



Critical review of theoretical frameworks elucidating the mechanisms accounting for the adverse developmental outcomes observed in children following exposure to intimate partner violence



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ARTICLE INFO

Keywords:

Children exposed to intimate partner violence
Developmental psychopathology
Social learning theory
Attachment theory
Trauma theory

ABSTRACT

The adoption of a useful theoretical framework is a fundamental component of any research study, whether the investigator is using a deductive theory-verifying approach or an inductive theory-generating approach. In an attempt to encourage the use of valid and reliable theoretical frameworks in both research and clinical practice with children exposed to intimate partner violence (IPV), the main purpose of the present paper was to present a critical review of four of the most widely used theoretical frameworks used to explain the mechanisms accounting for the adverse developmental outcomes observed in children exposed to IPV. First, we described the main propositions of these frameworks, which include developmental psychopathology, social learning theory, attachment theory, and trauma theory. Next we provided a critical review of the main empirical findings related to the study of children's adjustment following exposure to IPV within each of these frameworks, as well as a critical comparison of the four frameworks that takes into account their explanatory power concerning the development of adjustment difficulties observed in this population. We concluded our review by recommending the most suitable and useful frameworks with regard to elucidating the mechanisms involved in the development of adjustment difficulties in children following exposure to IPV.

1. Introduction

In the past three decades scholars from diverse disciplines have increasingly focused their research efforts on the study of childhood exposure to intimate partner violence (IPV), and today there is substantial agreement in considering exposure to IPV a form of child maltreatment that affects millions of children and adolescents worldwide (World Health Organization, 2013). Exposure to IPV occurs when caregivers of children under the age of 18 living at home engage in acts of psychological, physical, sexual, and/or financial abuse in the context of a current or former intimate relationship (Holden, 2003). Although a number of theories have been employed to account for the adjustment problems observed in children exposed to IPV, these contributions have been substantially independent from one another (D'Andrea & Graham-Bermann, 2016). As D'Andrea & Graham-Bermann (2016) pointed out, a critical review and comparison of the main theories applied to the study of the adverse developmental outcomes observed in children exposed to IPV is lacking. Therefore, our main purpose was to present a critical review of four theoretical frameworks that are often used to

explain the mechanisms that account for adverse developmental outcomes in children exposed to IPV in an attempt to fill a significant gap in the literature, and to encourage the use of valid and reliable theoretical frameworks in both research and clinical practice with children exposed to IPV. We began by describing the main propositions of these theoretical frameworks, which included developmental psychopathology, social learning theory, attachment theory, and trauma theory. Next we presented a critical review of the main empirical findings within each framework that focused on the adjustment of children exposed to IPV and provided a critical comparison of the explanatory power of the four theories concerning developmental outcomes observed in this population. While a wide range of theoretical models have been used in research on children exposed to IPV, the scope of the present review did not include a comprehensive critique of all models. Instead, we chose to focus on four widely used theoretical frameworks within this field of research, highlighting their applicability and value in explaining adjustment problems. It is hoped that this critique will serve as a guide for the development of intervention programs for this vulnerable population.

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2. Theoretical frameworks

2.1. Developmental psychopathology

2.1.1. Description

Sroufe and Rutter (1984) defined developmental psychopathology as the study of the origins and course of individual profiles and trajectories of maladaptation that encompasses any possible cause, age of onset, transformation in behavioral manifestation, and course of development. The defining features of developmental psychopathology include: i) attention to the understanding of causal processes, ii) appreciation of the role of developmental mechanisms, and iii) consideration of continuities and discontinuities between normality and psychopathology (Rutter & Sroufe, 2000). In order to identify specific developmental pathways of adjustment or maladjustment over time, this perspective takes into account the emerging behavioral repertoire, cognitive and language functions, social and emotional processes, and changes occurring in anatomical structures of the brain throughout the life span.

This perspective studies the interactions of individual, family, social, and cultural factors in order to predict and understand developmental changes and abnormal outcomes (Rutter & Sroufe, 2000). The main objective of developmental psychopathology is to understand how both risk and protective factors influence development, and how each individual's peculiar characteristics such as personality, cognition, emotions, history, and genes, as well as environmental and social factors including peers, family, school, society, and culture interact to influence the development of psychopathology. The understanding of the complex combinations of risk and protective factors that lead to specific adaptive or maladaptive outcomes is relevant in identifying the specific causal processes involved in the development of patterns of maladaptation. This perspective also stresses the need to examine both typical and atypical individual development in relation to meaningful moderators that can contribute to shape development such as sex and age.

2.1.2. Empirical evidence

In the study of children exposed to IPV, empirical support for the developmental psychopathology framework has been provided by a vast number of cross-sectional and longitudinal studies showing the existence of a dose-response relationship between a variety of individual-level and family-level risk factors and the adjustment difficulties observed in these children (Goebert et al., 2012; Hanson et al., 2006a, 2006b; Heberle, Thomas, Wagmiller, Briggs-Gowan, & Carter, 2014; Ma, Grogan-Kaylor, & Delva, 2016; Park, Smith, & Ireland, 2012; Suglia, Duarte, Chambers, & Boynton-Jarrett, 2012; Suglia, Duarte, Sandel, & Wright, 2010). Specifically, when exposure to IPV occurs in the presence of additional significant risk factors including low socio-economic status, low-income and unsafe neighbourhood, exposure to community violence, poor caregiver mental health, harsh parenting, and child maltreatment (abuse and neglect), children show poorer short-term and long-term adjustment as compared to IPV-affected children who are not exposed to additional risk factors (Afifi et al., 2011; Afifi et al., 2014; Campbell, Walker, & Egede, 2016; Coêlho, Andrade, Borges, Viana, & Wang, 2016; Fuller-Thomson, Roane, & Brennenstuhl, 2016; Gilbert et al., 2015; Hagan, Sulik, & Lieberman, 2016; Hanson et al., 2006a, 2006b; Hodges et al., 2013; Kennedy, Bybee, Sullivan, & Greeson, 2010; McLaughlin, Conron, Koenen, & Gilman, 2010). Similarly, when a person-centered approach such as cluster analysis or latent profile analysis is used to analyze profiles of adjustment in children exposed to IPV, the presence of a number of significant protective factors discriminates between profiles of resilience and psychopathology (Graham-Bermann, Gruber, Howell, & Girz, 2009; Martinez-Torteya, Anne Bogat, Von Eye, & Levendosky, 2009; McDonald et al., 2016; McDonald et al., 2016; McDonald, Graham-Bermann, Maternick, Ascione, & Williams, 2016). A number of studies

have found that positive maternal mental health, warm and effective parenting, high socio-economic status, higher level of caregiver education, race/ethnicity, family problem solving ability, and easy temperament of the child play a significant role in discriminating exposed children who show profiles of resilience from those who show adjustment problems. Taken together, the reviewed empirical findings seem to provide support for the proposition of developmental psychopathology that unique interactions of multiple protective and risk factors over time generate individual pathways of adjustment. However, further research that involves complex longitudinal designs is needed to fully elucidate the validity of this proposition.

2.1.3. Transactional model of intergenerational transmission of family violence

Cicchetti and Rizley (1981) proposed a transactional model to explain the causes of child maltreatment and the mechanisms through which violence is transmitted across generations; this model can be translated to the study of IPV-affected families. In this model, environmental forces, caregiver characteristics, and child characteristics influence each other through reciprocal contributions that affect developmental outcomes (Cicchetti & Rizley, 1981). Specifically, the model considers two broad categories of factors that contribute to the occurrence of maltreatment: i) potentiating factors that increase the probability of maltreatment, and ii) compensatory factors that decrease the risk for maltreatment. Both these elements can be further classified into: i) transient factors that are transitory and may indicate a temporary state, including short-term conditions and stresses; and ii) enduring factors that represent more permanent characteristics or conditions such as long-lasting parental, child, or environmental characteristics that can be biological, historical, psychological, and/or sociological in nature. According to this transactional model, child maltreatment, including IPV exposure, occurs only when potentiating factors that include challenges and vulnerabilities outweigh compensatory factors that include protectors and buffers.

Even though, to our knowledge this transactional model has not yet been tested with IPV-affected families, the literature on IPV has clearly established the existence of a dose-response relationship between different types of risk factors and the occurrence of intergenerational transmission of IPV (Cascardi, 2016; Eriksson & Mazerolle, 2015; Miller et al., 2011). Specifically, several cross-sectional and longitudinal studies have shown that a number of individual-level and family-level risk factors such as low socio-economic status, unemployment, low level of education, poor mental and physical health, insecure attachment styles, ineffective/negative parenting practices, positive attitudes toward the use of violence, and a history of involvement with the justice system significantly increase the risk of IPV occurrence and intergenerational transmission of violence within the family (Ehrensaft et al., 2003; Garrido & Taussig, 2013; Jouriles, Mueller, Rosenfield, McDonald, & Dodson, 2012; Mbilinyi et al., 2012; Minter, Longmore, Giordano, & Manning, 2015; Narayan, Englund, Carlson, & Egeland, 2014; Smith, Ireland, Park, Elwyn, & Thornberry, 2011).

2.2. Social learning theory

2.2.1. Description

According to social learning theory (Bandura, 1977, 2001), learning occurs through direct experience by observing the behavior of others, as well as the rewards and punishments following those behaviors; these outcomes respectively increase and decrease the likelihood that the individual will display that behavior again in the future. According to social learning theory, children learn through both observational learning and instrumental learning (Akers & Jennings, 2009). Observational learning is defined as learning by observing someone's behavior and imitating it, while instrumental learning is learning through reinforcement that can either encourage by rewarding or discourage by punishing a certain behavior. The type of reinforcement received

directly impacts the likelihood of imitating that behavior in the future, with rewarded behaviors that are more likely to be imitated and punished behaviors that are more likely to be extinct. These learning mechanisms occur through cognitive processes that promote the development of internal sets of attitudes, beliefs, and expectations regarding what represents appropriate behavior that should be imitated and what types of behavior are inappropriate and therefore should be avoided (Bandura, 1977; Sestir & Bartholow, 2007).

Social learning theory asserts that early in life the family system is the most important source of learning experiences and that children learn about relationships in the context of their family when behavior is modeled and reinforced by caregivers and older siblings (Akers & Jennings, 2009). This perspective asserts that aggressive behavior is learned through observational and instrumental learning within the family of origin during childhood and within the peer group during adolescence. Because caregivers, older sibling, and peers serve as models, exposure to IPV within the family during childhood and association with deviant peers during adolescence promote the development of favourable attitudes toward the use of violence and have a significant and enduring impact on children's propensity to use violence in their close relationships (Howell, Miller, & Graham-Bermann, 2012).

2.2.2. Empirical evidence

A vast body of research including cross-sectional and longitudinal studies has consistently indicated that following exposure to IPV, children and adolescents tend to develop favourable maladaptive attitudes and expectations regarding the use of violence in close relationships, particularly romantic relationships (Howell et al., 2012; Lee, Begun, DePrince, & Chu, 2016; Temple, Shorey, Tortolero, Wolfe, & Stuart, 2013). Consequently, these young persons are at a significant increased risk of displaying externalizing problems during childhood, including conduct problems, and aggressive and defiant behaviors, as well as law-breaking, deviant, and aggressive behaviors during adolescence and adulthood (Espelage, Low, Rao, Hong, & Little, 2014; Fagan & Wright, 2011; Foshee et al., 2011; Foshee et al., 2015; Graham-Bermann & Perkins, 2010; Huang, Vikse, Lu, & Yi, 2015; Knous-Westfall, Ehrensaft, Watson MacDonell, & Cohen, 2012; Latzman, Vivolo-Kantor, Niolon, & Ghazarian, 2015; Lee et al., 2016; Lucas, Jernbro, Tindberg, & Janson, 2016; Ma et al., 2016; Narayan et al., 2014; Palmetto, Davidson, Breitbart, & Rickert, 2013; Temple et al., 2013; Tyler & Schmitz, 2015; Vogel & Keith, 2015; Zurling et al., 2013).

A meta-analysis by Pratt et al. (2010) that evaluated the empirical evidence in support of social learning theory found considerable variations in the magnitude and stability of effect sizes across different research designs. Furthermore, a number of longitudinal studies supported the notion that violent behavior can be unlearned, as the data suggested that physical aggression peaks between the age of two and three and steadily decreases thereafter for most individuals (Ogilvie, Newman, Todd, & Peck, 2014). Some studies have also suggested that adolescents develop favourable attitudes and values regarding the use of violence without prior exposure to aggressive behavior, and then seek out peers with similar attitudes and values (Weerman, 2011), while social learning principles postulate a reverse temporal ordering in which associations with deviant peers precedes the development of attitudes about violence (Bandura, 2001). Most importantly, scholars have acknowledged that not all children exposed to IPV are violent, and that there must be moderating variables not considered in the social learning propositions that differentiate violent children exposed to PV from those who do not develop externalizing difficulties (Dardis, Dixon, Edwards, & Turchik, 2015). Some of these moderating variables have differentiated profiles of adjustment identified among children exposed to IPV (see for example McDonald, Graham-Bermann, et al., 2016).

2.2.3. The intergenerational transmission of family violence

A social learning model of the mechanisms involved in the intergenerational transmission of IPV was provided by Ronald Akers (1998),

who stressed the imitation of aggressive behavior across generations and the transmission of beliefs, values, and norms favourable to the use of violence in close relationships. Akers's social learning theory included four key elements: 1) imitation, 2) definitions, 3) differential association, and 4) differential reinforcement. Imitation refers to the emulation of significant others who represent role models, particularly parents, while definition refers to the attitudes and values individuals hold regarding the morality of the law in general and the wrongfulness of specific deviant/criminal behaviors, such as IPV perpetration. Differential association represents the specific influence of attitudes and behaviors of significant others on individual's conduct through repetitive interactions and "associations", while differential reinforcement refers to the net balance of anticipated costs and rewards associated with a given behavior, such as IPV perpetration. Accordingly, Akers's model predicted that adolescents and adults who have been repeatedly exposed to IPV within their family will have more positive attitudes about the use of violence in romantic relationships, seeing it as more rewarding than costly in terms of obtaining their goal (e.g., control in the relationship), and will therefore be more likely to engage in IPV (Cochran, Sellers, Wiesbrock, & Palacios, 2011; Sellers, Cochran, & Branch, 2005).

In addition to significant methodological and theoretical limitations (see Stith et al., 2000 for a review), the literature exploring the empirical value of the social learning model of intergenerational transmission of IPV has found only partial support. Specifically, even though there is substantial evidence that both boys and girls exposed to IPV in their family of origin tend to develop maladaptive beliefs and attitudes about family violence (Howell et al., 2012) and show aggressive behavior in a variety of context throughout their life span (Espelage et al., 2014; Foshee et al., 2011; Foshee et al., 2015; Latzman et al., 2015; Palmetto et al., 2013), when this model of intergenerational transmission of violence is rigorously empirically tested, only weak and partial support has been found for its propositions (Akers, 1998; Bevan & Higgins, 2002; Boeringer, Shehan, & Akers, 1991; Cochran et al., 2011; Cochran, Jones, Jones, & Sellers, 2016; Eriksson & Mazerolle, 2015; Fritz, Slep, & O'Leary, 2012; Jennings, Park, Tomsich, Gover, & Akers, 2011; Sellers et al., 2005; Zavala, 2016). Additionally, a meta-analysis suggested the existence of a weak to moderate association between exposure to IPV during childhood and involvement in violent romantic relationships during adolescence and adulthood (Pratt et al., 2010). When combined, this empirical evidence shows that not all children exposed to IPV become involved in violent romantic relationships in adolescence or adulthood, as well as not all adolescents or adults involved in violent romantic relationships have a history of exposure to IPV.

2.3. Attachment theory

2.3.1. Description

According to John Bowlby (1969, 1973, 1980, 1988), attachment is a genetically programmed and enduring emotional bond that develops during the first two years of life between infants and their primary caregivers. As part of the attachment behavioral system, infants have an innate repertoire of behaviors (e.g., smiling and crying) that are designed to elicit caregiver proximity. The attachment behavioral system is especially activated by emotional distress, and when the attachment figure is sensitive and responsive to the child's physical and emotional needs offering physical contact, reassurance, and comfort, attachment behaviors cease, and over time the child learns that the attachment figure is reliable and that the attachment relationship provides a safe base and a safe haven (Bowlby, 1982). However, when the attachment figure is unavailable, unreliable, or insensitive to the child's needs, the attachment system will continue to be activated and angry behavior will appear, followed by despair and detachment. According to Bowlby (1982), the caregiver-infant interactions that occur in the first two years of life are crucial because children over time internalize experiences

with caregivers in the form of internal representations or internal working models (IWMs) that will represent a prototype for later relationships outside the family and involve expectations about the behavior of individuals in close relationships. The IWMs are mental representations that the child develops over time about the self, others, and the relationship based on whether or not the attachment figure is responsive to needs of support and protection. The IWMs involve also beliefs regarding whether or not the self is worthy of support and protection from others, in particular the attachment figure.

According to the quality of the caregiver-child interactions, over time infants develop different attachment styles that can be assessed through the experimental procedure Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978). Specifically, infants can be classified as having either secure attachment or insecure attachment, and insecure attachment can be further divided into avoidant attachment, anxious-ambivalent attachment, and disorganized-disoriented attachment (Main & Solomon, 1986).

2.3.2. Empirical evidence

Research over the past 30 years, including literature reviews and meta-analyses of cross-sectional and longitudinal studies, has established significant associations between secure attachment during infancy and healthy functioning in a variety of domains throughout the life span, including emotional, psychological, and social domains, while insecure attachment has been linked concurrently and prospectively to a variety of adjustment difficulties during childhood, adolescence, and adulthood (Ogilvie et al., 2014; Park, 2016; Savage, 2014; Southwell, 2016; Sroufe, 2005). Research has also shown that exposure to IPV significantly and negatively affects children's functioning through the disruption of the infant-caregiver relationship (Berdot-Talmier, Aubrion, Pierrehumbert, & Gaudron, 2016; Bolen, 2005; Buchanan, Power, & Verity, 2014; Huth-Bocks, Levendosky, Bogat, & Von Eye, 2004; Huth-Bocks, Levendosky, Theran, & Bogat, 2004; Levendosky, Bogat, Huth-Bocks, Rosenblum, & von Eye, 2011; Theran, Levendosky, Anne Bogat, & Huth-Bocks, 2005; Zeanah et al., 1999).

Children exposed to IPV are less likely to have their basic attachment needs fulfilled, more likely to develop negative IWMs and relational patterns, and must deal with their attachment figures as potential sources of danger (Godbout, Dutton, Lussier, & Sabourin, 2009). Empirical studies consistently found that children exposed to IPV are likely to form insecure or disorganized attachment to their caregivers and to maintain these attachment styles in adulthood (Berdot-Talmier et al., 2016; Muller, Sicoli, & Lemieux, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Sroufe, & Egeland, 2000). From an attachment perspective, it can be hypothesized that the compromised parenting abilities (Gallagher, Huth-Bocks, & Levendosky, 2011), due in part to the distress and mental health problems frequently observed in caregivers who experience IPV (Holmes, 2013; Howell, Graham-Bermann, Czyz, & Lilly, 2010), contribute to the development of adjustment difficulties in children following exposure to IPV through the disruption of the caregiver-child attachment. This hypothesis has been supported by a vast literature showing that the quality of the mother-child relationship represents one of the most significant predictors of normative functioning in children following exposure to IPV, and one of the factors discriminating among profiles of resilience and psychopathology in these children (Graham-Bermann et al., 2009; Miller-Graff, Cater, Howell, & Graham-Bermann, 2016; Skopp, McDonald, Jouriles, & Rosenfield, 2007). Specifically, while some studies have found that maternal warmth, hostility, and mental health are significant mediators and moderators of the associations between exposure to IPV and adjustment difficulties in children (D'Andrea & Graham-Bermann, 2016; Miller-Graff, Cater, et al., 2016; Skopp et al., 2007), others have shown that children who show resilience following IPV exposure have mothers with better mental health and parenting skills (Graham-Bermann et al., 2009).

Further empirical evidence for the proposition that responsive

nurturing relationships with available caregivers are essential for emotional and cognitive development during childhood has been provided by neuroscience (Stien & Kendall, 2004). Neurobiological research conducted with vulnerable children who have experienced adverse and challenging life circumstances such as child maltreatment, has shown that a secure attachment to an available and nurturing caregiver produces a growth-facilitating environment that builds neuronal connections and integrates brain systems.

2.3.3. Attachment-based model of intergenerational transmission of IPV

Some scholars have proposed a model informed by attachment theory to explain the mechanisms through which exposure to IPV may affect children and account for their vulnerability to involvement in violent romantic relationships during adolescence and adulthood (Levendosky, Lannert, & Yalch, 2012). In this model of intergenerational transmission of violence, IPV is conceptualized as an assault on the woman, as well as on the caregiving system as a whole, in which damaged IWMs passed across generations negatively influence social and emotional functioning of women (both as individual and as mothers) and children. According to this model, due to experiencing IPV, mothers become fearful and overwhelmed, and often respond to their infants' distress with either projective identification, where the infant is perceived to be helpless and vulnerable as themselves, or with projection, in which the infant is perceived to be aggressive and hostile like the abusers. These psychological distortions lead to inconsistent, hostile, or insensitive parenting behaviors that set in motion the development of insecure or disorganized attachment in children, and so the cycle of violence is likely to continue.

A vast body of cross-sectional and longitudinal research has supported this model, showing that exposure to IPV during childhood is a significant risk factor for the development of insecure as well as disorganized attachment, which in turn are significant risk factors for IPV perpetration and victimization during adolescence and adulthood in both men and women (Allison, Bartholomew, Mayseless, & Dutton, 2007; Cameranesi, 2016; Dumas, Pearson, Elgin, & McKinley, 2008; Godbout, Lussier, & Sabourin, 2009; Godbout et al., 2016; Sutton, Simons, Wickrama, & Futris, 2014). However, it is important to consider what some scholars consider being the main limitation of this model (Guille, 2004). The model has been developed to explain male-perpetrated and unidirectional IPV or woman battering (Johnson, 1995, 2006) and is therefore not fully suitable to describe the most common type of IPV found in the general population, which is mutually perpetrated and known as situational couple violence (Johnson, 1995, 2006), as well as IPV occurring in families where fathers are the main caregivers.

2.4. Trauma theory

2.4.1. Description

Psychological trauma is conceptualized as an adaptive response to very stressful situations or events involving the direct experience or indirect exposure to actual or threatened death, serious injury, or sexual violence; indirect exposure can occur by witnessing the occurrence of a traumatic event to others or learning about the occurrence of such an event to close family members or close friends (American Psychiatric Association, 2013). These highly stressful and frightening experiences that overwhelm individuals' ability to cope may result in neurobiological alterations, particularly a dysregulation of the hypothalamic-pituitary-adrenal axis (HPA-axis), that gives rise to a set of mental health symptoms collectively known as trauma symptoms or Post-Traumatic Stress Disorder (PTSD) symptoms (APA, 2013; Pierce & Pritchard, 2013). Trauma symptoms consist of persistent and disruptive psychological and physiological distress reactions that significantly impair daily functioning by seriously compromising social, emotional, cognitive, and physical functioning and impairing the individual's physical health, as well as the ability to think and remember, solve problems,

control behavior, relate to others, and regulate emotions and arousal (Cloitre et al., 2009; D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012; Stien & Kendall, 2004; van der Kolk, 2014). Because of children's fragile developing psychological and physiological systems, a number of studies have shown that trauma occurring during childhood is particularly damaging as it significantly compromises healthy brain development therefore negatively affecting children's functioning in a variety of domains, including psychological, cognitive, social, and emotional domains (Cloitre et al., 2009; D'Andrea et al., 2012; Klorer, 2004; Perry, 2006, 2009; Schore, 2015; Stien & Kendall, 2004; van der Kolk, 2014; Wiese, 2013).

Notwithstanding the devastating nature of unintentional injury, natural disasters, and sudden loss, some feminist scholars have suggested that childhood trauma due to exposure to chronic interpersonal violence such as exposure to IPV, is a qualitatively different experience (D'Andrea et al., 2012; Herman, 1992; Teague, 2013). In light of the complexity of emotional and behavior problems that chronic childhood trauma typically causes, Herman (1992) proposed the term "complex trauma" or "complex PTSD" to describe the distress reactions of children exposed to chronic interpersonal trauma who in addition to the classic PTSD symptoms of re-experiencing, experiential avoidance, and hyper-arousal, have also difficulties with chronic affect dysregulation, self-harming behaviors, dissociative problems, somatization, and distortions in concepts of self and others.

In an attempt to elucidate the mechanisms involved in the marked variability observed across trajectories of recovery of individuals who experience trauma, Tedeschi and his research group (Tedeschi, 2004; Tedeschi & Calhoun, 1995; Tedeschi, Park, & Calhoun, 1998) formulated the construct of posttraumatic growth (PTG) to describe the experience of positive changes that occur as a result of the struggle with adverse and highly challenging life events. According to these authors (Tedeschi & Calhoun, 2004), PTG is manifested in five domains: 1) increased appreciation for life in general and changed sense of priority; 2) closer, more intimate and meaningful interpersonal relationships; 3) increased sense of personal strength; 4) identification of new life possibilities; and 5) richer existential and spiritual life. The authors argue that the process of PTG can follow a variety of traumatic events including child maltreatment and involves a deep cognitive revision of the set of beliefs and assumptions individuals hold regarding the world.

2.4.2. Empirical evidence

Originally observed in war veterans following World War II (Brown, 2004), research over the past three decades has extensively recognized that PTSD symptoms are a very common psychological problem observed in women who have experienced IPV, as well as in their children (Brown, 2004; Erolin, Wieling, & Parra, 2014; Galano, Miller, & Graham-Bermann, 2014; Graham-Bermann, Castor, Miller, & Howell, 2012; Graham-Bermann, DeVoe, Mattis, Lynch, & Thomas, 2006; Grant et al., 2003; Grant et al., 2006; Howell, Barnes, Miller, & Graham-Bermann, 2016; Hunt, Martens, & Belcher, 2011; Insana, Foley, Montgomery-Downs, Kolko, & McNeil, 2014; Koolick et al., 2016; Levendosky, Bogat, & Martinez-Torteya, 2013; Miller, Howell, & Graham-Bermann, 2012; Miller-Graff, Galano, & Graham-Bermann, 2016; Perry, 2006, 2009; Piotrowski & Cameranesi, 2018; Wiese, 2013; Yalch, Black, Martin, & Levendosky, 2016).

Immunology and neuroscience have provided further support for the relevance of trauma theory in the study of children following exposure to IPV. In particular, immunology has shown that the trauma of experiencing IPV during pregnancy impacts not only women but also their developing fetuses by altering immune responses in cord blood cells involved in the expression of allergic disease, therefore predisposing the unborn children to develop immunologic disease after birth, particularly asthma (Bair-Merritt et al., 2015; Breiding & Ziembroski, 2011; Wright et al., 2010). Neuroscience has provided evidence of HPA-axis dysregulation in infants whose mothers experienced IPV during pregnancy (Bair-Merritt, Johnson, Okelo, & Page, 2012; Levendosky

et al., 2016), as well as of abnormalities in the amygdala, the hippocampus, and the medial frontal cortex part of the brains of maltreated children (Nutt & Malizia, 2004).

For the most part, the available empirical data on PTG concerns adults who have faced a variety of adverse and challenging life events such as cancer patients (Rajandram, J., McGrath, & Zwahlen, 2011), war veterans (Tsai, Mota, Southwick, & Pietrzak, 2016), and survivors of IPV (Valdez & Lilly, 2015). Only recently scholars have begun to investigate PTG among children (Milam, Ritt-Olsen, & Unger, 2001). Since PTG implies an established set of schemas that are changed in the wake of trauma, this model may be more appropriate to describe positive changes experienced after a severe trauma by adolescents or adults than by young children (Tedeschi and Calhoun, 2004). However, a systematic review by Meyerson, Grant, Carter, and Kilmer (2011) found some support for the applicability of the PTG construct to children and adolescents and proposed a specific model of PTG in this population. Unfortunately, none of the studies they reviewed included survivors of child maltreatment or exposure to IPV, making this a very promising area for future research. In a recent investigation of PTG in adult daughters of women affected by IPV, Anderson and Bang (2012) described the recovery process, including PTG, of 15 adult daughters of battered women using qualitative inquiry. The authors found that participants' recovery involved a cognitive restructuring of childhood misconceptions of themselves, their parents, and the trauma itself. Key to the PTG process was an interwoven process of meaning-making including two specific elements of understanding: the cause and effect of IPV and the significance of suffering from such exposure in childhood. Distancing from their parents, education on IPV, accessing therapeutic/support services, and having a spiritual connection contributed to enhanced insight and wisdom in the study participants.

2.4.3. Intergenerational transmission of parental trauma

Based on the observation that trauma symptoms frequently co-occur between mothers and their children (Lannert et al., 2014), Scheeringa and Zeanah (2001) developed the relational model of trauma, which proposes that maternal trauma symptoms following exposure to a traumatic event may elicit or exacerbate infant traumatic stress symptoms by impairing maternal parenting behavior. Prior research provides substantial support for the applicability of the relational trauma model to IPV-exposed mother-child dyads (Graham-Bermann et al., 2012; Lannert et al., 2014; Levendosky et al., 2013; Miller-Graff, Cater, et al., 2016).

Consistent with the relational model of trauma, several studies have shown that mother and child PTSD symptoms often co-occur in IPV-exposed dyads (Bogat, DeJonghe, Levendosky, Davidson, & von Eye, 2006; Levendosky et al., 2013), and that maternal psychopathology and well-being are significant mediators of the relationship between IPV exposure and parenting practices (Huang, Wang, & Warrener, 2010; Nicklas & Mackenzie, 2013). Furthermore, research has consistently shown that some mothers affected by IPV are more likely to engage in parenting that is less effective or potentially harmful for developing infants, such as harsh, abusive, or neglectful parenting (for a review see Gallagher et al., 2011).

2.5. Critical comparison of theoretical frameworks

A critical discussion regarding the applicability of the reviewed theories to the study of children's adjustment following exposure to IPV should start with a general evaluation of "usefulness" (Higgins, 2004). Table 1 presents a summary of the key elements as well as major strengths and limitations of the four theoretical frameworks reviewed.

All reviewed theories are highly coherent, as their constructs and propositions are comprehensible, consistent, and non-contradictory, thus allowing for the formulation of clear predictions (Higgins, 2004). As a high-level theory, developmental psychopathology is highly generalizable because it can explain virtually all developmental pathways

Table 1

Key elements, strengths, and limitations of the four theoretical frameworks here critically reviewed.

Key elements	Strengths	Limitations
Developmental psychopathology - Study of the origins and course of individual patterns of maladjustment. - Individual (personality, cognitions, emotions & genes), family, social, and cultural factors are studied in their complex interaction and used to understand and predict developmental changes and psychopathology.	- Developmental perspective with high explanatory power when applied to the study of children and adolescents exposed to IPV. - Wide range of applicability: the theory makes predictions and account for a broad range of phenomena. - Highly coherent. - Supported by empirical evidence.	- Not easy testable: the theory is difficult to falsify because of its low specificity and broad range of factors included. - Focus on psychopathology and simplistic understanding of resilience. - Not economical: all possible factors are included. - Low intervention applicability due to its lack of specificity and the wide array of factors included.
Social learning theory - Individuals learn through observational learning/modeling, vicarious learning that occurs by watching someone perform an action. - Imitation is more likely when the behavior is rewarded, and the actor is highly regarded by the observer.	- Testable. - Highly economic. - Highly coherent. - Intervention applicability: development of Cognitive Behavioral Therapy (CBT) focused on changing assumptions about violence.	- Low explanatory power – Some children and adolescents exposed to IPV do not show externalizing behaviors. - Empirical verification is weak. - Narrow range of applicability: the theory is generalizable to the study of externalizing behaviors only. - Not applicable to the study of resilience.
Attachment theory - Infants are genetically programmed to develop attachment to adult caregivers. - The quality of the infant-caregiver attachment affects children's functioning in a variety of domains. - Insecurely attached children will develop negative Internal Working Models (IWMs) and will reproduce negative relationship patterns in current friendships and in adult romantic relationships.	- Developmental perspective: continuity in attachment styles during the life span. - High explanatory power and wide range of applicability: mother-child, intimate partners, and resilience. - Supported by empirical evidence. - Highly coherent. - Testable at the individual and dyadic levels. - Economical. - Intervention applicability: development of attachment-focused interventions. - Supported by Neuroscience.	- Does not take into account the environments surrounding the individual (i.g., family, school, neighbourhood, etc.). - Feminist scholars' critique: the strong emphasis on the mother-child relationship leads to mother blaming.
Trauma theory - The exposure to traumatic events results in a number of physical and psychological health problems, known as trauma symptoms. - Compared to other traumatic events, the trauma of exposure to IPV is a qualitative different experience due to its chronic and interpersonal nature. - Complex trauma or complex PTSD. - Posttraumatic Growth (PTG).	- High explanatory power: it explains psychopathology and posttraumatic growth (PTG). - Supported by empirical evidence. - Wide range of applicability: a broad range of traumatic events and traumatic symptoms can be studied. - Highly coherent. - Testable. - Economical. - Intervention applicability: development of trauma-focused cognitive behavior therapy (TF-CBT).	- Little attention to environmental factors. - Limited research regarding its application to the study of adverse developmental outcomes in children following exposure to IPV.

of adjustment and maladjustment and it is well supported by empirical evidence (Cicchetti & Toth, 1995). On the other hand, this framework is neither parsimonious nor easily testable and falsifiable because it considers virtually all possible protective and risk factors that affect human development: it is therefore difficult to use to make specific predictions regarding real-world phenomena. Conversely, social learning theory is highly economical and easily testable, as it includes few clear propositions regarding human learning processes that can be used in making predictions about human behavior. However, this framework received only limited support from empirical evidence (Pratt et al., 2010). Furthermore, some scholars have argued that the model, although parsimonious, is overly simplistic and does not account for all factors predicting human behavior generally, and aggressive behavior specifically (Turchik, Hebenstreit, & Judson, 2016). It therefore has low explanatory power when used to predict specific human behaviors. Additionally, even though theoretically social learning theory has a wide range of applicability, as it can be applied to the study of all learning processes and in predicting any type of human behavior, due to the partial empirical support received, in practice the model is used to make vague predictions regarding a limited number of behaviors (e.g., some types of aggressive behaviors). Attachment theory is an economical and testable middle-level theory that has been verified at

individual and dyadic levels, and has been applied to the study of a wide range of interpersonal phenomena throughout the life span such as mother-child and romantic relationships, receiving considerable support by empirical evidence (Mikulincer & Goodman, 2006; Mikulincer & Shaver, 2016). This theoretical model provides specific criteria to classify individuals in different typologies according to their ways of behaving in significant relationships, and its validity in predicting behaviors at the individual level and relationship outcomes at the dyadic level has been extensively established empirically. Similarly, trauma theory has been largely supported by empirical evidence, is parsimonious, testable, and applicable to explain the development of a variety of trauma symptoms following a wide range of traumatic experiences throughout the life span (Van Leeuwen & Brouwer, 2013). This model presents a clear and coherent explanation of the neuropsychological mechanisms involved in the development of psychopathological symptoms in individuals who experience events that challenge their coping capabilities, which can be used to predict adjustment and maladjustment outcomes in high-risk populations.

When considering the application of theories to the study of children exposed to IPV (see Table 2), it should be noted that developmental psychopathology, attachment theory, and trauma theory have all received extensive empirical support (Cicchetti & Toth, 1995;

Table 2

Empirical evidence on the application of the four theoretical frameworks critically reviewed in research on children exposed to IPV and its implications.

Empirical evidence	Implications
<p>Developmental psychopathology</p> <ul style="list-style-type: none"> - Supported by empirical studies investigating individual developmental pathways of adjustment and maladjustment in children following exposure to IPV. - High explanatory power when applied to the study of adjustment in children following exposure to IPV. - Focus on psychopathology and simplistic understanding of resilience as positive adaptation due to the presence of protective factors that outnumber risk factors. 	<ul style="list-style-type: none"> - This theoretical framework is able to account for the variability in adjustment observed in children following exposure to IPV. - Wide range of applicability in research on children exposed to IPV. - Inability to elucidate the complex mechanisms accounting for resilient developmental outcomes in children following exposure to IPV. - Need for the adoption of a more complex model when studying resilience in children exposed to IPV.
<p>Social learning theory</p> <ul style="list-style-type: none"> - Lack of empirical support: low empirical validity when applied to studying adjustment and functioning in children following exposure to IPV. - Narrow range of applicability in the study of adjustment in children following exposure to IPV: not applicable to the study of internalizing problems and resilience. - Limitations of the social learning explanation for the intergenerational transmission of family violence: inability to account for the wide variability in long-term outcomes observed in children following exposure to IPV. - Cognitive Behavioral Therapy (CBT) intervention programs that focus on changing children's assumptions about violence show preliminary promising results. 	<ul style="list-style-type: none"> - It does not fully clarify the mechanisms involved in the developmental outcomes observed in children following IPV exposure. - Applicable to studying the development of externalizing difficulties in some children following exposure to IPV. - The theory fails to explain why the vast majority of children who grow up in an IPV-affected family do not become involved in violent romantic relationships later in life. - Useful theoretical framework in developing some interventions.
<p>Attachment theory</p> <ul style="list-style-type: none"> - Supported by empirical studies investigating the mother-infant/child relationship in IPV-affected families and the dynamics involved in the occurrence and maintenance of IPV. - Attachment-based model of intergenerational transmission of IPV. - Effectiveness of attachment-focused intervention programs for IPV-affected families. - Lack of research on the father-child relationship and blaming of mothers. 	<ul style="list-style-type: none"> - Wide range of applicability in the study of IPV-affected families. - Applicable to studying the mechanisms involved in the transmission of maladaptive relational patterns across generations, including IPV. - Useful theoretical framework in developing a wide range of interventions. - More research on the father-child relationship is warranted.
<p>Trauma theory</p> <ul style="list-style-type: none"> - Promising preliminary empirical evidence supporting the use of the theory in elucidating the mechanisms accounting for trauma symptoms and resilience in children following exposure to IPV. - Supported by Immunology and Neuroscience. - Trauma-focused intervention programs with validated effectiveness in significantly reducing trauma symptoms in mothers experiencing IPV and their children. 	<ul style="list-style-type: none"> - Wide range of applicability in research on children exposed to IPV. - Promising area for further investigation. - Useful theoretical framework in developing interventions for mothers experiencing IPV and their children.

Mikulincer & Shaver, 2016; Van Leeuwen & Brouwer, 2013). Conversely, the empirical validity of social learning theory in explaining adjustment outcomes of children exposed to physical IPV has been seriously challenged by studies showing that between 15% and 60% of children exposed to physical IPV do not demonstrate aggressive or deviant behavior (McDonald, Corona, et al., 2016; McDonald, Graham-Bermann, et al., 2016). Furthermore, as noted above, the social learning explanation of the intergenerational transmission of family violence presents serious limitations, as it is not able to account for the wide variability in long-term outcomes observed in children exposed to IPV, failing to explain why the vast majority of these children do not become involved in violent romantic relationships during adulthood. Therefore, the major limitations of social learning theory reside in its lack of empirical support and narrow range of applicability in the study of children exposed to IPV, as it does not provide predictions regarding the development of internalizing problems in this population, as well as possible resilience developmental pathways. However, since some research has shown that some children exposed to IPV do hold maladaptive attitudes and beliefs regarding the commonality and acceptability of violence in romantic relationships (Howell et al., 2012), the principles of social learning theory have been used to develop Cognitive Behavioral Therapy (CBT) intervention programs that focus on changing children's assumptions about violence, and preliminary data show promising results (Graham-Bermann, Miller-Graff, Howell, & Grogan-Kaylor, 2015; Jouriles et al., 2016).

Even though developmental psychopathology has received extensive empirical support in its application to the study of individual developmental pathways of adjustment and maladjustment in this population, some limitations warrant consideration. Particularly, the focus of this model on psychopathology and its simplistic understanding of resilience as positive adaptation due to the presence of protective factors that outnumber risk factors, limit its use to the study of the complex mechanisms involved in resilient profiles of adjustment in

children exposed to IPV. In this regard, a more complex resilience model that integrates principles derived from different theoretical frameworks, such as the Resilience Portfolio Model recently proposed by Grych, Hamby, and Banyard (2015), appears more adequate to describe the complex interaction of factors involved in the development of children exposed to IPV. The transactional model of intergenerational transmission of family violence (Cicchetti & Toth, 1995) can also be considered as too simplistic, as it fails to explain why some individuals who experience very challenging life circumstances become abusive while others do not.

As this review has shown, attachment theory represents a highly useful and valid theoretical framework in the study of children exposed to IPV. The proposition of substantial continuity of attachment styles throughout the life span has informed developmental research, and its model has been applied to the study of the mother-infant/child relationship in IPV-affected families, as well as to the investigation of the dynamics involved in the occurrence and maintenance of IPV during adulthood (Mikulincer & Shaver, 2016), receiving extensive empirical support in both areas (see for example Allison et al., 2007; Berdot-Talmier et al., 2016). Attachment theory has been supported by neuroscience (Stien & Kendall, 2004) and the attachment-based model of intergenerational transmission of IPV offers a useful framework to understand the mechanisms involved in the transmission of maladaptive relational patterns across generations (Levendosky et al., 2012). Further, several attachment-focused intervention programs developed to strengthen positive parenting and promote healthy mother-child attachment in the context of IPV, have been empirically tested showing very positive outcomes (for instance Howell et al., 2015). Some feminist scholars, however, have criticized this perspective for its focus on the mother-child relationship that has led to a general lack of research on the father-child relationship and blaming of mothers for their lack of positive parenting in the context of IPV (Guille, 2004).

Finally, although its application to the study of children exposed to

IPV is still limited, trauma theory has been very promising in elucidating the mechanisms involved in the development of trauma symptoms in this population (see for instance Lannert et al., 2014). The propositions of trauma theory, as well as the construct of complex trauma (Herman, 1992), relational trauma (Scheerigan & Zeanah, 2001), and PTG (Tedeschi and Calhoun, 2004) can all be very valuable in elucidating the pathways through which childhood exposure to IPV can lead to varying profiles and timelines of resilience and psychopathology. In the study of children exposed to IPV, the propositions of trauma theory have been supported by immunology (Bair-Merritt et al., 2015) and neuroscience (Levendosky et al., 2016), and have been applied to the development of trauma-focused intervention programs with validated effectiveness in significantly reducing trauma symptoms in mothers exposed to IPV and their children (Graham-Bermann et al., 2015; Graham-Bermann & Miller, 2013; Lieberman, 2007). Even though outside the domain of applicability of the frameworks, a final consideration should be formulated regarding the little attention that both attachment theory and trauma theory pay to contextual factors outside the individual such as family context, school system, neighbourhood, and socio-cultural variables that have been recognized to play a significant role in shaping the effects of IPV exposure on children (Graham-Bermann et al., 2006; Ungar, 2011, 2013).

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