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# Towards a more comprehensive understanding of PTSD and parenting

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ABSTRACT

*Background:* The impact of post-traumatic stress disorder (PTSD) on parenting and the parent-child relationship has been well-documented in the scientific literature. However, some conceptual and methodological challenges within this research field remain.

*Procedure:* We reflect on a number of challenges that we identified while examining the literature in preparation of an individual participant data meta-analysis on the relationships between PTSD and parenting.

Findings: We address 1) the presence of 'trauma-islands'; 2) the need for transdiagnostic theoretical frameworks for mechanisms between PTSD and parenting; 3) the lack of developmental perspectives; 4) the overuse of self-reported retrospective measures; 5) the need to study more diverse samples and cultural contexts; and 6) the lack of research on resilience and post-traumatic growth in parenting. Based on these reflections, we offer suggestions on strategies for responding to these challenges through: 1) welcoming open science; 2) working towards shared theoretical frameworks; 3) doing more longitudinal research 4) expanding the methodological palette; 5) centering lived experience; and 6) taking systemic inequality into account.

Conclusion: With this commentary, we aim to open a discussion on next steps towards a more comprehensive understanding of the association between PTSD and parenting, and inspire collaborative research.

#### 1. Background

Parental PTSD is associated with a range of adverse child mental health outcomes, including child PTSD symptoms, internalizing problems such as depression and anxiety, and externalizing problems such as aggression and rule-breaking behavior [1,2]. Relationships between parental PTSD and child psychopathology emerge even among children who were not exposed to the traumatic events preceding parental PTSD, suggesting the presence of intergenerational risk mechanisms beyond shared trauma exposure [1,2].

One of these risk mechanisms is parenting. The last twenty years have seen a strong increase in research on PTSD and parenting (Supplemental Fig. 1). Several review studies have synthesized research on parenting across populations exposed to various traumatic experiences [3,4], including war-exposed and refugee families [5], military personnel [6], and survivors of child sexual abuse [7]. Findings consistently show support for associations between parental PTSD symptoms and negative parenting behavior (e.g., harshness, overinvolvement, inconsistent discipline) [3–7]. Interestingly, parents with PTSD often manage to sustain positive parenting behaviors (e.g., involvement, monitoring) despite their challenges [3]. The association between PTSD and parenting behaviors appears to be influenced by many risk and protective factors, including pre-trauma individual characteristics, the nature of the trauma itself, and post-trauma circumstances [3–7].

Despite continuous advances in the field of PTSD and parenting, several areas for theoretical and methodological improvement remain. We identified a number of challenges for the field while reviewing the literature in preparation for an individual participant data meta-analysis

(IPDMA; figures illustrating our findings, and instructions on accessing our search strategy and literature database are presented in the Supplemental Materials). Through discussion within our team of researchers and clinicians, we boiled these down to six key challenges. In this commentary, we aim to highlight these key challenges and make suggestions for addressing them.

### 2. Bridging the trauma-islands

The literature on PTSD and parenting is dominated by traumaspecific islands. By 'islands', we refer to research areas focused on populations sharing one specific type of trauma exposure (e.g., military veterans, survivors of intimate partner violence). Given that trauma is the starting point of PTSD, it is logical for PTSD research to be shaped around specific traumas and their consequences. The practicalities of recruitment also likely play a role. Populations exposed to specific traumatic events are often found in specialized settings such as Veteran Affairs hospitals or domestic violence shelters. It thus makes sense for research areas to emerge around foci most directly relevant to each trauma type. However, each island appears to crystallize towards its own conceptualizations and methodological decisions. This fragmentation of the research field creates barriers to synthesizing findings and distinguishing to what extent associations between PTSD and parenting are general or trauma-specific. Whereas the most obvious solution might be for future research to include samples that are heterogeneous in trauma-exposure, we might also consider aiding synthesis of findings across studies conducted within trauma-islands through increased conceptual and methodological consistency.

A first barrier on the way to synthesis of findings is the

operationalization of trauma exposure. Within studies, this choice may be made pragmatically: for example, participants recruited from a veteran population may be asked to report PTSD symptoms exclusively related to their military service [8]. In clinical studies, trauma exposure is often operationalized through an 'index trauma' (the experience the participant identifies as the worst; typically used in diagnostic interviews) [9]. Notably, some studies do not specify how they operationalize trauma exposure at all; for example, not all studies report whether only exposure to actual or threatened death, injury, or sexual violence (i.e., the criteria according to the Diagnostic And Statistical Manual of Mental Disorders - Fifth edition [10]) is considered, or whether a broader definition is used, including other potentially harmful experiences such as emotional abuse. These differences in operationalization interfere with synthesis of findings across trauma-islands. This is especially unfortunate considering that in reality, people typically do not live on one trauma-island; exposure to two or more types of trauma is more common than exposure to a single type of trauma [11]. Note for instance the high rates of physical and sexual abuse in childhood and adulthood among military veterans [12]. As such, not explicitly operationalizing trauma exposure and grouping people based on one shared traumatic experience could obscure other traumatic experiences that may be relevant to parenting. Research that bridges the trauma-islands should agree on a shared operationalization. A suggestion could be to supplement pragmatic choices (e.g., using the index trauma for diagnostic purposes) with assessment of lifetime exposure to all trauma types using a standardized instrument (e.g. [13],). This would provide a more complete picture of participants' trauma history and facilitate investigation of the extent to which exposure to multiple traumas confers risk for parenting outcomes.

A second barrier on the way to synthesis of findings is that some parenting outcomes remain under-researched in certain islands. For example, relatively little is known about long-term parenting outcomes in parents with PTSD following perinatal trauma (trauma related to pregnancy or childbirth, such as severe medical problems in pregnancy or very preterm birth), because research has mostly focused on attachment and parenting in the infant period (Supplemental Fig. 2 and 3). Contrastingly, attachment is rarely the focus of publications in other trauma-islands (Supplemental Fig. 2). Other preferences within trauma-islands are also apparent, such as a uniquely strong focus on family functioning in studies among military personnel and parents whose child suffered medical trauma (Supplemental Fig. 2).

We believe that bridging the trauma-islands in PTSD and parenting research could have several advantages. First, it can advance theory building on how aspects of trauma may influence the association between PTSD and parenting. As an example, consider the impact of interpersonal (e.g., physical or sexual violence) versus noninterpersonal trauma (e.g., natural disasters, accidents) on parenting. Correlations between parental PTSD symptoms and child psychopathology are stronger for parents who experienced interpersonal trauma, compared to non-interpersonal trauma [1]. An explanation may be that impairments to relationships, including the parent-child relationship, are more common following interpersonal trauma [14,15]. While a compelling and commonly cited idea, this hypothesis has never explicitly been tested for parenting in samples large enough to adequately compare different trauma types. To properly test whether parenting is indeed differently impacted in parents with PTSD following interpersonal versus non-interpersonal trauma, analyzing larger samples of parents heterogeneous in type of trauma exposure, and allowing for meta-synthesis through clear operationalizations of trauma and expanding the investigation of currently under-researched parenting outcomes would be necessary.

A second advantage of bridging the trauma-islands is the potential benefit for clinical practice. In line with the trauma-islands, existing parenting interventions for trauma-exposed parents are, to the best of our knowledge, all targeted to specific trauma populations; for example, survivors of childhood abuse (e.g. [16],), people with refugee

backgrounds (e.g. [17],), and veterans (e.g., [18]). By analyzing commonalities and differences in how parenting is affected across trauma types, we might identify both shared and unique risk and protective factors that interventions can focus on.

# 3. Creating a shared theoretical framework of mechanisms between PTSD and parenting

While the fact that PTSD can affect parenting is well-established, the mechanisms through which this happens remain relatively obscure [3,4]. A potential explanation is that the PTSD and parenting literature is not always strongly embedded in theoretical frameworks of parenting [4]. A complete discussion of all potentially relevant theories would be outside the scope of this paper; instead, we focus here on three interrelated transdiagnostic frameworks that we believe may be especially relevant to the relationship between PTSD and parenting: attachment, social cognition, and emotion regulation.

#### 3.1. Attachment

In adults, attachments emerge in the context of three types of relationships: those formed in childhood with one's primary caregiver(s), those formed in adulthood with partners or other significant persons, and those formed with one's own children. Adults' attachment styles with their partners and children are largely rooted in childhood attachment [19–21], but life experiences, including trauma and social transitions, can alter attachment style [19].

PTSD has generally been associated with increased likelihood of insecure parent-child attachment [3,4,22] but the mechanisms through which this process unfolds are not yet fully clear. For example, it is possible that symptoms of PTSD such as alterations in arousal and reactivity (e.g., irritability or anger) may cause the parent to behave in ways the child does not understand (e.g., appearing frightening towards the child), leading to internal representations of the parent as unpredictable [23]. However, many parents with PTSD do manage to form secure attachment bonds with their children [22], suggesting more research is needed to develop a comprehensive theory of the contextual factors underlying the association between PTSD and insecure parent-child attachment.

### 3.2. Social cognition

Social cognition - the ability to infer, interpret, and respond to others' mental states (intentions, motivations, etc.) [24] - has been extensively studied in the context of PTSD [25,26]. In parenting research, social cognition is usually operationalized as 'parental mentalization' (sometimes also called 'reflective functioning' or 'mind-mindedness'): the capacity of the parent to perceive and understand what their child and they themselves are thinking and feeling, and how this influences the child's and their own behavior [27]. Parental mentalization capacity is an important factor for child psychological wellbeing and development [28,29].

Both traumatic experiences and PTSD can negatively impact mentalization capacity [27,30,31], and interpersonal trauma, particularly when perpetrated by caregivers, is especially associated with impaired mentalization [31]. This probably explains why there are many studies exploring mentalization as a mechanism to explain parenting in (female) survivors of abuse (e.g., [30,32,33]). However, mentalization is also hindered by alterations in arousal [31] - a key symptom of PTSD. Thus, impairedmentalization likely plays a role in parenting deficits in parents with PTSD, regardless of trauma type. Indeed, findings confirm this for mothers who experienced perinatal trauma [34,35], and for veteran mothers and fathers [36,37]. One study [38] found mentalization to mediate the association between PTSD and child and family functioning in veterans with relatively high symptoms, but not in those with relatively low PTSD symptoms. This may suggest a severity threshold,

although this idea warrants further research. As of yet, studies investigating mentalization as a mechanism between PTSD and parenting in trauma types other than interpersonal abuse remain scarce.

#### 3.3. Emotion regulation

Difficulties in emotion regulation are central to several core symptoms of PTSD (e.g., hyperarousal, irritability, and avoidance of traumarelated thoughts and feelings) [10,39]. PTSD is associated with reduced emotional awareness and clarity, increased avoidance of emotions, and difficulty managing negative emotions when distressed [40,41]. For any parent, managing challenging child behaviors can invoke negative emotions. However, in the case of PTSD, symptoms related to emotion dysregulation may overwhelm parents and interfere with their ability to respond sensitively or consistently. In addition to a well-established literature suggesting links between PTSD and parental harshness [3], recent findings indicate that withdrawal might be an equally common response to such challenging parenting situations. In a sample of mothers exposed to heterogeneous trauma, PTSD was associated with lax parenting behaviors through a mediating effect of emotion regulation difficulties [42]. In another study, emotion regulation difficulties mediated the association between PTSD symptoms and reduced parental supportiveness [43]. Although research has predominantly focused on regulation of negative emotions, the regulation of positive emotions in PTSD has recently received increased attention. For instance, avoidance of intense positive emotions was found in veterans with high PTSD symptom severity [44]. This implies that for some parents with PTSD, withdrawal may not only occur in response to negative encounters (e.g., discipline interactions), but also in positive encounters (e.g., expressions of affection by the child).

We present attachment, social cognition and emotion regulation as three promising theoretical frameworks. However, the full picture of possible mechanisms underlying the association between PTSD and parenting is more intricate than we can do justice to in this commentary. More factors come into play than we can consider here, and the complex ways in which attachment, social cognition, and emotion regulation interact with each other remain a topic of study and debate (e.g., [45]). The bottom line is that theoretical frameworks with strong evidence supporting their relevance are not yet widely applied in PTSD and parenting research. A clear and comprehensive theoretical framework that prioritizes transdiagnostic mechanisms is necessary to advance our understanding of relevant mechanisms underlying the association between PTSD and parenting, and to link it to the broader psychopathology literature.

# 4. Integrating a developmental perspective

Given that parenting behaviors evolve over the course of a child's development, the theoretical framework for research on PTSD and parenting necessitates grounding in a developmental perspective [46]. Yet child development is not often explicitly taken into account: the majority of studies are cross-sectional (Supplemental Fig. 4), and child age differences in effects of parental PTSD on parenting are rarely investigated.

Considering child development in PTSD and parenting is important for two reasons. First, children are not passive recipients of parenting practices: the child's development also impacts the parent, and it is critical to take this mutual influence into account. For example, behaviors typical to the infant period, such as crying, may affect parents differently than those typical to the adolescent period, when conflict and intentional provocation may increase. Whereas this is true for all parents regardless of psychopathology, parental PTSD can complicate adjustment to the child's developmental level as parents with PTSD may interpret developmentally normal changes in child behavior as negative or threatening [47] and respond with emotional dysregulation [42]. This could make it more difficult for parents with PTSD to adequately

react to changes in their child's behavior.

Second, the way parental PTSD may affect the child also inevitably varies as a function of the child's developmental age. Each developmental stage encompasses specific needs to be fulfilled to support children's psychosocial development [48]. Parental PTSD may not affect the ability to adequately address needs to an equal degree at every stage. For example, PTSD-related cognitions about the world as fundamentally unsafe may begin to elicit difficulties when the child reaches adolescence and developmental goals include finding balance between establishing autonomy and remaining connected with the parent.

Relatedly, child development has windows of opportunity (periods in which children are especially susceptible to learn and develop certain skills, and in which interventions may have especially positive effects), as well as windows of vulnerability (in which children are more susceptible to stressors [49]; for a review of conceptual and methodological issues, see [50]). We currently know very little about whether and how such periods present in children of parents with PTSD; for example, whether there are developmental periods in which PTSD-related parenting challenges more strongly influence children's psychosocial development.

Another important developmental question is how the duration and course of parental PTSD might impact parenting and child development. The course of PTSD symptoms varies widely; whereas many patients recover, remittent and long-lasting trajectories are also common [51]. In cross-sectional research on children growing up with a parent with mental or physical illness, gradual onset of parental illness, but not duration, was associated with more emotional and behavioral difficulties [52]. In contrast, a longitudinal study demonstrated a significant effect of duration of parental depression on the likelihood of psychiatric disorders in offspring 25 years later, suggesting that adverse effects of long-term exposure to parental mental illness may express over a longer period [53]. These findings give rise to questions like: Does longer-term PTSD have a greater impact on parenting and child development? When a parent recovers from PTSD, is the risk of negative parenting outcomes mitigated or even reversed? Does the onset of PTSD affect parenting and child outcomes differently based on whether or not it is concomitant to critical child developmental windows? To the best of our knowledge, no studies have investigated these important questions.

To achieve greater understanding of the interplay between parental PTSD, parenting and child outcomes throughout child development, prospective longitudinal studies across many years - ideally even across generations - would be invaluable (although cross-sectional studies can also apply a developmental perspective; a first step could be comparing groups of parents based on child age). Such studies would not only allow us to see how theorized mechanisms on the intergenerational impact of trauma and PTSD actually play out, but could also contribute to knowledge that is especially relevant for interventions. For instance, we might be able to better support parents with PTSD and their children in challenges specific to certain developmental periods, and help them prepare for future challenges associated with their children growing older. Furthermore, knowledge on windows of opportunity and vulnerability, as well as duration and course of PTSD symptoms, could allow for preventive interventions at the moment when they are most relevant and effective.

# 5. Moving beyond self-report retrospective questionnaires

A methodological concern in PTSD and parenting research is the reliance on self-reported, retrospective assessments of parenting. Certainly, self-report questionnaires are critical for measuring parents' subjective experiences and perceptions of parenting (e.g., perceived parenting competence). They also have practical advantages, such as ease of administration and relatively low labor-intensity for researchers. However, the predominant use of self-report measures has limited our understanding of the association between parental PTSD and parenting in several important ways. First, evidence suggests self-reported

parenting may have limited convergence with observed parenting, especially in parents experiencing emotional distress [54]. Convergence between self- and child-report is also limited; parents tend to report about themselves more positively than their children do (e.g., [55]). However, there is evidence that this discrepancy may be smaller [56], or even reversed [57] among parents with mental illness. Given that alterations in cognition and mood (e.g., negative views of the self and others [10]) are central to PTSD, parents with PTSD may report on their parenting and the parent-child relationship in an overly negative light. This may limit the validity of self-reported parenting by parents with PTSD.

A second shortcoming is that many commonly used instruments ask parents to report retrospectively on expansive time-frames (e.g., "In the past month, how often did you..."). This poses two concerns. First, deficits in concentration, which can influence memory, are a symptom of PTSD [10]; thus, parents with PTSD may have difficulty accurately responding to retrospective instruments. Second, PTSD symptoms such as intrusive memories can fluctuate from moment to moment, in response to reminders of the trauma or other stressful circumstances [58]. These symptom fluctuations may impact parenting behavior in everyday life, but cannot be captured by questionnaires reflecting long timescales.

Finally, the reliance on parent-report has resulted in a dearth of information on experiences of children growing up with parents with PTSD. Given the well-documented cascading effects of parental PTSD on child wellbeing [1,2], it is clear that these children deserve to have their voices heard and their experiences integrated into the scientific knowledge base on PTSD and parenting (see also [59]). Including children's perspectives may shed light on new important knowledge that cannot be gained through parent-report. As such, there is a pressing need for more research centering the experiences of children of parents with PTSD.

Fortunately, there is a growing trend towards the use of innovative and comprehensive measurement of parenting in the field. For example, the number of studies on PTSD and parenting using behavioral observation has increased steadily over the past years (e.g., [33,60,61]). Though not without limitations (see [62]), behavioral observation is advantageous in that it facilitates more objective measurement of parenting behaviors in a largely controlled environment, offsetting some of the methodological limitations of self-report described above. Observational methods are also increasingly paired with psychophysiological measurement (e.g., [33,60,61]), which can provide insight into cognitive, affective, and biological mechanisms through which PTSD may affect parenting. Additionally, we are seeing an increasing interest in qualitative and mixed-methods research, which can promote understanding of the ways PTSD impacts parenting through parents' and children's own experiences (e.g., [63,64]).

Another promising methodological development is the rise of ecological momentary assessment (EMA), which involves repeated sampling of participant data in daily life. EMA is typically structured to collect data multiple times per day across days, weeks, or months [65]. Although self-reported EMA questionnaires may still be susceptible to negative cognitive bias, the repeated reporting over short periods can reduce memory bias and allows for the capturing of moment-to-moment fluctuations in PTSD symptoms [58]. An especially valuable EMA approach could be to study variations at the symptom (cluster) level and their associations with parenting in daily life; this would allow for examination of how PTSD symptoms, parenting, and context (e.g., environmental stressors) dynamically unfold in real time. Many studies have looked at global effects of PTSD, either by comparing parents with PTSD to parents without PTSD, or by analyzing the effect of overall PTSD symptom severity on parenting. However, to answer questions that take the heterogeneity of PTSD into account (e.g., do fluctuating symptoms, such as intrusive memories, affect parenting differently than more stable symptoms, such as negative self-cognitions?), we need a more detailed approach. Here, EMA studies with frequent measurements of PTSD

symptoms and parent-child interactions could be highly valuable.

To summarize, expansion of the methodological palette with dynamic methodologies such as observation and EMA can help us obtain a richer understanding of the real-time interplay between PTSD symptoms and parenting in daily life. By pairing these with psychophysiological measures, we can learn more about the biopsychosocial mechanisms through which PTSD affects parenting. This may be especially useful for identifying mechanisms of change that can be targeted in interventions; for example, helping parents recognize situations in which arousal reactions are elicited that may evoke maladaptive parenting behaviors. Finally, qualitative and mixed-methods research can promote understanding of PTSD and parenting through people's lived experiences. Despite these positive developments, involving children of parents with PTSD in research remains critical to see a more complete picture of the effects of parental PTSD. A downside to the approaches we suggest is that they are relatively complex and time-intensive for both participants and researchers. We do not suggest that they should replace more 'traditional' methods such as questionnaires entirely; however, they could be a highly valuable addition where possible.

# 6. Prioritizing more diverse populations and emphasizing sociocultural context

A pervasive problem cutting across fields of psychology is over-reliance on convenience samples [66]. Though scholars have raised awareness about this issue for decades [67,68], most publications continue to draw from participants located in Western, educated, industrialized, rich, and democratic (WEIRD [68]) societies. The field of PTSD and parenting is no exception. Indeed, 87·2% of publications in our literature search (n=231) report on data collected in Western countries (of which n=164 in the United States), while 12·5% (n=33) report on data collected in non-Western countries; one remaining study reported on data collected in both Western and non-Western countries (Supplemental Fig. 5) [69]. However, it must be noted that only Englishlanguage articles were included in our literature search, which may have caused underrepresentation of countries where English is not the first language.

WEIRD samples represent a narrow segment of diversity, and findings garnered from this group may not generalize to populations, communities, and countries with diverse racial ("broad categories of people that are divided arbitrarily but based on ancestral origin and physical characteristics") [70,71], ethnic ("a person's cultural identity (e.g., language, customs, religion)") [70,71] and socioeconomic backgrounds [68]. This is especially unfortunate because evidence suggests higher rates of PTSD among particular racial and ethnic minority groups, including Black, multiracial, and Hispanic/Latine individuals in the United States [72,73], and Turkish and Moroccan individuals in the Netherlands [74].

Socioeconomic status is also likely to play a role, and may be closely related to risk factors for PTSD such as lack of social support and community cohesion [75,76]. However, evidence for its relationship with PTSD prevalence is inconsistent. Findings differ across operationalizations of socioeconomic status and countries in which studies were conducted, and effects may be bidirectional (e.g., [74,77,78]). Fortunately, there has been an increasing emphasis on research prioritizing underrepresented families, which is important for our understanding of the convergence and divergence of findings among parents with (and without) PTSD living in different contexts. Nonetheless, a lack of diversity among countries where data are collected, and lack of racial/ethnic and socioeconomic diversity within those participating populations, remains an area of concern for the field.

Gender diversity is also lacking in the PTSD and parenting literature. As pointed out in a scoping review of parents with a history of childhood sexual abuse, study titles often include the word 'parents' where they mean 'mothers' [79]. A clear exception are studies of military-related PTSD, which often include fathers only (e.g., [37,80,81]) or both

fathers and mothers [82,83]. However, in other 'trauma-islands', much of the literature only pertains to mothers. This issue is by no means exclusive to the PTSD and parenting literature; the need to include fathers in research on parenting and mental health has been voiced in numerous publications (e.g., [84–86]). Much remains to be learned, especially when it comes to trauma types that are more common in or mistakenly thought to only affect women, such as sexual abuse or traumatic childbirth. The studies that do investigate fathers' experiences after such events, describe how gender norms and expectations can negatively impact their psychological adjustment [87,88]. This further underlines the importance of studying parenting experiences of fathers with PTSD. Finally, research into experiences of parents with PTSD in families not following the structure of two heterosexual, biological caregivers (e.g., foster and adoptive families, non-parental caregivers, LGBTQIA+ families) is sorely lacking.

A related problem is the lack of research on the role of culture and other ecologies in family processes. In examining risk and resilience among parents exposed to trauma, most research overemphasizes individual strengths and deficits even though social support has emerged as one of the strongest longitudinal predictors of whether individuals develop and maintain PTSD [89]. Additionally, to better appreciate the impact of PTSD on parenting, there is a need to understand the larger context in which a child is raised, such as neighborhoods, schools, culture, religion, and socioeconomic status [90,91], and the risks and protective factors embedded within those contexts. For example, one study found high neighborhood cohesion buffered the link between PTSD and poorer perceived parental functioning among single Black veteran parents. This was not the case among partnered Black veterans, nor among single or partnered white parents, indicating the emphasized protective potential of social contexts for people with multiple intersecting marginalized positions [83]. Investigating how systemic inequality perpetuates cycles of risk and resilience is likely particularly relevant to families of color [92]. Indeed, there is evidence to suggest income inequalities faced by parents of color - particularly single mothers - may aggravate the home environment by generating greater stress to the family [93]. Yet, the bulk of research has neglected wider ecological systems of influence.

# 7. Attention for resilience and post-traumatic growth in parenting

The broader field of psychopathology has been hindered by an overemphasis on deficit models [94], and this critique extends to the field of PTSD and parenting. Although parental PTSD is associated with child psychological distress [1], exceptions exist (e.g., [95]), and relational protective factors such as responsive parenting can mitigate adverse effects on child mental health (e.g., [96]). These findings underline the necessity to investigate protective and promotive factors. Again, the focus should extend beyond individual-level factors contributing to resilience; looking across ecological systems such as the family, neighborhood, and culture, will help establish a fuller understanding of how and why many parents exposed to trauma and adversity are thriving.

Illuminating moderators of effects also informs treatment development, since protective factors can be leveraged in the context of interventions. For example, if social support promotes positive child outcomes (e.g., [97]) expanding families' social circles among those who lack such protective social networks should be central to interventions.

Finally, researchers have argued that using science against the best interests of marginalized groups and prioritizing "damage-centered" research has contributed to the erosion of trust among oppressed communities, such as African Americans living in the United States (e.g., [98,99]). For decades, researchers have studied negative parenting practices among individuals already exposed to a glut of trauma and adversity. Participants who recognize stigmatizing research agendas may understandably experience distress, refuse participation, or yield to

pressures to provide the socially desirable response [100,101]. By instead listening to and learning from the wisdom of parents with PTSD, we can move the field forward and contribute to social justice efforts.

Notably, a growing literature on resilience has proliferated over time [102,103]. Much of this research has focused on the concept of posttraumatic growth (PTG). PTG is defined as the experience of positive change, including positive personality change, following traumatic events [104,105]. Parenting may serve as an important platform for PTG. Indeed, even when other life domains are impaired, parenting can remain intact and even serve as a source of strength [106]. Further, there is evidence to suggest that positive parenting strategies may be less adversely affected by trauma and PTSD than negative parenting strategies [3]. To summarize, an overemphasis on deficit models overshadows the potential for resilience in families exposed to trauma. This can lead us to overlook protective factors for intervention and (unintentionally) stigmatize parents with PTSD, especially those from marginalized communities. In fact, parenting may be a source of strength and potential area for PTG, and more research from this perspective would be highly valuable.

#### 8. Practical implications

The scientific understanding of the associations between PTSD and parenting has made great strides over the past decades. In this paper, we aimed to highlight what we believe are opportunities for advancement, and hopefully provide inspiration for potential ways forward. In closing, we would like to suggest some practical ways to bring these ideas to fruition.

#### 8.1. Welcome open science

We consider the open science movement to have great potential for moving the field forward. Various open science consortia in trauma and PTSD research have already been established. Notably, the Global Collaboration on Traumatic Stress champions open science in traumatic stress research and harbors several data archives [107]. The International Consortium to Predict PTSD, a consortium of acute care centers in six countries wherein prospective data on posttraumatic outcomes were shared and synthesized, is also a good example of what can be achieved through data sharing collaborations between clinical sites [78].

Given the ongoing increase in PTSD and parenting research, there is already an enormous amount of data which, if shared and synthesized, could be used to answer many research questions. Part of these data has already been shared with us by researchers as contributions to our IPDMA; we aim to make as much of these data as possible publicly available after completion of the IPDMA. PTSD treatment centers, which often already systematically collect data for routine outcome monitoring purposes, could also make an important contribution to collaborative data sharing consortia. Funding agencies could play an important role in this, by providing funding to projects based on the sharing and re-use of existing data, or by encouraging studies collecting new data to make their data 'Findable, Accessible, Interoperable, and Reusable' (FAIR [108]) to facilitate synthesis with data from other studies.

#### 8.2. Work towards shared theoretical frameworks

To make the most out of research and data sharing collaborations, bridging the conceptual and methodological gaps between the traumaislands is necessary. In doing this, we cannot skip the critical step of working towards shared theoretical frameworks, based on relevant transdiagnostic mechanisms. These theoretical frameworks can inform the exploration of mechanisms between PTSD and parenting. To bridge the trauma-islands, we need to be explicit about which parenting domains we study in the context of parental PTSD and why, and how these should be defined and measured. In turn, this greater conceptual and methodological clarity can further facilitate the re-use and synthesis of

research data.

#### 8.3. Do more longitudinal research

In terms of research designs, we again emphasize the importance of longitudinal studies. These have several advantages. Firstly, longitudinal research is critical in applying a developmental perspective, because it allows us to analyze how intergenerational and developmental processes play out over time. Secondly, longitudinal studies can show us whether and how parenting changes across time after trauma. For instance, it might be valuable to test whether commonly identified patterns of post-trauma adjustment (see [103]) also apply to parenting behavior. This is also important from a resilience perspective, as following families of parents with PTSD over time can provide insight into pathways of resilience and PTG following trauma.

#### 8.4. Expand the methodological palette

We also call for a critical evaluation of research instruments. Of course self-report can and should not be abandoned, but we should also consider more dynamic methods of administration, such as EMA. Observational measurement is also highly suitable for researching the dynamic interplay between PTSD symptoms and parenting behavior, and is used increasingly in the literature. However, some gaps remain. The advantages of lab-based observation notwithstanding, there is a need for more research examining parenting in naturalistic settings such as the home, to ensure that findings translate to real-world settings. Additionally, some samples are underrepresented in observational studies, such as fathers with PTSD.

It also remains important to expand the methodology with otherreport, especially that of children growing up with a parent with PTSD. Given the current scarcity of such research, we think discussion of methodological approaches (e.g., selection or development of suitable child-report measurement instruments) but also ethical best practices (e. g., how to capture children's experiences while avoiding excessive participant burden) would be a valuable starting point.

# 8.5. Center lived experiences

Our understanding of PTSD and parenting should be deepened through qualitative research centering participants' lived experiences (e. g., [106]). Relatedly, there has been an increasing emphasis on community based participatory research (CBPR) in which researchers work hand-in-hand with families to develop research agendas that address their needs collaboratively. Fortunately, the need for research that is meaningful according to members of the research population is also being increasingly recognized by funding agencies (e.g., [109,110]). CBPR has rarely been applied to the field of trauma and parenting (for an exception, see [111]), but could contribute substantially to community trust and advancement within marginalized at-risk populations. Furthermore, it can contribute to more effective interventions, as it allows us to take families' needs and strengths into account more directly.

### 8.6. Take systemic inequality into account

Finally, we need to expand our focus outside the individual to focus on community- and society-level factors. Lack of access to good healthcare, school, and housing has been perpetuated by systemic inequities that continue to negatively impact parent-child relations among low-resourced families exposed to trauma [112]. More research examining the influence of community-level factors is needed to expand our understanding of the myriad ways in which trauma and PTSD may impact families, to address these factors in public policy and intervention efforts.

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#### Author's contributions (CRediT taxonomy)

Laurien Meijer: Conceptualization; data curation (systematic literature search, literature screening and selection, extracting information from literature for the literature database); funding acquisition; investigation (literature research); project administration; validation (coordinating the double-coding process for establishing interrater reliability); visualization (graphs); writing - original draft; writing: review & editing.

Molly Franz: Conceptualization; data curation (extracting information from literature for the literature database); Supervision (of research assistants who helped with extracting information for literature database); writing - original draft; writing - review and editing.

Maja Deković: Funding acquisition; methodology; validation (participation in double-coding process); writing - review & editing.

Elisa van Ee: Funding acquisition; validation (participation in double-coding process); writing - review & editing.

Catrin Finkenauer: Conceptualization; funding acquisition; methodology; supervision (of PhD candidate/corresponding author); validation (participation in double-coding process); writing - review & editing.

Rolf Kleber: Funding acquisition; writing - review & editing.

Elise van de Putte: Funding acquisition; validation (participation in double-coding process); writing - review & editing.

Kathleen Thomaes: Funding acquisition; methodology; supervision (of PhD candidate/corresponding author); validation (participation in double-coding process); writing: review & editing.

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The other authors have no conflicts of interest to declare.

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