reflecting more frequent exposure to victimization. The reliability coefficient for this subscale was .81 ($\alpha = .81$) indicating high internal consistency.

The Sexual Experiences Survey- Tactics First: Revised (SES-TFR, Hermann et al., 2018)

This instrument is a modified version of the 'Tactics First' version of the Sexual Experience Survey (SES-TF) developed by Abbey et al. (2005). Originally, the SES was developed by Koss and colleagues (Koss & Gidycz, 1985; Koss, et al., 1987; Koss & Oros, 1982). Hermann et al. (2018) modified the SES-TF by using a 10-point scale to assess frequencies of up to *nine times or more*. Additionally, participants were asked to recall sexual experiences from age 16 rather than age 14. After careful consideration of the different versions of the SES scales, Hermann et al.'s (2018) was the most appropriate to use in our study because the age of consent in the UK is 16 years. The SES-TF version we used asked participants about the frequency with which they have experienced a number of sexual acts since the age of 16 (e.g. sexual touching, oral sex, and vaginal sex) using the following sexually aggressive tactics: (a) arguments and pressure, (b) lies or false promises, (c) guilt or displeasure, (d) giving a woman drugs or alcohol, (e) taking advantage of a woman when she is incapacitated due to drugs or alcohol, and (f) physical force. In the present study, the phrasing was adapted to assess sexual victimization experiences, as the original wording is tailored for assessment of perpetration. A continuous sum scoring approach was employed, in which the raw frequency responses for each item were summed to create a total sexual victimization score. This method captures the overall frequency of sexual victimization experiences. This approach has been scrutinized because it does not differentiate between severity levels or types of victimization, potentially treating less severe forms of victimization (e.g. verbal pressure) as equivalent to more severe forms (e.g. physical force) (Koss et al., 2007). However, after careful consideration of available scoring methods, we opted for this approach because sexual victimization is a secondary variable in the present study. Therefore, it was more important to

capture an overall frequency of sexual victimization experiences, rather than a weighted frequency analysis as established in the work of Koss and colleagues (2007). Prior research by Anderson and associates (2018) has successfully used continuous sum scoring. Hermann and colleagues (2018) reported the alpha coefficient for this measure to be .94 among a student sample and .97 among a sample of community men. We found a high reliability, consistent with that previously found (α = .97).

Barrett's impulsiveness scale (Barratt, 1959)

This scale was utilized to measure impulsivity in our sample. The instrument consists of 30 items which are measured on a 4-point Likert scale ranging from 'Never' to 'Always'. Some examples of impulsive and non-impulsive behavior traits included in the instrument are 'I do things without thinking' and 'I am self-controlled' (reverse-scored item). After appropriate scoring adjustments, responses were summed to yield a total impulsivity score ranging from 0–120. Higher scores indicate a stronger inclination towards impulsive behavior. Stanford et al. (2009) reported an alpha score of .83 for their study. We found the scale to have a higher reliability score (α = .97).

The interpersonal reactivity index (Davis, 1980)

This measure was used to measure levels of empathy. The scale consists of 28 items which are measured on a 4-point Likert scale ranging from 'Does not describe me well' to 'Describes me very well'. The four different subscales, including ` comprise example items such as 'I believe that there are two sides to every story and try to look at them both' (perspective taking), 'After seeing a play or movie, I have felt as though I were one of the characters' (fantasy), 'I am often quite touched by things that I see happen' (empathic concern), and 'In emergency situations, I feel apprehensive and ill-at-ease' (personal distress). To ensure accurate measurement, certain items were reverse-scored. Examples of reverse-scored items include 'I sometimes find it difficult to see things from the 'other guy's' point of view' (perspective taking), 'sometimes I don't feel very sorry for other people when they are having problems' (empathic concern), 'I am usually objective when I watch a movie or play, and I don't often get completely caught up in it'. (fantasy) and 'When I see someone get hurt, I tend to remain calm' (Personal Distress). Scoring involved summing the responses for each subscale, resulting in scores ranging from 0 to 28 per subscale. Further reliability analyses on the subscales reported high internal consistency for perspective taking (Baldner & McGinley, 2014), (α = .75); (Baldner & McGinley, 2014), empathic concern (α = .80); personal distress (Baldner & McGinley, 2014), (α = .76); and fantasy (Baldner & McGinley, 2014), (α = .79). We also found high internal consistency for perspective taking (α = .78), personal distress (α = .84), empathic concern (α = .74), and fantasy subscales (α = ..77). Davis (1980) reported an overall alpha coefficient ranging from .68 to .79, but the scale's alpha coefficient in our study had a relatively higher internal consistency (α = .82). This scale was analyzed at the subscale level throughout the present study to allow for differentiation between each domain of empathy and our outcome variable.

Moral disengagement measure (Moore et al., 2012)

This instrument was used to measure the extent to which respondents rationalized, justified, or distanced themselves from morally questionable actions. A cumulative total

of 8 items comprised this scale, with each item on the scale used in our study representing each of the 8 subscales: moral justification, euphemistic language, advantageous comparison, displacement of responsibility, diffusion of responsibility, distorting consequences, attribution of blame, and dehumanization. Items were measured on a 5-point Likert scale ranging from 1 ('Strongly Disagree') to 5 ('Strongly Agree'), rather than the original 7-point scale used by Moore et al. (2012). This adjustment, though initially unintentional, ensured consistency with other scales in the survey. Responses for each item were summed to create a total moral disengagement score, with higher scores indicating greater moral disengagement. Example items from this scale include 'it is okay to spread rumors to defend those you care about' (moral justification); and 'taking something without the owner's permission is okay as long as you're just borrowing it (euphemistic labeling)'. Despite this modification, the scale demonstrated acceptable internal consistency (α = .78), suggesting it still captured the intended construct effectively. Moore and colleagues reported a relatively higher internal consistency (α = .90).

Measure of criminal attitudes and associates questionnaire (Mills et al., 2002)

This scale is made up of 46 items which measure many attitudes and associations related to criminal behavior. This instrument measures four attitude scales including violence, entitlement, antisocial intent, and associates. Respondents answered the items with 'Agree' or 'Disagree'. Some example items from the subscales include 'Someone who makes you very angry deserves to be hit' (Violence); 'I should be treated like anyone else no matter what I've done' (Entitlement); 'I could easily tell a convincing lie' (Antisocial Intent); and 'I have friends who have been to jail' (Attitudes towards Associates). Reverse-scored item included items from antisocial intent and associates' subscales. Examples include: 'I am not likely to commit a crime in the future' (Antisocial Intent) and 'none of my friends have committed crimes' (Attitudes towards Associates). Responses for each subscale were summed to create total subscale scores ranging from 0–10 for Violence, Entitlement, and Attitudes towards Associates subscales and 0–12 for Antisocial Intent. The internal reliability as measured by the alpha coefficient was .75 for the full scale (Mills et al., 2002). In their examination of the individual subscales, Mills et al. (2002) documented good internal consistency, with a coefficient of .80 (α = .87). Additionally, the entitlement subscale demonstrated a coefficient of .63 (α = .63), while the antisocial intent and associates' subscales exhibited coefficients of .84 (α = .84) and .82 (α = .82), respectively. In our reliability analyses of the subscales, we found high internal consistency for violence (α = .73), entitlement (α = .66), antisocial intent (α = .78), and associates (α = .79) We found the measure as a whole to have a slightly higher internal consistency (α = .87). In the present study, analyses were conducted using the four subscales independently rather than a total MCAA score, in order to explore each domain's relationship to our outcome variable.

Social status questionnaire (South & Wood, 2006)

This 18-item instrument is used to measure perceived importance of social status. The wording in the scale was adjusted for participants to reflect on their time in secondary school. The items were measured on a 5-point Likert scale ('Strongly disagree' to 'Strongly agree'). Items were summed to create an overall social status score with a possible score range of 18–90. Example of items include: 'At school it was important to students to have

other students' respect' and 'At school students got respect if they weren't easily pushed around'. The items previously had good internal consistency (α = .75) (South & Wood, 2006). We found that this was further substantiated in the current study (α = .93).

The peer pressure questionnaire (Saini, 2016)

This measure was used to assess respondents' susceptibility to peer influences. The wording on this scale was also adjusted to assess peer pressure experiences when participants were in secondary school. Example of items include: 'Sometimes I would miss classes because my friends would urge me to do so' and 'Despite parental concerns, I would go out with friends'. The scale has 25 items which are measured on a 5-point Likert scale ('Strongly disagree' to 'Strongly agree'). Responses for each item were summed to create a total peer pressure score, resulting in a possible score range of 25–125. Higher scores indicate greater susceptibility to peer influence. The scale demonstrated strong internal consistency with a Cronbach's alpha coefficient of 0.87 (Saini, 2016). We found a higher internal consistency in the current study (α = .94).

The Hounslow survey- Grove Park (Jackson, 2009)

Item five from this instrument was used to measure fear of crime (Jackson, 2005). The item is comprised of two parts and asked respondents to compare themselves to others of the same sex and age group in their area. The first item asked if participants have a less, more, or about the same chance of becoming a victim of crime. The second item asked if participants worry less, more, or about the same about becoming a victim of crime in their area. Participants responded to both items on a 5-point Likert scale ranging from 'A lot less than average' to 'A lot more than average'. Responses to these two items were summed to create a total Fear of Crime score, resulting in a possible score range of 2–10. Higher scores indicate a greater perceived risk and worry about becoming a victim of crime. Jackson (2009) reported standardized loadings above the suggested cut-off points of .70 and .50, suggesting good scaling properties. For the current study, an inter-correlation of two fear of crime items was conducted. The Pearson correlation was found to be $r = .589$, $p < .05$, indicating a moderate to strong positive linear relationship, further demonstrating the internal consistency of these items.

Offense-related shame and guilt scale (Wright & Gudjonsson, 2007)

This construct is used to measure feelings of shame and guilt related to offenses. Because we have a community sample, the wording was adapted from referencing past offenses (e.g. 'I will never forgive myself for what I have done') to referencing any emotional pain/harm (e.g. 'I never forgave myself for the emotional pain/harm I've caused'). Due to a technical error with our Qualtrics survey, one item from the shame subscale was not included in the analysis. Therefore, for this study, we used 9 items which asked respondents to reflect on how they felt at a time when they may have caused any emotional pain/harm. The items were measured on a 7-Point Likert scale ranging from 'Not at all' to 'Very much'. Responses for each subscale were summed to create total Shame and Guilt scores, resulting in possible score ranges of 3–21 for the Shame subscale and 6–42 for the Guilt subscale. Higher scores indicate greater feelings of shame or guilt. Wright and Gudjonsson (2007) reported adequate internal consistency (shame: α = .78;

guilt: α = .79). We found the measure to have a higher internal consistency for the guilt subscale. (shame: α = .78; guilt: α = .92).

Procedure

This study was approved by the School of Psychology Ethics Committee. Participants were recruited on Prolific Academic and paid £3 for their participation. Following this, participants were directed to the survey on Qualtrics via a link. Before beginning the survey on Qualtrics, participants were given an information sheet followed by a consent form. All participants were told that their responses were confidential and would remain anonymous. Participants were also told that their participation was voluntary and that they could leave the study at any time. Questionnaires took approximately 30 minutes to complete after which participants were provided with a debriefing sheet which reiterated the purpose of the study, provided information on how to withdraw data if they wished to do so, and provided the researchers' contact details for any further questions. Additional contact information for support groups was provided (e.g. Victim Support, Supportline, Good Samaritans).

Results

This study utilized both retrospective and current measures. Retrospective variables, such as delinquency, victimization, gang membership, social status, and peer pressure, were assessed based on participants' experiences during adolescence/when in secondary school. In contrast, current measures included assessments of impulsivity, empathy, moral disengagement, criminal attitudes, and post-offense emotional responses.

Independent variables were categorized into three subgroups of factors: (1) social factors, (2) motivational factors, and (3) cognitive justifications. Data were entered into Jamovi, where analyses were conducted in accordance with a $p < .05$ level of significance. While our criterion variable for this study was *crimes against a person*, namely, we have opted to use the term *interpersonal violence (*as defined above) when referring to our criterion variable. A preliminary prevalence analysis was conducted for each of the three delinquency subscales (e.g. minor offending, property offending, and crimes against a person). This analysis found one in every four women (25%) were involved in crimes against a person, also referred to as the interpersonal violence subscale. As the interpersonal violence subscale was the most prevalent in our sample, we used it as a standalone criterion variable in all analyses. Recall that we created a total delinquency score by summing all items from the three subscales (including the interpersonal violence items) to reflect participants' broader engagement in delinquent behavior. This total score was used as a predictor variable in regression models examining social and cognitive contributors to interpersonal violence. First, correlational analysis was conducted to determine the associations between variables. Then, hierarchical regression analysis was utilized to find to what extent the independent variables predicted interpersonal violence, the unique effects of the predictor variables on this type of violence, and the effects of all predictors on interpersonal violence simultaneously. Prior to conducting the hierarchical regression, it was important to run a correlation analysis to identify which variables emerged as significantly associated with the outcome variable (interpersonal violence).

Only predictors demonstrating significant bivariate associations were entered into the regression models. This approach allowed for the identification of empirically relevant relationships in the subsequent models, minimizing the noise of irrelevant predictors.

Correlations between variables

A correlation matrix was used to investigate any significance between predictor variables, namely our demographic variables, social factors, motivational factors, cognitive justifications, and post-offense emotional responses with interpersonal violence (see Table 1). This analysis helped identify which predictors emerged as significant with the criterion variable and were therefore included in the subsequent regression models. Following this, multicollinearity assumptions were conducted on the selected predictor variables to ensure model validity. Variance Inflation Factors (VIF) and tolerance values were examined. All VIF values fell below the recommended threshold of 10. Tolerance values were all close to one, indicating that multicollinearity was not a concern for the predictors included in the regression models.

Self-reported perpetration of interpersonal violence during adolescence exhibited statistically significant and positive associations with self-reported victimization during adolescence, self-reported delinquency during adolescence, self-reported gang membership during adolescence, self-reported sexual victimization experiences from age 16 onwards, and susceptibility to peer pressure during secondary school. The correlation coefficient suggested a weak negative association between current age and retrospectively reported perpetration of interpersonal violence, indicating that as age increases, self-reported perpetration of interpersonal violence during adolescence decreased.

Table 1. Correlations for Demographics, Social Factors, Cognitive Factors, and Post-Offense Emotional Responses on Interpersonal Violence.

Variables	Interpersonal Violence
Demographics & Retrospective Predictors	
Age	−.141*
Ethnicity	.065
Education	−.053
Employment	−.024
Delinquency	.604**
Victimization	.477**
Peer Pressure	.319*
Gang Membership	.278**
Sexual Victimization	.278**
Social Status	.176**
Cognitive & Motivational Factors	
Fear of Crime	−.017
Violence	.317**
Entitlement	.118
Antisocial Intent	.346**
Associates	.368**
Moral Disengagement	.212**
Perspective Taking	−.154*
Empathic Concern	−.124
Personal Distress	.162*
Impulsivity	.369**
Post-Offense Emotional Responses	
Guilt	−.001
Shame	.113

** Correlation is significant at .01 level (2-tailed) * Correlation is significant at .05 level (2-tailed).

Self-reported interpersonal violence during adolescence also observed statistically significant and positive correlations with perceived importance of social status during secondary school, impulsivity, the violence, antisocial intent, and associates subscales of the Measure of Criminal Attitudes and Associates (MCAA), moral disengagement, and the personal distress subscale of the Interpersonal Reactivity Index. Significant negative correlations emerged between self-reported perpetration of interpersonal violence during adolescence and the perspective taking subscale of the Interpersonal Reactivity Index, suggesting that individuals with a greater ability to understand others' perspectives in adulthood are less inclined to report perpetration of interpersonal violence during adolescence. The empathic concern subscale approached marginal significance, however, was not statistically significant. Fear of crime, shame, and guilt were all excluded from the subsequent regression models as there was no observed significance with interpersonal violence.

Hierarchical regression analyses

Following correlational analysis, significant demographic, social, motivational, and cognitive factors were entered into a hierarchical regression analysis. The structure of our models were informed by empirical literature and theory (Relational-Cultural Theory and Social Role Theory). Our models were therefore organized in conceptual order to reflect developmental temperance and theoretical importance. Table 2 demonstrates the results of the hierarchical regression analysis with self-reported interpersonal violence during adolescence as the criterion variable.

Demographic and retrospective social factors

In the first model, we entered age as a basic demographic control to establish potential relationships between participants' current age and self-reported retrospective interpersonal violence. Current age held a significant contribution and accounted for 1.89% of the total variance ($R^2 = .0189$, $\Delta R^2 = .0189$, $F(1, 213) = 4.10$, $p = .04$).

Table 2. Hierarchical regression results for interpersonal violence.

Variables	R^2	ΔR^2	B	Beta	t	*p*	95% CI
MODEL 1	.0189	.0189					
1. Age			−.00905	-0.137	−2.03	.044	[−.0271, −.00367]
MODEL 2	.4080	.3891					
2. Retrospective Victimization			.07884	.2299	3.504	< .001	[.101, .3593]
3. Retrospective Peer Pressure			−.00195	−.0441	−.646	.519	[−.179, .0904]
4. Retrospective Delinquency			.06918	.5096	6.902	< .001	[.364, .6551]
5.Retrospective Sexual Victimization			-1.99e-4	−.0121	−.196	.845	[−.133, .1090]
6. Retrospective Gang Membership							
MODEL 3	.4089	9.08e-4	−.00859	−.0103	−.163	.871	[−.136, .1150]
7. Retrospective Social Status			.00231	.0334	.564	.573	[−.0834, .1502]
MODEL 4	4670	.0581	−.03125	−.16435	−2.7884	.006	[−.28058, −.0481]
8. Perspective Taking							
9. Personal Distress			.00711	.04541	.7940	.428	[−.06738, .1582]
10. Impulsivity			.00994	.12552	1.8701	.063	[−.00683, .2579]
11. Moral disengagement			-8.44e-4	−.00418	−.0689	.945	[−.12395, .1156]
12. Antisocial Intent			−.02369	−.07366	−.9405	.348	[−.2 2810, .0808]
13. Violence			.03342	.08991	1.3582	.184	[−.04082, .2115]
14. Associates			−.03442	−.08316	−1.0528	.294	[−.23892, .0726]

Model 2 introduced retrospective social factors (e.g. self-reported victimization during adolescence, self-reported susceptibility to peer pressure during secondary school, self-reported delinquency during adolescence, self-reported sexual victimization from age 16 onwards, and self-reported gang membership) into the regression. This decision was made in alignment with relational and environmental influence proposed in Relational-Cultural Theory (e.g. prosocial relationships function as protective factors against interpersonal violence while disruptions to such connections can foster interpersonal violence). Next, retrospective victimization and peer pressure were entered because they manifest as foundational influences which precede and foster delinquent behavior, particularly among girls (De La Rue et al., 2014; Sutton, 2017). Following this, retrospective self-reported delinquency and sexual victimization were entered as outcomes of such relational disruptions. Last, retrospective self-reported gang membership was entered. This decision was guided by findings that girls who experience trauma or relational disconnection often turn to delinquent peer groups (e.g. gangs) as alternative sources of connection (De La Rue et al., 2014; Sutton, 2017). This order reflects the progression posited by Relational-Cultural Theory, beginning with disruptions to interpersonal relationships through victimization experiences and peer pressure/peer influences. This may then lead to maladaptive behavioral outcomes (e.g. delinquency). Because sexual victimization is a distinct and severe form of trauma which can manifest from earlier relational disruptions while also deepening existing vulnerabilities (e.g. victimization) it was entered later on in our model. Finally, retrospective gang membership was entered as a situational risk factor based on findings of sexual abuse as a significant predictor of gang involvement in girls (De La Rue et al., 2014). In model 2, current age was no longer significant. While retrospective social factors together accounted for 40.8% of the model, self-reported delinquency and self-reported victimization during adolescence emerged as significant contributors to self-reported perpetration of interpersonal violence during adolescence ($R^2 = .4080$, $\Delta R^2 = .3891$, $F(6, 208) = 23.89$, $p < .001$).

Retrospective motivational factors

The third model prioritized perceived importance of social status during secondary school, capturing its role as a motivational factor which may be activated as a response to earlier social disruptions. Furthermore, this corroborates Social Role Theory. For example, status-seeking aligns with individuals' efforts to adhere to socially constructed gender norms. For females, whose roles are typically defined by communal traits such as empathy, aligning with status-driven behaviors may reflect a deviation from traditional gender expectations- particularly when situated within male-dominated peer groups. In these contexts, girls may adopt more agentic behaviors, such as aggression or dominance, as a means of elevating status and can therefore be understood as an adaptation to the expectations of gangs (Miller & Brunson, 2000). Therefore, it was important to implement social status in the regression model as a later-emerging factor rather than a primary risk factor. This model showed a slight increase in the proportion of explained variance in the dependent variable from the previous model ($\Delta R^2 = .000908$) and had a small overall contribution to explaining self-reported perpetration of interpersonal violence during adolescence. Perceived importance of social status during secondary school did not significantly predict self-reported perpetration of interpersonal violence during adolescence (B

= .00231, $p = .573$). The significant retrospective variables from model 2, namely self-reported victimization and self-reported delinquency during adolescence, continued to be significant even after considering retrospectively reported perceived importance of social status in this model. Current age remains non-significant in this model.

Current cognitive justifications

While the earlier models focused on retrospective social and motivational factors, Model 4 applied current cognitive justifications (e.g. perspective-taking) and personal distress subscales from the Interpersonal Reactivity Index, impulsivity (Barratt's Impulsivity Scale), moral disengagement (MDS), and the antisocial intent, violence, entitlement, and associates subscales from the Measure of Criminal Attitudes and Associates to the hierarchical regression simultaneously as a single final block. The inclusion of these variables was conceptually and empirically informed. Perspective-taking and personal distress subscales were accounted for first in the model because empathy is considered a protective element, fostering positive interpersonal relationships. Similarly, lack of empathy may indicate disconnection that can facilitate violence. Social Role Theory also posits that women are socialized to prioritize relational and communal traits like empathy, which may buffer against aggression (Shah, 2015). Impulsivity was accounted for next in the model, as it has been associated with poor emotional regulation and reactive aggression (Bottos, 2007; Vazsonyi et al., 2006) thus it only made sense to include impulsivity in this order to capture individual differences in emotional self-regulation that may co-occur with, or function separately from, empathic processes. Cognitive justifications and attitudes towards offending, specifically, moral disengagement and the four subscales from the Measure of Criminal Attitudes and Associates (antisocial intent, violence, entitlement, and attitudes toward associates) were the final variables accounted for. Including them at this stage made sense conceptually, as these attitudes often reflect longer-term patterns of thinking that can persist into adulthood and shape how women interpret their own past behavior. Together, this model accounted for 46.7% of the total variance ($R^2 = .4672$, $\Delta R^2 = .0581$, $F(14,200) = 12.52$, $p < .001$). The perspective-taking subscale if the Interpersonal Reactivity Index emerged as significant when accounting for current age, retrospective social factors, and retrospective motivational factors. Specifically, perspective-taking was significantly negatively associated with self-reported interpersonal violence during adolescence indicating that women with higher levels of perspective-taking were less likely to self-report interpersonal violence during adolescence. In summary, the final model established three key predictors of self-reported interpersonal violence during adolescence: higher self-reported delinquency during adolescence, higher self-reported victimization during adolescence, and lower perspective-taking ability. All other variables, including social status, impulsivity, moral disengagement, attitudes towards criminals, and current age were non-significant.

Moderated mediation

Using GLM Mediation in jAMM (Gallucci, 2019), we examined whether (, p. 1) perspective-taking mediates the relationship between self-reported victimization during adolescence (X) and self-reported perpetration of interpersonal violence during adolescence (Y), (2)

whether this indirect effect (X → M → Y) is moderated by self-reported delinquency during adolescence (W_1) and (3) if this indirect effect is moderated by current age (W_2). The model is depicted in Figure 1. The proposed indirect pathway (Victimization → Perspective-Taking → Interpersonal Violence) aligns with Relational-Cultural Theory, which suggests that victimization disrupts relational connections, diminishing ability to empathize (e.g. perspective-taking), resulting in increased aggression and interpersonal violence. Social Role Theory further posits that feminine norms, such as empathy and nurturing behaviors, can function as protective factors against interpersonal violence. Disruption to such roles, potentially through involvement in delinquent behaviors, may result in an increased risk of violence, informing our second pathway with delinquency as a moderator. Delinquency was included as a moderator because of its role in diminishing prosocial relationships (e.g. male-majority and mixed-gender peer groups; Haynie et al., 2007; Miller & Brunson, 2000; Peterson et al., 2001; Peterson et al., 2018). Current age was tested as a moderator both because it emerged as a significant demographic in the initial correlation and regression analyses, and to account for potential differences in how participants recall past experiences and their temporal distance from adolescent years, given the retrospective nature of the study. To that end, we hypothesized the following pathways:

1. Path A (X → M): Higher victimization levels during adolescence would be associated with lower perspective-taking levels.
2. Path B (M → Y): Lower perspective-taking would predict higher interpersonal violence during adolescence.
3. Path C Direct Effect (X → Y): Higher victimization levels during adolescence would directly predict interpersonal violence during adolescence.
4. Path D Indirect effect A x B (X → M → Y): Perspective-taking would mediate the relationship between victimization during adolescence and interpersonal violence during adolescence such that higher levels of victimization during adolescence would be associated with lower perspective-taking levels, which in turn would be associated with higher levels of interpersonal violence during adolescence.

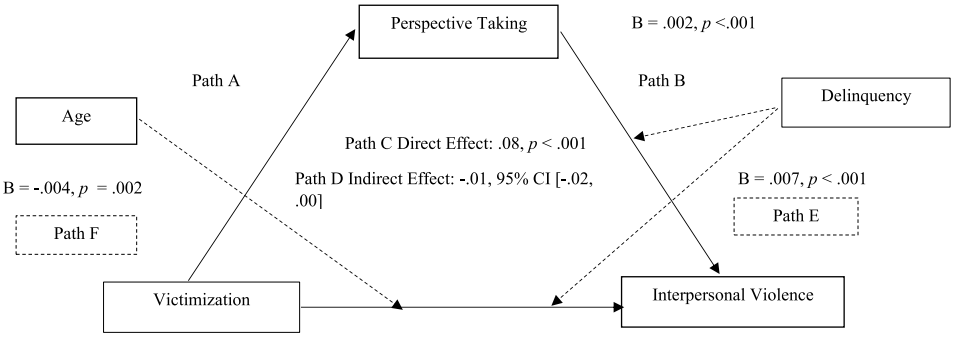

Figure 1. Conceptual and statistical depiction of the moderated mediation model examining the mediating role of perspective-taking between retrospectively reported victimization and interpersonal violence, with retrospective delinquency and current age as moderators. Note: Path A = Victimization → Perspective Taking, Path B = Perspective Taking → Interpersonal Violence, Path C = Direct Effect, Path D = Indirect Effect, Path E = Delinquency as Moderator, Path F = Age as Moderator.

5. Path E Moderated Indirect Effect (X → M → Y moderated by Retrospective Delinquency): The relationship between retrospective victimization on retrospective interpersonal violence via perspective-taking would be moderated by retrospective delinquency. Specifically, higher levels of retrospectively reported delinquency were expected to strengthen the negative association between perspective-taking and interpersonal violence during adolescence. Namely, among individuals who reported higher retrospective delinquency, lower perspective-taking was expected to be associated with higher levels of retrospective interpersonal violence.
6. Path F Moderated Indirect Effect (X → M → Y moderated by Current Age): The indirect effect of retrospective victimization on retrospective interpersonal violence via perspective-taking would also be moderated by current age such that the association between retrospective victimization, and both perspective-taking and retrospective interpersonal violence will weaken as participants' age increases.

The model we examined (see Figure 1) revealed age moderated the direct effect between retrospectively reported victimization and interpersonal violence (B = −.00485, $p = .002$), with full statistical values presented in Table 3. This indicated that as age increases, the effect of experiences of victimization during adolescence, self-reported perpetration of interpersonal violence during adolescence decreases. Interestingly, retrospectively reported delinquency was a significant moderator for direct and indirect pathways between retrospective self-reported experiences of victimization and self-reported perpetration of interpersonal violence during adolescence, with higher levels of delinquency strengthening the direct pathway (B = .0773, $p < .001$). Furthermore, retrospectively reported delinquency during adolescence strengthened the mediation effect of perspective taking on the relationship between retrospectively reported victimization during adolescence and self-reported perpetration of interpersonal violence during adolescence (B = .00154, $p < .001$). The data partially supported the hypothesized moderated mediation model. Namely, perspective-taking does mediate the relationship between retrospective victimization and interpersonal violence, though this mediation is significantly influenced by retrospective delinquency. Age, while moderating the direct effect between retrospective victimization and interpersonal violence, did not significantly impact the mediation pathway.

Correlational analysis was performed first to identify significant associations between retrospective interpersonal violence and key social, motivational, and cognitive factors, guiding the inclusion of these factors in further analysis. Variables not significantly correlated with retrospective interpersonal violence, namely, fear of crime, shame, and guilt,

Table 3. Moderated Mediation Results for Perspective-Taking as a Mediator Between Retrospective Victimization and Interpersonal Violence, with Delinquency and Age as Moderators.

Path	B	SE	95% CI	β	z	p
Indirect (VIC → PT → IV)	−.00333	.00379	[−.01071, .00409]	−.00976	−.881	.378
Direct (VIC → IV)	.06559	.01967	[.02724, .10394]	.19192	3.352	<.001
Total (VIC → IV)	.08764	.01875	[.05088, .12440]	.25605	4.673	<.001
Component (VIC → PT)	.13693	.14791	[−.15296, .42682]	.07563	.926	.355
Component (PT → IV)	−.02435	.00852	[.04106, −.00765]	−.12899	−2.857	.004

Note: VIC = Retrospective victimization; PT = Perspective-Taking; IV = Interpersonal Violence. Analyses were conducted using the jAMM module (Gallucci, 2019) in Jamovi (Jamovi project, 2024).

were excluded from subsequent analysis. Hierarchical regression revealed that higher levels of retrospective victimization and delinquency as well as lower levels of current perspective-taking, significantly predicted retrospective interpersonal violence. At this point, retrospectively reported susceptibility to peer pressure, sexual victimization, gang membership, and social status were excluded due to no longer holding significance in the regression models. The moderated mediation analysis showed that current perspective-taking partially mediated the relationship between victimization and interpersonal violence, and this mediation was significantly moderated by retrospective delinquency. Current age moderated only the direct effect between retrospective victimization and interpersonal violence, suggesting this relationship weakens over time. Together, these findings provide partial support for the hypothesized model, underscoring the interplay between social factors and cognitive factors which will be further discussed in the subsequent section.

Discussion

The present study examined the role of current and retrospective demographic, social, motivational, and cognitive factors on self-reported perpetration of interpersonal violence during adolescence among UK women. A negative correlation was observed between current age and retrospective perpetration of interpersonal violence, highlighting that older participants reported less instances of such behavior during adolescence. At face value, this aligns with research suggesting that girls peak earlier in terms of delinquency compared to boys (Wong, 2012), however it is important to consider that this association may also reflect age-related differences in memory recall. Older participants might underreport adolescent behaviors due to memory decay over time, a known limitation of retrospective self-reports (Widom & Shepard, 1996; Yoshihama et al., 2005).

The final hierarchical regression model, which accounted for demographic, social, motivational, and cognitive factors, revealed that retrospective reports of delinquency and victimization during adolescence remained robust predictors of self-reported perpetration of interpersonal violence during the same period. This supports our initial hypotheses and aligns with existing literature (Sladky et al., 2014; Sutton, 2017). Social role theory helps explain these findings: exposure to delinquent peers and adverse environments may lead individuals to adopt delinquent roles, reflecting a disregard for societal norms and an acceptance of violent behaviors. Victimization experiences can disrupt social roles and identities, leading to maladaptive coping strategies and an increased risk of perpetrating violence. Relational-cultural theory emphasizes that victimization in interpersonal relationships can erode trust and intimacy, further contributing to violence and aggression. Incorporating cognitive justifications measured concurrently, the final model explained a significant proportion (46.7%) of the variance in women's propensity to engage in interpersonal violence during adolescence. Perspective-taking, as measured by the Interpersonal Reactivity Index, emerged as a significant negative predictor, highlighting that the ability to understand and consider others' viewpoints and feelings functions as a protective factor against violence. This finding suggests that women who adhere to traditional female gender norms, which emphasize empathy, are less likely to self-report perpetration of interpersonal violence during adolescence. Impulsivity also approached significance, suggesting that higher levels of impulsivity may increase

the likelihood of violent behavior. Although not significant at the conventional level, this finding aligns with social role theory, which posits that men are socialized to exhibit risk-taking and aggressive behaviors. Women identifying with delinquent roles may adopt these traditionally masculine behaviors, including increased impulsivity and propensity for violence.

To further understand the processes underlying the relationship between retrospective victimization and interpersonal violence, a moderated mediation approach was utilized, examining current perspective-taking ability as a mediator and current age and retrospective delinquency as moderators. The results indicated that older individuals were less likely to translate victimization experiences during adolescence into interpersonal violence during the same time frame. Retrospective delinquency significantly moderated both the direct and indirect pathways between retrospective victimization and retrospective interpersonal violence. Higher levels of retrospective delinquency strengthened the direct pathway between retrospective victimization and retrospective interpersonal violence and weakened the protective effect of perspective taking. This suggests that for highly delinquent individuals, the ability to empathize is less effective in reducing violence, potentially due to learned behaviors that override empathic functions and leading them to act out violently despite being aware of the harm their actions may have on others. These findings can also be understood through the concept of the victim-offender overlap, where victimization and the perpetration of crime and delinquency are strongly related (Erdmann & Reinecke, 2019; Gottfredson, 1981). Delinquency, which diminished the protective role of perspective-taking, further highlights the need to address both relational and societal factors that contribute to delinquency and violence.

While these findings provide valuable insights, they should be interpreted with caution, acknowledging the potential limitations imposed by retrospective recall. Although retrospective self-report measures introduce potential challenges related to memory recall bias, there is substantial empirical support for their continued use in research, particularly for salient experiences. For instance, Widom and Shepard (1996) found that when adults are asked to recall specific and significant events that occurred during a time they were old enough to understand, 'the central features of their accounts are likely to be reasonably accurate'. Furthermore, retrospective reports of childhood physical abuse demonstrated both predictive and construct validity in their study. Similarly, Yoshihama et al. (2005) reported that salient experiences such as interpersonal violence were recalled with improved reliability using structured approaches. In our study, participants were prompted to reflect on specific, impactful events such as interpersonal violence, gang involvement, and delinquency-within well-defined time frames during adolescence (e.g. ages 12–18 for victimization, delinquency, and gang involvement; age 16 for sexual victimization). Additionally, the Social Status Questionnaire was specifically framed to prompt reflection on participants' time in secondary school, further anchoring recall to a meaningful and memorable period. By prompting participants to recall such experiences within a specific timeframe and using items from validated instruments, we aimed to minimize memory recall bias and enhance the accuracy of retrospective reporting.

Understanding these mechanisms underscores the need for comprehensive interventions targeting both victimization experiences and delinquent behaviors. Future research should explore the specific cognitive and behavioral processes that mediate and

moderate these relationships. Application of longitudinal methods to investigate the developmental trajectories of victimization and delinquency will be beneficial for future research, helping to mitigate the adverse effects of victimization and reduce the incidence of interpersonal violence among at-risk populations.

Limitations

After careful consideration of our study design, data collection methods, and statistical analyses, the potential limitations in our research were identified. One potential limitation may be that we did not include socioeconomic status, mental health issues, and substance abuse in our analysis of demographic variables. As these were not accounted for, it is important to note that there could be other factors that might affect the relationship between demographic factors and interpersonal violence. Additionally, the racial and ethnic composition of our sample was relatively homogenous, with the majority identifying as White. This limits the generalizability of our findings to more racially diverse populations. Future research should aim to recruit more ethnically and culturally diverse samples to explore potential variations in the predictors of interpersonal violence. Furthermore, our sample consisted of community-based women who self-reported past involvement in interpersonal violence. While this approach allowed us to examine risk factors among community-based women, it may not fully capture the dynamics of violence among individuals with more extensive criminal justice history.

Another notable limitation of our study is the relatively low internal consistency observed in some of the delinquency subscales. Upon further examination, it became evident that the primary cause of these low reliability scores is not due to flaws in the data itself, but rather the limited number of items included in each subscale. The small number of items in each subscale may lead to underestimation of internal consistency as alpha values are particularly affected by the length of the test (e.g. a short test will have a corresponding low alpha) (Tavakol & Dennick, 2011).

While hierarchical regression analyses can include predictors measured at different time points, it does not inherently establish temporal precedence, especially in the present study as it was cross-sectional, and all variables were measured simultaneously. Thus, the current study did not definitively identify causal pathways for women who reported past involvement in interpersonal violence. Furthermore, the potential influence of social desirability bias is acknowledged, as participants may have provided responses that are deemed as socially desirable, rather than truthful, which may lead to either underreporting or overreporting of certain behaviors and attitudes. This could compromise both the reliability and accuracy of our data, particularly given the sensitive nature of the topic. Finally, the use of retrospective self-report measures, while necessary for this study, introduces the potential for memory recall bias. However, as noted earlier, prior research supports the validity of retrospective reporting for salient, impactful experiences (Widom & Shepard, 1996; Yoshihama et al., 2005), which provides some reassurance about the reliability and applicability of our findings. Nonetheless, the present study illuminated various factors associated with women's engagement in interpersonal violence, offering valuable insight for understanding the complexities of such behavior. Future research should aim to capture these processes more precisely by employing both qualitative and longitudinal methods, which can better account for the temporal and

contextual factors that shape violent behavior over time. Additionally, studies that concurrently measure demographic, social, motivational, and cognitive factors may provide more accurate and temporally precise insights into the pathways leading to female-perpetrated interpersonal violence, reducing the reliance on potentially biased retrospective self-reports. Given the inherent limitations of retrospective recall, such as memory decay and recall bias, this approach would allow researchers to observe these influences as they unfold in real time. Moreover, studies involving high-risk or offending samples may offer a more comprehensive understanding of these pathways, as these populations are more likely to have engaged in such behaviors and may provide richer, more contextually nuanced accounts of their experiences.

Disclosure statement

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

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