
INTRODUCTION TO THE SPECIAL SECTION

The effect of maltreatment experiences on maltreating and dysfunctional parenting: A search for mechanisms

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The far-reaching consequences of childhood maltreatment are well documented, and can include the transmission of adversity and risk onto subsequent generations. Research has demonstrated that a history of child maltreatment can affect the extent to which parents struggle with day-to-day parenting and can also increase parents' risk of maltreating their own child (Dubowitz et al., 2001; Madigan et al., 2019; Savage, Tarabulsky, Pearson, Collin-Vézina, & Gagné, 2019). In order to develop effective interventions to prevent maltreatment in subsequent generations, further knowledge on the mediating and moderating mechanisms underlying the intergenerational transmission of maltreatment are urgently needed. Enhancing understanding of mechanisms of intergenerational maltreatment is imperative for theory development and testing as well. To date, several possible theoretical mechanisms of transmission have been proposed, but few have been adequately tested and/or confirmed.

This Special Section was initiated in light of the many unanswered questions regarding the underlying mechanisms involved in the effect of child maltreatment history on later parenting. *Why* are parents with childhood maltreatment experiences at increased risk of parenting problems and even maltreating their own children? *How* does the risk of maltreatment get passed from one generation to the next? Is transmission of maltreatment, or otherwise dysfunctional or severely inadequate parenting, an environmental or a genetic risk effect, or is it more likely to be explained by the interplay of these risks? Is intergenerational transmission explained by the unexpected, deleterious, and insidious experience itself or (also) by the parent's additional vulnerability to other types of violence?

Are there certain risk factors or individual characteristics that influence the extent to which different individuals' parenting is affected by the experience of maltreatment? Are interventions aiming to mitigate family risk factors as effective for parents with and without childhood experiences of maltreatment? In an effort to answer some of these complex but pressing questions, the ultimate goal of this Special Section is to shed light on empirical evidence to further select, shape, and fine-tune existing theories and to drive the field toward additional innovative research on the intergenerational transmission of maltreatment.

In this introduction, we first present the most commonly used theoretical perspectives that have guided research to date on mechanisms of intergenerational risk. We then provide an overview of the series of 13 papers that compose this Special Section, including two critical, comprehensive meta-analyses, one on child maltreatment history and parenting behavior (Savage et al., 2019) and the second on the intergenerational transmission of maltreatment (Madigan et al., 2019), as well as 11 empirical papers from different research groups worldwide that explore and describe a diverse array of mediators and moderators that play a role in the intergenerational transmission of maltreating and dysfunctional parenting. We hope this Special Section stimulates additional research undertakings on the transmission of risk across generations, given that studies devoted to this matter are relatively scarce, but undoubtedly crucial for the development of prevention and intervention efforts aiming to break the cycle of intergenerational risk.

Theoretical Perspectives on Mediating Mechanisms

Several developmental scientists have described theoretical mechanisms that could explain the effect of early maltreatment experiences on parenting behaviors, including social learning theory, social information processing, attachment theory, neurophysiological models, developmental psychopathology, and heritability models (Cicchetti & Valentino, 2006; Rutter & Sroufe, 2000; Sroufe & Rutter, 1984; Widom

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& Wilson, 2015). Each of these theoretical models will be reviewed in turn below.

Social learning theory

A hallmark theory for understanding the transmission of maltreatment, in particular the perpetration of physical maltreatment and harsh parenting, is social learning theory (Bandura, 1973). This theory posits that parents imitate the parenting behavior of their own parents. The inaccurately perceived “positive effects” of these parenting practices (e.g., “having been physically punished made me the good person I am today”) purportedly motivates parents to repeat these behaviors in interactions with their own children. Research showing that physical maltreatment increases the risk of later harsh parenting or physical maltreatment of one’s own children (Pears & Capaldi, 2001) or the risk of later aggression in general (Braga, Gonçalves, Basto-Pereira, & Maia, 2017; Dodge, Pettit, Bates, & Valente, 1995; Widom, 1989) provides support for social learning theory (see Muller, Hunter, & Stollak, 1995).

Social information processing

Another model, mostly used to explain transmission of physical maltreatment, is the social information processing model (Milner, 1993). Drawing on Dodge’s (1986; see also Dodge, Bates, & Pettit, 1990; Dodge, Pettit, McClaskey, & Brown, 1986) proposition that social information processing plays an important role in the intergenerational transmission of violence, Milner (1993) specifically described a social information processing model applicable to physical maltreatment. This social information processing model postulates that parents may have cognitive, attentional, and attributional deficits in the processing of child behavior and consequently their response to this behavior. In particular, abusive parents would be less attentive and aware of child behaviors, and more inclined to interpret ambiguously valenced behavior as more negative and blameworthy compared to other parents. In addition, the model predicts that the ability to integrate and use important information to understand children’s behavior is impaired among abusive parents, which in turn, may lead to an inability to correctly implement and monitor appropriate parenting responses (Milner, 1993). There is evidence that the *experience of maltreatment* itself, is related to impairments in social information processing (Dodge et al., 1990; Keil & Price, 2009). Several studies have also found evidence for social information processing deficits in maltreating parents or parents at risk for maltreatment, but also in parents showing low levels of emotional support in interaction with their children (Beckerman, Van Berkel, Mesman, & Alink, 2018; Farc, Crouch, Skowronski, & Milner, 2008; Rodriguez, Smith, & Silvia, 2016).

Attachment theory

Attachment theory purports that children form attachment relationships with their parents and that the quality of these

relationships highly depends on the parenting they receive (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982; De Wolff & van IJzendoorn, 1997; Verhage et al., 2018). The child’s attachment relationship with primary caregivers functions as a blueprint for other social interactions and relationships later in life. Research has shown that the attachment relationship of maltreated children is more often insecure or disorganized compared to that of nonmaltreated children (Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010). In turn, insecure or unresolved adult attachment representations later in life are associated with parenting problems and maltreatment behaviors (Reijman et al., 2017).

Neurophysiological models

There are several neurophysiological processes that may (perhaps differentially) act as underlying mechanisms of the effect of maltreatment experiences on parenting. Neurophysiological models are for a large part rooted in animal research showing effects of early life stress on altered stress regulation (e.g., Francis, Diorio, Liu, & Meaney, 1999), which can partially be explained by increased methylation of stress-related genes (Turecki & Meaney, 2016). Evidence in humans shows similar effects of maltreatment experiences in early life (McGowan et al., 2009; Turecki & Meaney, 2016), although findings do not all converge. Some studies show a flatter diurnal pattern or lower cortisol production in maltreated children compared to their nonmaltreated peers (Bernard, Butzin-Dozier, Rittenhouse, & Dozier, 2010; Bernard, Zwerling, & Dozier, 2015) and a blunted hypothalamic–pituitary–adrenal axis response to stressors (MacMillan et al., 2009), and others reveal an increased stress response in adulthood as a result of early life stress (e.g., Heim et al., 2000). A separate set of studies show that altered stress regulation is also a characteristic of maltreating parents. Meta-analytic findings point to increased basal autonomic nervous system levels (Reijman et al., 2016), but recent studies have also shown that blunted stress reactivity may be related to maltreatment (perhaps particularly neglect) and disengaged parenting (Reijman et al., 2015; Sturge-Apple, Skibo, Rogosch, Ignjatovic, & Heinzelman, 2011). Stress regulation, as an explanatory mechanism, may thus function differently for different types of maltreatment and parenting problems.

Developmental psychopathology models

Another mechanism with possibly differential functions depending on maltreatment type, and quite relevant in the current context, is psychopathology. The ecological–transactional perspective and the developmental psychopathology framework (Cicchetti & Valentino, 2006; Rutter & Sroufe, 2000; Sroufe & Rutter, 1984) posit that individuals develop within the “normal range” if presented with an average expectable environment. In expectable environments, children may successfully negotiate relevant stage-salient issues of development (developing behavioral regulation, forming secure attachment rela-

tionships, adapting to school, etc.). Child maltreatment clearly falls outside this average expectable environment, impinging on a child's capacity to successfully negotiate developmental tasks. Through this process, whereby maltreated children accumulate various cognitive, social, emotional, and neurophysiological deficits, maltreatment may eventually lead to psychopathology. In addition, studies have shown that parents with certain types of psychopathology are at risk for maltreatment (see Stith et al., 2009, for a meta-analysis). In particular, a study looking at the effects of maltreatment on parenting showed that the association between maternal childhood experience of physical abuse and insensitive parenting was mediated by maternal depression (Madigan, Wade, Plamondon, & Jenkins, 2015). However, there is also evidence that certain types of psychopathology (e.g., depression and posttraumatic stress disorder) *reduce* the likelihood of the intergenerational transmission of physical abuse (Pears & Capaldi, 2001). It is possible that certain forms of psychopathology, such as withdrawal and passivity, may make parents more prone to neglect their child (acts of omission) than to commit acts of commission (e.g., physical abuse). These possibilities need to be explored in future research.

Heritability models

An important question is whether the transmission of maltreatment and dysfunctional parenting can be (partially) explained by heritable factors. Even though some animal studies imply that heritability does not play a role in the transmission of maltreatment (e.g., Francis et al., 1999; Maestri-pieri, 2005), there is some evidence from behavioral genetic studies in humans showing partial heritability of corporal punishment (e.g., Jaffee et al., 2004) and abuse and neglect (e.g., Fisher et al., 2015). These behavioral genetic studies show that the *experience* of maltreatment may be partially heritable. In addition, several studies confirmed the heritability of a number of dysfunctional parenting practices such as physical discipline and parental negativity (e.g., Klahr & Burt, 2014; Wade & Kendler, 2000). However, as far as we know there are no studies (in humans) on the heritability of the perpetration of maltreatment. Knowledge about the extent to which maltreatment and parenting problems are heritable is needed to give direction to intervention efforts. In addition, because some of the environmental mechanisms can be partially heritable, it is important to have an estimate of the heritability of parenting problems and maltreatment to place environmentally based mechanisms in perspective.

Moderating Mechanisms

The above-mentioned theoretical frameworks all assume that the intergenerational transmission of maltreatment and the effects of experienced maltreatment on parenting problems more broadly are environmentally mediated or partially explained by heritability. Yet, in addition to mediating mechanisms, enhanced understanding of moderating processes is

imperative to inform theory on risk and resilience, and to guide practice aimed at preventing maltreatment. It has been aptly noted that attachment theory can be powerful in predicting lawful discontinuity in development (Belsky, 1993). According to attachment theory, supportive relationships can positively modify internal working models and therefore change expectations of interpersonal relationships enabling parents to "care for their own offspring in a manner decidedly different from the way they themselves were cared for" (Belsky, 1993, p. 416). Moreover, a supportive relationship is one of the most studied factors that may be responsible for breaking the cycle of maltreatment. Throughout the past several decades, studies have quite consistently shown that safe, stable, and nurturing relationships have the potential to break the cycle of maltreatment (Egeland, Jacobvitz, & Sroufe, 1988; see Schofield, Lee, & Merrick, 2013, for a meta-analysis). Although this knowledge is of the utmost importance for (preventive) intervention efforts, expanding knowledge on possible factors that could protect parents with a history of maltreatment from experiencing difficulties in the parenting of their own children can increase theoretical understanding of continuity and discontinuity, and can also improve the tools made available to clinicians to effectively break cycles of risk.

A Continued Search for Mechanisms

Two meta-analyses in this Special Section confirm the hypothesized intergenerational effects of maltreatment. First, averaging effects across 32 studies, Savage et al. (2019) demonstrate that a mother's history of maltreatment is associated with later dysfunctional parenting behaviors. Second, Madigan et al. (2019) demonstrate across 80 studies that the strength of the intergenerational transmission of maltreatment is significant. They also demonstrate type-to-type or homotypic transmission (e.g., physical abuse in one generation to physical abuse in the next), as well as crossover or heterotypic transmission of maltreatment (e.g., physical abuse → neglect). Together, these studies demonstrate that an individual who endures maltreatment in childhood is at risk of repeating these problematic behaviors toward their own children when they become a parent. While these meta-analyses provide critical support for hypothesized associations, they do not explain pathways of transmission, that is, *how* are cycles of maltreatment maintained across generations and *how* can these cycles be discontinued? Ultimately, research on the intergenerational transmission of maltreatment comes down to: *how* does it work (mediating mechanisms), *what* can break the cycle, and for *whom* is the cycle broken (moderators)?

In research thus far, evidence supporting mediator effects is often indirect. Studies have shown associations between childhood maltreatment and possible mediating factors (e.g., depression; Madigan et al., 2015), or they have shown an association between a potential mediating factor (e.g., depression) and its potential to increase the risk of dysfunctional parenting or maltreatment (see Stith et al., 2009). However,

direct testing of mediating mechanisms that explain intergenerational effects remains scarce. This may be due, at least in part, to the time-consuming and cost-intensive nature of such studies, where it is necessary to collect data on maltreatment or dysfunctional parenting across two generations (e.g., Widom, Czaja, & DuMont, 2015). In addition, there is a paucity of research identifying protective factors that can reduce the effect of experienced maltreatment on maltreating or dysfunctional parenting. Finally, more research is needed on the role of parenting interventions in breaking the cycle of maltreatment or dysfunctional parenting. In order to address these considerable gaps in the literature, several leading scientists in the field were invited to submit research that would move the field forward by addressing or explaining mediating or moderating mechanisms of the intergenerational transmission of parenting and/or maltreatment. Below we discuss the specific themes addressed by the manuscripts in this Special Section.

Expanding research to dysfunctional parenting, in both mothers and fathers

Several papers in this Special Section tested the transmission of child maltreatment to dysfunctional parenting, as well as the transmission of child maltreatment to perpetuating maltreatment toward one's own child. The expanded focus on dysfunctional parenting may be informative in our search of mechanisms involved in the transmission of maltreatment. After all, maltreatment is often considered as the end of a continuum ranging from functional/good to dysfunctional/maltreating parenting (Azar, 2002; Wolfe & McIsaac, 2011). Knowledge about effects on dysfunctional parenting (in addition to maltreatment perpetration) can be used to design and test effective preventive interventions that focus on dysfunctional parenting as possible precursors to maltreatment.

Research in this Special Section by Adams, Handley, Manly, Cicchetti, and Toth (2019), Augustyn, Thornberry, and Henry (2019), Capaldi, Tiberio, Pears, Kerr, and Owen (2019), Choi et al. (2019), Pittner et al. (2019), and St-Laurent, Dubois-Comtois, Milot, and Cantinotti (2019) focus specifically on maltreatment as an outcome. In particular, Labella, Raby, Martin, and Roisman (2019) test effects on both parenting problems and maltreatment and Narayan, Ippen, Harris, and Lieberman (2019) investigate children's trauma exposure (which included child maltreatment) as an outcome. Moreover, Oosterman, Schuengel, Forrer, and De Moor (2019) and Zajac, Raby, and Dozier (2019) investigate mechanisms underlying the association between a history of experiencing maltreatment and parenting problems, such as parenting self-efficacy, harsh discipline, and parental (in)sensitivity. Finally, Steele, Murphy, Bonuck, Meissner, and Steele (2019) examine whether a history of maltreatment moderates the effects of an intervention on parenting. Given the paucity of research on fathers and parenting behavior, we explicitly sought out research that could address this topic. Four of the empirical studies in this Special Section include

both fathers and mothers, and one study explicitly tests mechanism of transmission separately for mothers and fathers (Capaldi et al., 2019).

Assessment of maltreatment types

Maltreatment types are highly comorbid, and accordingly, it can be difficult to disentangle their differential predictors and consequences. On the one hand, it has been argued that isolating specific maltreatment types (e.g., predictors of emotional abuse) may not necessarily reflect a true representation of a child's reality, given that maltreatment types are likely to cluster together (see Claussen & Crittenden, 1991; Madigan et al., 2019). On the other hand, others have suggested that an emphasis on specific maltreatment types is needed to effectively unravel mechanisms of the intergenerational transmission for each maltreatment type (Berzenski, Yates, & Egeland, 2014). To meet these varying perspectives, this Special Section includes both type-to-type transmission and maltreatment broadly conceptualized. Specifically, Capaldi et al. (2019) focus on the transmission of physical maltreatment, and Choi et al. (2019), Madigan et al., (2019) Pittner et al. (2019), and St-Laurent et al. (2019) focus on the transmission of multiple types of maltreatment.

New evidence on mediating mechanisms

Using some of the most influential theoretical frameworks, eight of the papers in this Special Section report on possible mediating mechanisms of intergenerational effects. Augustyn et al. (2019) showed that the association between experienced and perpetrated maltreatment measured broadly was mediated by adolescent delinquency and two precocious transitions, dropping out of school and independent living, as well as the accumulation of precocious transitions and problem behaviors. Using a similar perspective, Capaldi et al. (2019) found no evidence for delinquency or substance use as mediating mechanisms of the transmission of physical maltreatment specifically; however, the relation between severe experienced maltreatment and adulthood delinquency was significant. Adams et al. (2019) and Labella et al. (2019) found support for partner relationship problems (romantic competence and relationship violence) as a mechanism of the effect of experienced maltreatment on (lack of) supportive parenting (Labella et al., 2019) and perpetrated maltreatment (Adams et al., 2019; Labella et al., 2019). Zajac et al. (2019) showed that in families involved with Child Protective Services, dismissing and unresolved attachment states of mind based on the Adult Attachment Interview were related to sensitivity, but childhood maltreatment experiences were not significantly related to sensitivity. In addition, focusing on neurobiological mechanisms, Oosterman et al. (2019) found that a high number of adverse childhood experiences predicted more harsh discipline, but this was not mediated by pre-ejection period or respiratory sinus arrhythmia in response to listening to a crying baby. Moreover, a high number

of adverse child experiences was related to less respiratory sinus arrhythmia reactivity, which predicted increases in depressive symptoms, but the indirect effect was not significant. Further, Choi et al. (2019) reported that the association between maternal emotional and sexual abuse experiences and their child's exposure to maltreatment was mediated by maternal depression (postpartum and later, but the effect was driven by later depression). Finally, in their paper on the heritability of child maltreatment, Pittner et al. (2019) report that genetic factors significantly contributed to perpetrated emotional abuse but not to physical abuse and emotional neglect. Thus, it will be important in future research to examine why mechanisms underlying the effects of emotional abuse may be genetically explained, whereas physical abuse and emotional neglect may not.

New evidence on moderating factors

Two papers address moderating factors and add novel results to the current literature. Narayan et al. (2019) found that angel memories about childhood (i.e., memories of loving moments with caregivers) significantly moderated associations between maltreatment and posttraumatic stress disorder symptoms, comorbid psychopathology, and children's trauma exposure; the negative effects of experienced maltreatment were absent for mothers with more positive, elaborated memories. In addition, St-Laurent et al. (2019) showed that compared to maltreated mothers who did not maltreat their own children, those who perpetuated the cycle were more likely to have experienced family-ecology related stressors and little family support in adulthood.

Intervention research

Beyond knowing about the processes involved in the continuity of maltreatment or other dysfunctional parenting behavior,

it is pertinent to understand whether interventions designed for parents with a history of childhood maltreatment can effectively break the cycle of maltreatment. What works, and what does not? Steele et al. (2019) address this issue and test whether intervention effects on parental hostility and dyadic constriction (as proxies for maltreatment) differ for mothers with less or more severe early childhood adverse experiences in order to inform clinical practice working with parents with adverse histories. In their randomized control trial testing the efficacy of the Group Attachment-Based Intervention (GABI), Steele et al. (2019) found that mothers who participated in GABI, in comparison to those in the control group, showed significant improvements in maternal supportive presence and dyadic reciprocity, and significant declines in maternal hostility and dyadic constriction (proxies for risk of child maltreatment). However, the capacity of GABI mothers to benefit from this intervention, in terms of decreasing dyadic constriction and increasing reciprocity, was weaker for those with a high level of adverse child experiences compared to those with a low level of adverse child experiences. These findings demonstrate the challenges of breaking the cycle of maltreatment for parents with more severe histories of maltreatment.

Conclusion

We are tremendously grateful for the researchers who contributed to this Special Section on mediators and moderators of intergenerational transmission of maltreatment. The search for mechanisms has only just commenced, and we hope that the papers presented in this Special Section are an impetus for new research that further propels the field to finding effective and actionable solutions to breaking the cycle of maltreatment and preventing child maltreatment more broadly. These research endeavors are crucial to helping children and families at risk.

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