

**When Caregiving Hurts:
Unpacking the Violent
Consequences of Parental Burnout**

When Caregiving Hurts: Unpacking the Violent Consequences of Parental Burnout

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Résumé

Être parent n'est pas toujours facile. Pour certains parents, le stress peut dépasser les ressources disponibles. Lorsque ce déséquilibre devient chronique, cela peut mener au burnout parental. Le burnout parental constitue un enjeu sociétal majeur, en raison de sa prévalence, des coûts qu'il engendre pour la société, mais aussi de ses conséquences multiples. Dans ses formes plus sévères, le burnout parental peut augmenter le risque de violence envers les enfants. Malgré cet impact sur la société et sur la famille, plusieurs questions restent sans réponse, notamment: (i) dans quelle mesure le burnout parental prédit-il la violence envers les enfants par rapport à d'autres prédicteurs de violence ? (ii) existe-t-il des facteurs de risque ou de protection qui modèrent cette relation ? (iii) par quels mécanismes le burnout parental peut-il mener à la violence ? (iv) quels comportements violents sont le plus fortement influencés par le burnout parental? Cette thèse aborde ces quatre questions à travers six chapitres et montre que le burnout parental est un prédicteur *spécifique* de la violence, menant à des plaintes cognitives. Cette escalade vers la violence est progressive, et modérée par des facteurs tiers, tels que l'intelligence émotionnelle et le style d'attachement peureux. Enfin, le burnout parental se manifeste par des comportements spécifiques envers les enfants, notamment par une augmentation de violence psychologique. Ces résultats sont discutés en tenant compte des perspectives de recherche et cliniques.

Abstract

Being a parent is not always easy. For some parents, stresses can exceed available resources. When this imbalance becomes chronic, it may lead to parental burnout. Parental burnout is a significant societal issue due to its prevalence, associated societal costs, and its wide-ranging consequences. In its most severe forms, parental burnout can increase the risk of violence towards children. Despite this impact on society and families, several questions about the condition remain unanswered, including: (i) To what extent does parental burnout predict violence compared to other predictors of violence? (ii) Are there risk or protective factors that moderate this relationship? (iii) Through which mechanisms does parental burnout lead to violence? (iv) Which violent behaviors are most strongly influenced by parental burnout? This thesis addresses these four questions across six chapters and shows that parental burnout is a *specific* predictor of violence that leads to cognitive complaints. This escalation toward violence is gradual and moderated by third factors, such as emotional intelligence and fearful attachment style. Finally, parental burnout has a specific behavioral footprint, in that it specifically increases psychological violence towards children. These results are discussed considering research and clinical perspectives.

Table of contents

Chapter 1: General Introduction	13
1.1 The multifaceted challenges of parenthood	15
1.2 Parental burnout	19
1.2.1 What is parental burnout?	20
1.2.2 What is parental burnout not?	22
1.2.3 The etiology of parental burnout	24
1.2.4 Why does parental burnout matter?	29
1.3 Child maltreatment.....	32
1.3.1 What is child maltreatment?	32
1.3.2 Why does the study of violence matter?.....	37
1.3.3 The origins of violence	41
1.3.4 What predicts violence towards children?	43
1.4 The specific consequence of parental burnout: Violence towards the offspring	46
1.5 The unknowns in the link between parental burnout and violence.....	47
1.5.1 To what extent does parental burnout predict child maltreatment relative to other known risk factors?.....	47
1.5.2 Are there factors that moderate the link between parental burnout and violence?	49
1.5.3 Why does parental burnout lead to violence?	52
1.5.4 Which violent behaviors are most influenced by parental burnout?.....	55
1.6 Aims and research questions.....	56
Chapter 2: Parental burnout and borderline personality stand out to predict child maltreatment.....	61
2.1 Introduction	63
2.2 Method	64
2.2.1 Procedure	64
2.2.2 Participants.....	64
2.2.3 Measures	65
2.2.4 Statistical Analyses	67
2.3 Results	67
2.4 Discussion.....	71
2.4.1 Data availability	73
2.5 Supplementary materials.....	74

<i>Chapter 3: Spiraling down: fearful attachment style moderates the link between parental burnout and violence</i>	83
3.1 Introduction	85
3.2 Methods.....	87
3.2.1 Procedure	87
3.2.2 Participants.....	88
3.2.3 Measures	89
3.2.4 Statistical analyses	90
3.3 Results	91
3.4 Discussion.....	95
3.4.1 Data availability statement.....	97
3.5 Supplementary materials.....	98
<i>Chapter 4: Reducing child maltreatment in parental burnout: The mitigating role of emotional intelligence.....</i>	101
4.1 Introduction	103
4.2 Methods.....	104
4.2.1 Participants.....	104
4.2.2 Procedure	105
4.2.3 Measures	105
4.2.4 Statistical analyses	106
4.3 Results	106
4.4 Discussion.....	109
<i>Chapter 5: Why does parental burnout lead to violence? Testing the mediating role of executive functions.....</i>	113
5.1 Introduction	115
5.1.1 Executive functions as the missing link between parental burnout and violence.....	117
5.1.2 Aims and hypotheses	120
5.2 Methods.....	120
5.2.1 Study 1	120
5.2.2 Study 2	124
5.3 Results	126
5.3.1 Study 1	126
5.3.2 Study 2	129
5.4 Discussion.....	137
5.5 Supplementary materials.....	146

Chapter 6: Parental burnout stages and their link to parental violence: A longitudinal study	153
6.1 Introduction	155
6.1.1 Hypotheses	156
6.2 Method	157
6.2.1 Participants	157
6.2.2 Procedure	158
6.2.3 Measures	158
6.2.4 Pre-registration and open data	160
6.2.5 Ethical approval	161
6.3 Results	161
6.4 Discussion	165
6.5 Supplementary Materials	170
Chapter 7: Parental burnout increases psychological violence more than physical violence	177
7.1 Introduction	179
7.1.1 Aims and hypotheses	180
7.2 Method	180
7.2.1 Participants	180
7.2.2 Measures	181
7.2.3 Statistical analyses	182
7.3 Results	183
7.3.1 Complementary Analysis	190
7.4 Discussion	190
7.4.1 Limitations and Future Directions	192
7.4.2 Concluding Comment	193
7.5 Supplementary Materials	194
Chapter 8: General Discussion	203
8.1 To what extent does parental burnout predict child maltreatment relative to other known risk factors?	205
8.1.1 Parental burnout is a strong and distinct risk factor in violence towards children	205
8.2 Are there risk and protective factors that moderate this association?	209
8.2.1 Characteristics within the parent moderate the burnout-violence link	209

8.3	Which mechanisms explain why parental burnout leads to violence?	218
8.3.1	Parental burnout predicts more self-reported executive functions problems, but these do not robustly relate to violence.....	218
8.3.2	Burnout can gradually lead violence	223
8.4	Which violent behaviors are most influenced by parental burnout?	233
8.4.1	Parental burnout has a behavioral footprint: psychological violence	233
8.5	Limitations	238
8.6	Conclusion.....	244
	References	249
	Appendix	319
9.	<i>Appendix 1 – References for Figure 1. The balance between risks and resources in parental burnout.</i>	321
9.1	Risk factors	321
9.1.1	Micro level.....	321
9.1.2	Meso level.....	325
9.1.3	Macro level	325
9.2	Protective factors.....	326
9.2.1	Micro level.....	326
9.2.2	Meso level.....	327
9.2.3	Macro level	327
10.	<i>Appendix 2 – Additional paper written during the PhD</i>	329
10.1	Does Parenting Perfectionism Ironically Increase Violent Behaviors from Parent towards Children?	329
10.1.1	Introduction	331
10.1.2	Materials and Methods	333
10.1.3	Results	338
10.1.4	Discussion.....	341
10.1.5	Supplementary Materials.....	345

Chapter 1: General Introduction

1.1 The multifaceted challenges of parenthood

Parenthood is often described as one of life's most meaningful roles, offering rewards that shape parents' well-being in profound ways. Raising children can strengthen a parent's sense of competence and efficacy, which allow for the parent to foster life satisfaction and emotional growth (for a review, see Nelson et al., 2014). Moreover, children provide love, closeness, and companionship, which nurture a deep sense of connectedness (for a review, see Nelson et al., 2014), which can result in parents generally feeling better on a day-to-day basis than non-parents (Nelson et al., 2013). Children bring joy, pride, and amusement into everyday life, and their milestones and behaviors introduce variety and novelty that sustain happiness over time (for a review, see Nelson et al., 2014). It is also the specific tasks involved in parenthood that influence the parent's wellbeing, for instance responsibilities can enhance feelings of autonomy, personal control, and growth (for a review, see Nelson et al., 2014), as well as generally deriving more positive feelings from caring for their children than from other activities (Nelson et al., 2013). Parenthood also represents a meaningful social role, enriching identity and offering a sense of purpose (for a review, see Nelson et al., 2014).

While parenthood provides significant meaning and rewards, it is equally one of life's most demanding roles. It has sometimes been described as a crisis, as it requires constant adaptation to new challenges (Russell, 1974). Accordingly, LeMasters (1957) emphasizes that "the fact that parenthood is normal does not eliminate crisis", underscoring that parenthood can be very disruptive, despite being a normal experience (LeMasters, 1957). Some of the reasons that parenthood can be perceived as very demanding is the fact that parenthood inherently brings *new* and *ample* challenges that the parent is *constantly* dealing with. These challenges are diffuse, as they take place in many of the parent's life domains, such as physical, social and societal, and psychological.

Physically, parenthood is often marked by sleep disturbances that affect not only daily functioning but also long-term health (Da Costa et al., 2021; Medina et al., 2009). Parents are significantly less likely to achieve restorative sleep (Carson et al., 2018), which is known to impair cognitive abilities (Kong et al., 2023). Beyond disrupted sleep, parenthood results in

changes in activity levels. These activity levels significantly decline, and in many cases, these changes are long-lasting, with activity never fully returning to pre-parenthood levels (Perales et al., 2015). This reduced activity is often paired with weight gain (Umberson et al., 2011), especially in mothers (for a meta-analysis, see Corder et al., 2020), which then increases their risks of being obese (Saxbe et al., 2018). Obesity may physiologically translate to them showing lower levels of HDL cholesterol and an increased risk of developing cardiovascular disease and cardiovascular complications (Peters et al., 2017). Thus, overall, parents tend to report poorer physical health.

Socially and societally, parents deal with new relational and social dynamics, as well as heightened societal pressures that are put on them.

Socially, parenthood deeply changes the relational surrounding of the parent. For those in a romantic relationship, the couple's relationship often undergoes significant strain, marked by increased conflict, reduced quality and quantity of communication, and less constructive conflict management (Kluwer, 2010; Watson et al., 1995). Coparenting differences in childrearing styles may exacerbate this strain, fueling marital conflict (Tavassolie et al., 2016). Parenthood not only adds new stressors but can also diminish previous pleasures. A meta-analysis observed that in the first two years postpartum, marital satisfaction declines steeply, with interdependent effects between partners (Bogdan et al., 2022). Beyond the couple, parenthood reshapes broader social relationships. Parents, particularly of infants and toddlers, often report reduced social relationships and shrinking networks, as caregiving demands leave less room for peer and community engagement (Nowland et al., 2021). This social isolation is not beneficial, as limited social support increases vulnerability to ill-being and health outcomes (Holt-Lunstad & Steptoe, 2022).

At the societal level, parents face broader cultural and structural pressures. Contemporary parenting discourse is increasingly prescriptive, bombarding parents with contradictory messages and unrealistic ideals (e.g., Lapin, 2020; Pantley, 2009; Roberts, 2022). For instance, parents are told simultaneously to foster independence, yet maintain constant involvement (e.g., parents should learn to let go of their children, see Obradović et al., 2021; versus parents should be involved, see Tan et al., 2020), creating confusion and insecurity. This reflects the ideology of intensive parenting, which frames parents as the primary determinants of their children's future

success (e.g., Adams, 2020; Lind et al., 2016; Rizzo et al., 2013). Such cultural scripts amplify pressure and foster perfectionism in parents. Importantly, societal norms of the “good parent” are often narrow and exclusionary, stigmatizing single parents or families deviating from dominant models (e.g., Sperling, 2013). Structural inequalities also shape parental well-being: parents experiencing unemployment, economic strain, or dependency on welfare report worse health outcomes (for a review, see Neises & Grüneberg, 2005). Gender differences have also often been reported, for instance where new mothers tend to adopt more traditional gender role attitudes (Grinza et al., 2022) and experience more social pressures compared to fathers (Venard et al., 2024), though a recent meta-analysis suggests that in terms of stress, both genders experience similar levels during parenthood (for a meta-analysis, see Rusu et al., 2025).

It is not only social and societal factors that can make the experience of parenthood challenging; *institutional* factors can also add to these difficulties. For instance, work-family conflict is a common experience, as more families rely on dual incomes and must juggle full-time employment with caregiving (Byron, 2005). Moreover, the availability of parental leave, childcare, and flexible work policies vary greatly across countries and communities, leaving many parents without sufficient support (OECD, 2011). Additional social challenges arise for parents of children with developmental disorders or special needs. These parents face unique day-to-day challenges (Neff & Faso, 2015), often in the absence of adequate societal support, frequently paired with stigma and judgement (Broady et al., 2017).

However, parenthood entails more than just physical strain and social or societal challenges. The most significant difficulties for many parents appear to be *psychological* in nature. Parents are confronted with the substantial task of constructing a new identity, the parental self, that is centered around the parental role (Tsushima & Burke, 1999). This identity occupies a significant portion of the self and is likely to persist over an extended period, usually for a lifetime. While this can be fulfilling, it can also be distressing, especially for parents who overly identify with their parental role, because they’re at risk of experiencing even more stressors and parental distress (Simon, 1992).

Cognitively, mental overload is a common challenge for parents, driven by the constant need to plan, organize, and make decisions under time

pressure and uncertainty. The daily mental load, ranging from arranging childcare and coordinating transportation to managing household responsibilities, can result in significant decision fatigue and depletion of mental resources (Vohs et al., 2008).

Emotionally, parents must engage in extensive emotional labor, which includes regulating not only their own emotions but also those of their children (Rutherford et al., 2015). This period also brings heightened vulnerability to mood disorders, such as postpartum depression (Epifanio et al., 2015). The intensity of emotion regulation demands can exceed parents' typical regulatory capacities, increasing the risk of psychological distress or pathology, especially when compounded by high levels of stress (Rutherford et al., 2015). Stress itself is one of the most pervasive and normative psychological experiences associated with parenthood. Empirical evidence consistently shows that parents experience elevated stress levels (for a review, see Westrupp et al., 2022), requiring constant adaptation (Israelashvili & Taubman-Ben-Ari, 2023; Terry, 1991).

Thus, the challenges of parenthood span multiple life domains and can profoundly challenge parents. They often contend with disrupted sleep and physical health risks, strain on intimate relationships and broader social ties, and societal pressures tied to ideals of "good parenting" and structural inequalities. Added to this are institutional barriers, such as limited parental leave or inaccessible childcare, as well as the psychological demands of identity shifts, cognitive overload, and emotional labor, often coupled with heightened vulnerability to stress and mood disorders.

Considering all these aspects of parenthood is important as, for some parents, they might be the reason for their ill-being. Most parents are able to deal with such challenges, underlined by the fact that these stresses are still considered as normal (LeMasters, 1957). However, some parents accumulate too many stresses for too long. Along with this chronic accumulation, some parents also have a serious depletion of resources, thus not enabling them to re-balance the stresses they face. In these instances, parents may experience burnout in their parenting role: parental burnout (Mikolajczak et al., 2021). Although parental burnout is specific to the parental context, it is interesting to note that not only parenthood-specific risk and protective factors matter in its etiology, but also non-specific factors (Mikolajczak & Roskam, 2018), thus emphasizing the importance of considering *many* facets of parenthood

challenges. In fact, the components that make a parent tip into parental burnout are personal to each parent. Some parents accumulate risk factors, that can vary in their nature and magnitude (Roskam & Mikolajczak, 2022), thus suggesting that the various aspects of parenthood should be considered when studying parents and, clinically, when tackling risk and resources (Roskam & Mikolajczak, 2022).

The current thesis aims to deepen knowledge on the well-established finding that parental burnout can lead to violence toward children. The introduction will first explore the concepts of parental burnout and child maltreatment, followed by an overview of the specific link between parental burnout and violence. It will conclude by highlighting the remaining unknowns in this area, which the thesis seeks to address. The questions guiding this work are: To what extent does parental burnout predict child maltreatment relative to other known risk factors? Are there risk and protective factors that moderate this link? Why is parental burnout associated to violence? Which violent behaviors are most associated with parental burnout? The chapters following the introduction are organized around these questions, and the thesis concludes with a discussion section that integrates the findings and provides a nuanced perspective on the results.

1.2 Parental burnout

The study of parental burnout is relatively recent, expanding upon earlier research on occupational burnout. The concept of burnout was initially introduced in the job domain, specifically among healthcare professionals, and was defined as a state of physical and emotional exhaustion resulting from excessive demands on energy, strength, and resources (Freudenberger, 1974). However, subsequent research demonstrated that burnout was not limited to healthcare professionals (Freudenberger, 1975). Later studies further refined the conceptualization of burnout, identifying core symptoms such as cynicism, negativism, and psychological rigidity as central features of the syndrome (Freudenberger, 1977). Since then, burnout has been recognized as a reaction to chronic stress (Edú-Valsania et al., 2022) that should be regarded as a significant mental health concern on a global scale (Heinemann & Heinemann, 2017). Given that burnout is a response to chronic stress, it is not inherently confined to occupational settings. Rather, burnout

is context-specific and can emerge across a variety of contexts characterized by high and sustained stress. Research has increasingly demonstrated the existence of multiple forms of burnout beyond the workplace, including academic and parental burnout. Academic burnout refers to a syndrome experienced by students who face persistent academic pressures (e.g., Lin & Huang, 2014). Similarly, the construct of parental burnout has been developed to describe the exhaustion-state that can result from chronic parenting-related stress (e.g., Mikolajczak et al., 2021). These insights have broadened the understanding of burnout beyond occupational settings, highlighting its relevance in diverse life domains.

This thesis focuses on parents experiencing burnout for four reasons. First, the decision to focus on parents was initially motivated by a personal interest in understanding their lived experiences and the complexities they navigate. Second, parents constitute a large societal group, underscoring the significance and relevance of addressing their mental health. In fact, currently parents living with at least one child constitute one third of Belgian population (StatBel, 2024). Third, beyond the intrinsic importance of supporting parents' mental health, their well-being also has broader implications for the family system. Parents play a role in shaping the developmental trajectories of their children, as unwell parents can impact physical and mental health in their offspring (for physical outcomes, see Pierce et al., 2020; for mental outcomes, see van Santvoort et al., 2015). Fourth, parental burnout *specifically* is of significant societal concern due to its prevalence, its associated societal costs, and its detrimental consequences. These aspects will be explored in greater detail in the following sections. We begin by examining the concept of parental burnout and defining its characteristics.

1.2.1 What is parental burnout?

Initially, parental burnout was primarily studied in parents facing specific challenging conditions, such as those raising children with chronic illnesses (Lindahl Norberg, 2007; Lindström et al., 2010), developmental disabilities (Weiss, 2002), tumors (Norberg, 2010), or who had undergone surgery (Lindahl Norberg et al., 2014). More recently, however, parental burnout research has broadened to include all parents, as it has become evident that burnout is not limited to those dealing with extraordinary

caregiving challenges. Indeed, any parent may be at risk of experiencing burnout due to the cumulative stressors associated with parenting (Mikolajczak & Roskam, 2020).

Parental burnout is a stress related condition specific to the parental role, which occurs when the parent is faced with overwhelming stressors that outweigh the parent's resources (Mikolajczak et al., 2021). The initial conceptualization of parental burnout emulated the conceptualization of job burnout. In fact, parental burnout was initially described as consisting of three symptoms: exhaustion, emotional distancing and inefficacy (original version, see Roskam et al., 2017; Dutch version, see Van Bakel et al., 2018; Japanese version, see Kawamoto et al., 2018). Subsequently, the current conceptualization of parental burnout was developed using an inductive approach, grounded in the lived experiences of burnt-out parents. This methodology enabled researchers to define parental burnout based on patterns and themes emerging directly from parental narratives, ensuring that the construct reflects the realities of those affected (Roskam et al., 2018). Using this bottom-up approach, four core symptoms of parental burnout emerged: exhaustion, emotional distancing from one's children, a sense of being fed up with parenting, and a perceived contrast with one's previous parental self; all of them manifesting specifically in the parental role (Mikolajczak & Roskam, 2020; Roskam et al., 2018). Based on these symptoms, cut-off scores have been developed to classify parents into three categories: low risk (control), at risk of burnout, and experiencing burnout (Brianda et al., 2023). Although categorizing parental burnout can be useful for distinguishing between different groups, treating it as a continuous variable remains particularly relevant in current research. A continuous approach allows for finer-grained analysis and retains the full variability of the data, making it possible to examine more subtle and complex relationships between parental burnout and psychological or behavioral outcomes. For these reasons, in this thesis, parental burnout is treated as a continuous variable.

Parental burnout is a process. Parents who experience parental burnout do not necessarily exhibit all symptoms at once. In fact, parental burnout seems to be a *developmental process*, in which exhaustion sets in as the first symptom (Roskam & Mikolajczak, 2021), which then prospectively increases emotional distancing (Roskam & Mikolajczak, 2021). In other words, parents may start feeling exhausted at first, but as parental burnout

sets in, parents may start to feel more emotionally distant with their children. Interestingly, some symptoms may contribute to maintaining parental burnout, making it harder to get out of. However, results are not always consistent, as they differ based on the measurement used for parental burnout. Emotional distancing seems to be the symptom that allows parental burnout to maintain, by activating and reinforcing all the remaining symptoms, when using a prior measure of parental burnout (i.e., Parental Burnout Inventory; Blanchard et al., 2021). On the contrary, when parental burnout is measured with the new measure (i.e., Parental Burnout Assessment), exhaustion and feeling fed up contribute the most to maintaining a parent in burnout (Kalkan et al., 2022). Even though majority of parents do not exhibit all symptoms at once, parents in the most *severe* stages of parental burnout do. In fact, severely burned out parents seem to have high levels of all four symptoms, and this no matter the country it is investigated in (for a study on 36 countries, see Matias et al., 2023). However, culturally, some symptoms seem to be more present in certain parts of the world than others. For example, the symptom of contrast seems to be a distinctive symptom for parental burnout in countries with low collectivism and high individualism values (for a study on 36 countries, see Matias et al., 2023).

Thus, parental burnout is conceptualized as a chronic, processual condition specific to the parental role. While most parents experiencing burnout do not display all symptoms simultaneously, severe cases often do. The expression of symptoms may also vary across cultures. To fully understand parental burnout, however, it is equally important to clarify what it is not. This helps define its boundaries more precisely and prevents conceptual confusion.

1.2.2 What is parental burnout not?

In the following paragraphs, we examine what parental burnout is not, by distinguishing it from related psychological conditions. Clarifying these distinctions is essential for a more precise understanding of the concept and its unique implications.

Parental burnout is not mere parental stress. Three arguments point to the fact that parental burnout and stress are conceptually different. First, the items measuring parental burnout rely on a frequency scale ranging from never to several times a day. Thus, the more often the parent experiences

symptoms, the more burnout is *chronic*. Stress, on the other hand, is usually conceptualized as a *momentary* response to environmental stressors (Cohen et al., 1995). Second, research so far seems to suggest that one precedes the other. The more frequently a parent experiences stress (in the absence of corresponding resources), the more they are at risk of developing parental burnout (Desimpelaere et al., 2023). Third, parental burnout is associated with an increase in the hormone of *chronic* stress - cortisol (Brianda, Roskam, & Mikolajczak, 2020), further suggesting that parental burnout is not mere momentary stress.

Parental burnout is not job burnout, because the symptoms of the former are contextualized in the parental role, whereas job burnout symptoms are in the professional context (i.e., items parental burnout scale do not load with job burnout scales, see Mikolajczak et al., 2020). Moreover, parental burnout has also specific symptoms that have not been identified in the professional sphere, such as emotional distancing, feeling fed up, and contrast with the previous parental self (Mikolajczak et al., 2020). Not only are symptoms different, but parental burnout also carries a higher risk for certain negative outcomes compared to job burnout. Parental burnout specifically increases more parental violence and neglect towards children (Mikolajczak et al., 2020). However, the fact that they are different concepts, does not preclude that they are related (for a meta-analysis, see Mikolajczak et al., 2023). Longitudinal evidence suggests that parental burnout can lead to increased work-family conflict, which subsequently contributes to higher levels of job burnout (Wang et al., 2022). However, it's important to note that despite the longitudinal design, this study did not test for bidirectional effects, meaning it's still unclear whether job burnout might also contribute to subsequent parental burnout. While the two forms of burnout are related, current evidence suggests that parental burnout has relatively limited influence on work-related outcomes (Evans et al., 2022).

Parental burnout is not depression, as it only includes experiences in the parental role, and does not diffuse into other life spheres, as depression would (Mikolajczak et al., 2020). Its symptoms are unlike depression, which is supported by the fact that they do not load with depression scales (Mikolajczak et al., 2020). As mentioned in the previous paragraph, parental burnout has more pronounced consequences on behaviors towards children (i.e., violence and neglect), that are much lower in job burnout, but also in

depression (Mikolajczak et al., 2020). Although distinct, parental burnout and depression are positively related, meaning that a parent experiencing burnout in their parental role may be at higher risk of developing depression symptoms (Yakupova & Suarez, 2023), and this could happen because parental burnout could increase maladaptive coping strategies, which would then lead to an increase in depression (Sabzi et al., 2023). However, the relationship between parental burnout and depression only seems to appear when tested cross-sectionally, as when tested longitudinally, no prospective relation between parental burnout and depression is observed (Evans et al., 2022). This suggests that the relationship between parental burnout and depression, although seemingly existing, is more complex than expected.

In summary, although parental burnout shares similarities with stress, job burnout, and depression, it should be recognized as a distinct construct with specific consequences for parental behaviors toward children.

1.2.3 The etiology of parental burnout

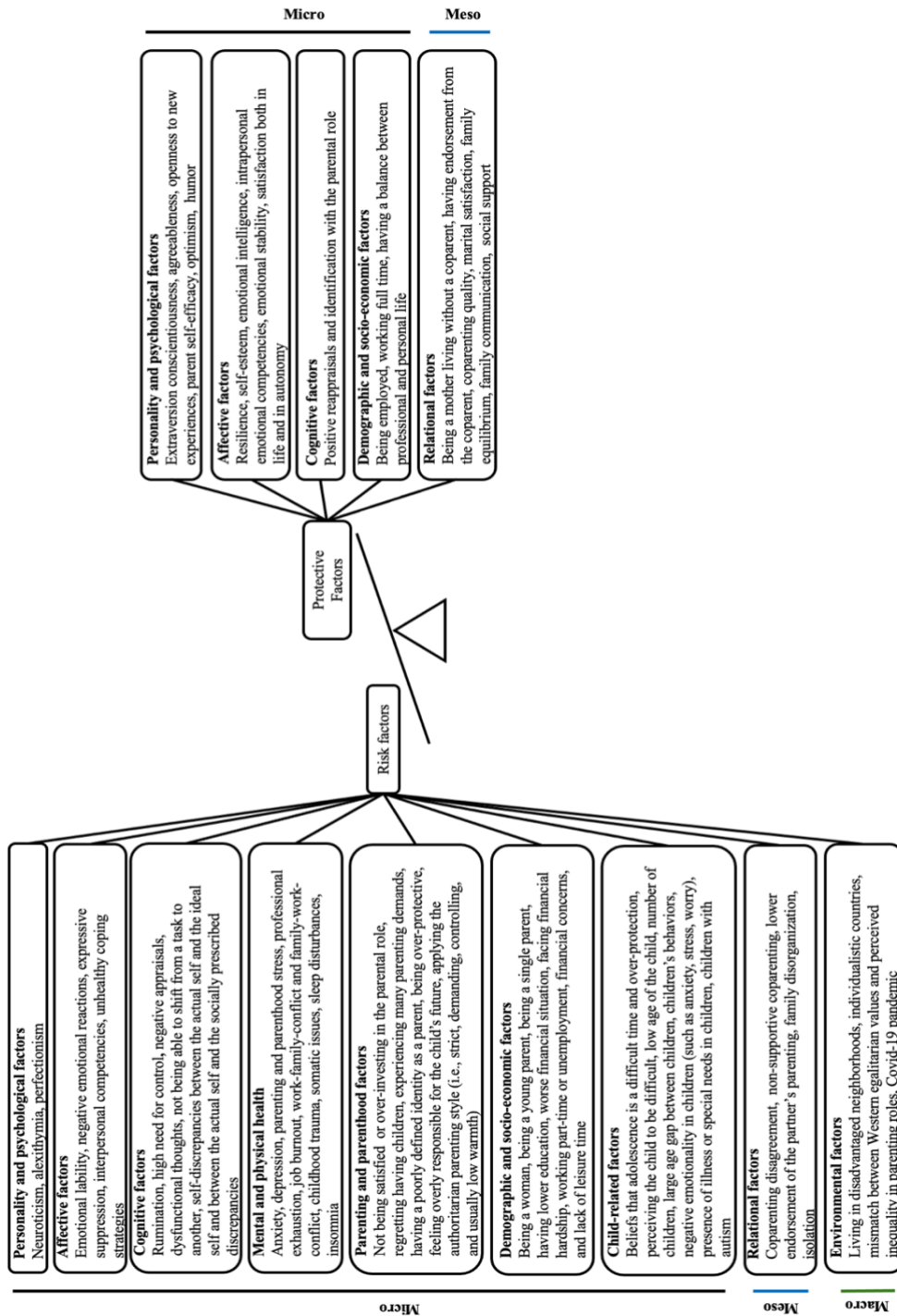
Thus far, we have defined the conceptual boundaries of parental burnout, clarifying what it is and what it is not. In the following paragraphs, we explore how parents come to develop burnout.

Most research on parental burnout has explained its etiology through the balance of risks and resources model (Mikolajczak & Roskam, 2018). In this model, parents who *chronically* face too many stressors that are not outweighed by available resources could develop parental burnout (Mikolajczak & Roskam, 2018). Although parental burnout is specific to the parental context, it is interesting to note that not only parenthood-specific risk and protective factors (e.g., parental standards, parenting practices, co-parenting) matter in its etiology, but also non-specific factors (e.g., perfectionism, stress management abilities, pessimism; Mikolajczak & Roskam, 2018). The components of the balance vary and are personal to each parent, but research so far has identified factors that seem to influence parental burnout at a mean level. Risk and protective factors can be categorized in micro (i.e., individual), meso (i.e., relational), and macro (i.e., environment) levels. Within the risk factors, micro-level risk factors entail personality and psychological factors, affective, cognitive, mental and physical, parenting and parenthood, demographic and socio-economic, and child-related factors. At the meso level, relational factors have been identified

increasing the risk of parental burnout. Finally, at the macro level, environmental factors have been identified as increasing parental burnout. For protective factors, so far, only micro and meso-level factors have been identified as decreasing the risk of parental burnout. Details on the elements constituting risk or protective factors can be viewed in **Figure 1**, which summarizes literature until now (January 2025). Further details and references can be found in **Appendix 1**.

Figure 1

The balance between risks and resources in parental burnout



It should also be mentioned that most studies focus on singular risk and protective factors predicting parental burnout. Thus, research has majorly focused on the influence of risk and protective factors *alone* in the etiology of parental burnout. But parents actually accumulate an array of factors. To my knowledge, only one study carried out analyses that identified which factors weigh the most in the balance, when controlling for the influence of the other factors (Mikolajczak, Raes, et al., 2018). The results can be summarized in three points. *First*, socio-demographic factors play a negligible role in the etiology of parental burnout (Mikolajczak, Raes, et al., 2018), and if they matter, it seems to be through positive or negative reappraisals of such factors (Woine et al., 2022). *Second*, traits of the parent (in the study, emotional intelligence, neuroticism, and avoidant attachment), parenting factors (in the study, positive parenting, self-efficacy beliefs, and role restriction), and family functioning factors (in the study, exposure to conflict, co-parental agreement, marital satisfaction, and family disorganization), seem to weigh the most in the etiology of burnout (Mikolajczak, Raes, et al., 2018). Among these, parenting factors explain the largest proportion of parental burnout's variance (Mikolajczak, Raes, et al., 2018). *Third*, although some factors might carry a larger weight on the scale, this does not mean that only those should be targeted in interventions. In fact, what truly matters is the accumulation of risk factors (Roskam & Mikolajczak, 2022). The more risk factors present, the higher the parental burnout. This suggests that clinically, any factor can matter, and tackling a series of smaller risk factors when treating a parent can be as important as trying to reduce a major one (Roskam & Mikolajczak, 2022).

The balance between risks and resources model remains the most influential framework in explaining the etiology of parental burnout. Recently, however, a new theoretical approach has been tested: the effort-reward imbalance model (Wang et al., 2025). This model introduces the concept of reward, which is not explicitly accounted for in the original framework. Nevertheless, the current body of literature is insufficient to determine whether the effort-reward imbalance model provides a more accurate prediction of parental burnout. Further empirical research is required to assess its added value, and until then, the balance between risks and resources model continues to be the dominant explanatory framework.

In summary, the etiology of parental burnout has primarily been explained through the balance between risks and resources model, emphasizing that burnout arises when parenting stresses chronically outweigh available resources. Although individual risk and protective factors play important roles, recent findings highlight that it is the cumulative effect of multiple factors that most strongly predicts parental burnout. However, despite these insights into how parental burnout develops, we have yet to fully grasp how significant and impactful it is; a question that will be addressed in the following section.

Although parental burnout has not formally been placed in a psychiatric etiological perspective, the thesis adopts an approach situated at the intersection of Engel's (1977) biopsychosocial model and Dodge's (2012) well-being model. The biopsychosocial model posits that biological, psychological, and social explanations all contribute equally to the development of mental disorders (Engel, 1977). By emphasizing their interdependence, this model encourages dialogue and collaboration across disciplines, acknowledging that mental illness is a multilayered phenomenon. Complementing this, Dodge's (2012) model of well-being introduces the concept of balance, defining well-being as the dynamic equilibrium between an individual's resources and the challenges they face (Dodge et al., 2012). These models contrast with the view, particularly prevalent in the U.S., that psychiatry can be understood solely through the biomedical model (for a review, see Deacon, 2013), which conceptualizes mental disorders as brain diseases that arise from biological dysfunctions and can therefore be treated pharmacologically only. Within this framework, mental illness is not fundamentally different from physical illness, as both are viewed as consequences of malfunctioning organs (Deacon, 2013).

Engel's (1977) and Dodge's (2012) perspectives seem the most relevant to parental burnout. Research demonstrates that risk factors for burnout span biological, psychological, and social levels (see **Figure 1**), while empirical evidence also consistently supports the view that it is the imbalance between risks and resources that underly its etiology. Thus, although the biomedical model can offer valuable insights into the biological underpinnings of mental illness, it is insufficient on its own in the context of parental burnout. To fully understand parental burnout, the psychological and

social dimensions in which psychopathology emerges must also be taken into account.

1.2.4 Why does parental burnout matter?

The surge in research on parental burnout can be attributed to its significant clinical and societal implications, supported by three key reasons. *First*, a 42-country study showed that parental burnout is rather prevalent (Roskam, Aguiar, et al., 2021). Although there are cross-cultural differences in its prevalence, in some countries parental burnout is rather prevalent. For Belgian parents especially, parental burnout's prevalence reaches 8%. In other words, one out of twelve parents in Belgium may experience parental burnout (Roskam, Aguiar, et al., 2021). *Second*, parental burnout, in association with other mental health issues during the post-natal period, considerably increases the costs of healthcare services (i.e., for a study conducted in Germany, see Kass et al., 2024). *Third*, parental burnout has far-reaching and detrimental consequences that extend beyond the individual, affecting the entire family system. It compromises the health of the parent and disrupts interpersonal relationships within the family. The consequences of parental burnout can be categorized into three factors, namely consequences on: the unwell parent, the couple's relationship, and the child's wellbeing and parenting behaviors towards the child. For each, we will distinguish findings that have cross-sectional, longitudinal, or experimental proofs. These will be presented in the following paragraphs.

Parental burnout affects the unwell parent, that can be either psychological or somatic. *Psychologically*, parental burnout is related to increased escape and suicidal ideations (cross-sectionally, see Mikolajczak et al., 2018; Mikolajczak et al., 2020; longitudinally, see Mikolajczak et al., 2019) and is related to addiction, such as alcohol abuse (cross-sectionally, see Mikolajczak et al., 2018; Mikolajczak et al., 2020) and smartphone addiction (cross-sectionally, Sun et al., 2024). *Somatically*, parental burnout is related to somatic complaints (cross-sectionally, see Mikolajczak et al., 2020), sleep disorders (cross-sectionally, see Mikolajczak et al., 2018; Mikolajczak et al., 2020), and an increase in hair cortisol concentration (cross-sectionally, see Brianda, Roskam, & Mikolajczak, 2020; experimentally, see Brianda, Roskam, Gross, et al., 2020).

Parental burnout also affects the couple's relationship. In fact, parental burnout seems to be related to more marital conflict and partner's estrangement (cross-sectionally, see Mikolajczak et al., 2018). Specifically, it is the symptom of exhaustion that is more related to marital issues (cross-sectionally, see Sun et al., 2024).

Parental burnout affects the child's wellbeing. Parental burnout increases psychological and behavioral issues in children. *Psychologically*, parental burnout is associated with more symptoms of emotional distress in children between 2 and 6 years old (cross-sectionally, Prino et al., 2023), where emotional distress is associated with more academic burnout in adolescents (cross-sectionally, Zhang et al., 2023). Additionally, parental burnout increases adolescent burnout by fostering greater psychological control (estimated with lagged regression without bidirectional effects, Wang et al., 2023). *Behaviorally*, parental burnout is linked to more internalizing and externalizing behavior issues in children, as it is linked with lower positive parenting (cross-sectionally, Woine et al., 2024), adolescent self-control, increases parental psychological aggression (estimated with lagged regressions without bidirectional effects, Yuan et al., 2022) and parental hostility (longitudinally, Chen et al., 2022), which in turn all increase behavioral problems in children. Especially the symptom of exhaustion is most related to child behavioral problems (cross-sectionally, Morón et al., 2023). Parental burnout does not only increase behavioral problems, but it is also linked to lower pro-sociality in children and adolescents. This is because decreases in parental empathy (cross-sectionally, Wang et al., 2024) and increases in psychological control (cross-sectionally, Yan et al., 2023), result in lower pro-social behaviors in children and adolescents. Parental burnout can also disrupt the children's social adaptation. This is because parental burnout increases psychological control (Wang et al., 2023), harsh parenting and parental rejection (estimated with lagged regressions without bidirectional effects, Song et al., 2024), and parental neglect (estimated with lagged regressions without bidirectional effects, Guo et al., 2024), which in turn decrease the social-adaptation of the adolescent. Evidence of this can also be seen in social-withdrawal in children and adolescents, through a positive association with smartphone and screen use (cross-sectionally, Campos et al., 2023; Sun et al., 2024; Zhang et al., 2024). Thus, parental

burnout detrimentally affects psychological and behavioral aspects in both children and adolescents.

Parental burnout affects parenting behaviors towards children.

Parental burnout influences parenting behaviors in multiple ways. Research has shown that it is negatively related to positive parenting (cross-sectionally, Ping et al., 2023; Woine et al., 2024), which includes relational competencies (e.g., helping a child calm down when they are stressed), formative competencies (e.g., inviting the child to collaborate in daily household activities), protective competencies (e.g., ensuring the child is cared for appropriately in the parent's absence), and reflective competencies (e.g., evaluating whether parenting practices are developmentally appropriate) (Woine et al., 2024). Burned-out parents also tend to report fewer authoritative (i.e., higher warmth and higher demands) and permissive (i.e., higher warmth and lower demands) parenting behaviors (cross-sectionally, Mikkonen et al., 2022). In contrast, parental burnout has been consistently linked to an increase in negative parenting practices (cross-sectionally and longitudinally, Guo et al., 2024; Ping et al., 2023), and to a greater reliance on authoritarian parenting (i.e., lower warmth and higher demands; cross-sectionally, Mikkonen et al., 2022).

Research suggests that parental burnout is linked to increased feelings of anger (cross-sectionally, Johnson et al., 2024) and hostility towards children (cross-sectionally, Morón et al., 2023; Ning et al., 2023). More critically, parental burnout increases the risk of illegal behaviors towards children, namely child maltreatment, particularly violence and neglect (cross-sectionally, Mikolajczak et al., 2018; longitudinally, Mikolajczak et al., 2019; experimentally, Brianda et al., 2020).

Thus, parental burnout is not only a highly prevalent and costly condition, but it also has profound psychological, relational, and behavioral consequences that extend beyond the parent to the broader family system. Its impact on child development and parenting behaviors, particularly the increase in violence, underscores the urgent need for further investigation. The relationship between parental burnout and violence will serve as the foundation of this thesis. However, before exploring in detail how parental burnout is linked to violence, it is essential to first define and clarify the concepts of child maltreatment and violence.

1.3 Child maltreatment

1.3.1 What is child maltreatment?

Defining child maltreatment presents significant challenges, as numerous factors can shape perceptions of what constitutes maltreatment. Historical period, cultural context, and the intended purpose of the definition all contribute to this variability. In the following section, we will first outline the factors that complicate the definition of child maltreatment, before presenting the definition adopted in this thesis.

Historical considerations in the definition of child maltreatment

Historically, the growing interest in child maltreatment can be traced back to the 1960s in the United States, a period marked by the rapid enactment of child protection legislation (Paulsen, 1967; Paulsen et al., 1965). This shift likely coincided with a broader transformation in societal views of childhood, wherein children began to be seen as vulnerable individuals in need of *care*, *support*, and *protection* to achieve optimal development (DeMause, 1995; MacMillan, 2000). At that time, however, there was no universally accepted definition of child maltreatment. Early research efforts focused primarily on case descriptions of what was then termed “child maltreatment syndrome” (e.g., Kempe et al., 1962), with particular emphasis on documenting the consequences of maltreatment rather than establishing conceptual clarity (Cohen et al., 1966; Fontana et al., 1963).

The evolution of societal attitudes toward children is also reflected in international legal frameworks. The Geneva Declaration of the Rights of the Child (League of Nations, 1924) primarily emphasized the child’s right to *optimal development*. Later declarations, such as those of the United Nations (1948), increasingly highlighted the child’s need for *care*, *protection*, and *respect*. It was not until the 1970s that more precise definitions of child maltreatment began to emerge, describing it as *non-accidental physical injury* inflicted by caregivers (Gil, 1968). This culminated in the 1989 United Nations Convention on the Rights of the Child, which formally recognized a child’s right to be *protected* from all forms of *physical or mental violence*, neglect, and sexual abuse; forms now widely categorized under child maltreatment (United Nations, 1989a).

Thus, over time, interest in child maltreatment has evolved from an initial focus on clinical syndromes to the development of more conceptual frameworks. Early definitions were relatively narrow, primarily encompassing non-accidental physical harm inflicted by caregivers. These definitions gradually expanded to include a broader range of maltreating behaviors, culminating in conceptualizing child maltreatment as encompassing physical and psychological violence, neglect, and sexual abuse (United Nations, 1989a).

It is essential to recognize, however, that this conceptual evolution has been largely shaped by Western perspectives. While the current definitions offer important protections, they may not fully capture the diversity of experiences and cultural norms across different societies. As will be explored in the following sections, cultural context plays a pivotal role in shaping how child maltreatment is defined, perceived, and addressed globally.

Cultural considerations in the definition of child maltreatment

What is considered child maltreatment in one culture may not be perceived as such in another. This variability is likely rooted in differences in the cultural values assigned to children and prevailing child-rearing practices (Agathonos-Georgopoulou, 1992). For example, some countries might perceive a behavior as being maltreating whilst another country might not. A cross-cultural comparison of nurses in the United States (US) and the United Kingdom (UK) revealed that UK nurses were more likely to classify certain parental behaviors as maltreating than their US counterparts (Levinson et al., 1984). Notably, beating a child with a belt was more frequently identified as maltreating by UK nurses (Levinson et al., 1984).

Cultural differences are evident not only in the types of behaviors considered maltreating, but also in the *thresholds* at which behaviors are labeled as such. In a study comparing Dutch and Chinese participants, the Chinese sample demonstrated a higher threshold for labeling behaviors as child maltreatment relative to the Dutch sample (Woudstra et al., 2021). Similarly, in a nine-country study, Chinese mothers identified fewer behaviors as maltreatment compared to mothers in countries such as the Netherlands, Iran, Portugal, and South Africa (Mesman et al., 2020).

These cultural variations also extend to the perceived *acceptability* of maltreating behaviors. In a comparative study involving Cameroon, Canada,

Germany, and Japan, behaviors classified as child maltreatment were rated as more acceptable in Cameroon than in the other countries (Bartoli et al., 2024). Moreover, *cultural norms* around the acceptability of certain behaviors can influence their prevalence. For instance, a multi-country study examining corporal punishment found that Kenya had the highest average scores for both the perceived normativeness and perceived necessity of corporal punishment (Lansford et al., 2015). Correspondingly, Kenya also reported the highest levels of corporal punishment. In contrast, Sweden reported the lowest levels for both perceived normativeness and the actual use of corporal punishment (Lansford et al., 2015). These findings highlight how cultural perceptions of what is considered “normal” can directly shape the frequency of specific behaviors.

In sum, culture influences which behaviors are defined as maltreatment, the thresholds for labeling behaviors as such, and the extent to which these behaviors are deemed acceptable, and thus more or less prevalent. It is important to note, however, that these cross-cultural observations are derived from research contexts where definitions of violence and maltreatment may differ from those used in practice by professionals in other disciplines or contexts.

Professional considerations in the definition of child maltreatment

The *purpose* of the definition influences how we define child maltreatment. Defining child maltreatment could serve different purposes for clinicians, legal professionals, or researchers (Hutchison, 1990). For instance, professionals dealing firsthand with clinical cases of child maltreatment will base their judgement on whether a child has experienced maltreatment based on the consequences observed on the child (e.g., the child has bruises), rather than directly observing maltreating behaviors (e.g., the physical act harming the child; Hutchison, 1990). This then may create a gap between those who see the consequences of maltreatment (i.e., clinical staff) and those who embody the role of formulating legal regulations and social policies (Hutchison, 1990). For legal representatives, the focus is placed mostly on the specific behaviors that should be avoided or punished (Hutchison, 1990). Thus, these professionals need a very dichotomized conceptualization of child maltreatment (it happened versus it did not happen). It should be noted however that even within the legal domain, definitions of child maltreatment

are multiple and disparate (Petersen et al., 2014). Where legal regulations and social policy particularly need a clear and dichotomous definition of maltreating behaviors, researchers don't have the same purpose. Most of the time, the purpose for researchers in child maltreatment research is to observe relationships between maltreatment and other variables (e.g., antecedents, consequences, etc.; Hutchison, 1990). In research, child maltreatment is usually conceptualized as a continuous variable, that can go from not maltreating to very maltreating.

Thus, these differences in conceptualizations can create gaps between clinicians (who are confronted with the aftermath), legal representatives (who need to decide whether maltreatment did or did not occur), and researchers (who try to understand what influences maltreatment and how maltreatment influences other variables). This is an important issue, as the absence of shared definitions, and consequently, of comparable findings, not only hinders the scientific identification of incidence rates, risk factors, and effects, but also obstructs subsequent steps of prevention (Jud & Voll, 2019).

In sum, defining child maltreatment is a complex endeavor influenced by historical developments, cultural norms, and the professional lens through which maltreatment is examined. Each of these factors contributes to variations in how maltreatment is perceived, categorized, and addressed. Having outlined these key challenges, we now present the definition of child maltreatment adopted in this thesis.

Current definition of child maltreatment and violence

In light of past definitional challenges, there have now been globally recognized efforts to standardize the definition of child maltreatment. The most influential are those proposed by the World Health Organization (WHO), which have gained substantial traction in both scientific research and clinical practice. Given the broad reach of the WHO, we use their framework as a primary point of reference.

According to the WHO, child maltreatment refers to all forms of physical and emotional ill-treatment, sexual abuse, neglect, and exploitation that result in actual or potential harm to a child's health, development, or dignity, and that occur to a child under 18 years of age at the hands of their caregivers (World Health Organization, 2022a). Within this framework, violence towards children is recognized as one specific form of child

maltreatment. It encompasses all acts of physical and psychological violence inflicted by caregivers or individuals in caregiving roles (World Health Organization, 2022b). The current thesis does not explore neglect, but focuses specifically on violence. Although violence and neglect are both components of child maltreatment, they represent distinct phenomena with different prevalences, risk factors, and consequences (e.g., Alkema et al., 2024; Heim et al., 2010; Liel et al., 2020). In order to allow a more detailed and nuanced examination, this work focuses solely on violence.

This categorization is structured along two key axes identified in the child maltreatment literature: the *nature* of the behavior, namely acts of commission (i.e., violence) versus acts of omission (e.g., neglect); and the *type* of harm, namely physical versus psychological (e.g., Aber & Zigler, 1981; Laajasalo et al., 2023; Starr et al., 1990). Thus, when focusing specifically on violence, this yields two primary categories: physical violence and psychological violence.

Physical violence involves the intentional use of physical force against a child that poses a risk to their survival, health, dignity, or development (for a meta-analysis, see Norman et al., 2012). Psychological violence, on the other hand, refers to behaviors or environments (punctual or frequent) that fail to support the child's emotional and developmental needs (for a meta-analysis, see Norman et al., 2012). Some scholars also propose a third subtype, verbal violence, defined as the use of hostile or degrading language directed at the child. However, the conceptual distinction between verbal and psychological violence remains under debate, with some viewing verbal violence as a distinct category and others treating it as a subcomponent of psychological violence (for a systematic review, see Dube et al., 2023). Due to this ongoing definitional ambiguity, the present thesis considers violence as a global construct encompassing all its potential forms.

When studying violence, the chronicity of such experience is really important to consider (Herrenkohl, 2005). In fact, repeated exposure to violent behaviors has been linked to greater risk for emotional and behavioral trauma symptoms in children (English et al., 2005). Accordingly, this thesis adopts a global approach to studying violence by focusing on the *chronicity* of violent behaviors experienced by children.

In conclusion, while defining child maltreatment and violence remains complex, there is growing clarity around understanding violence. While it is

important to recognize that violence can take different forms and vary in chronicity, its study is crucial because of its prevalence, global scope, and far-reaching consequences, all of which will be discussed in the following section.

1.3.2 Why does the study of violence matter?

In the following paragraphs, the importance of violence will be supported by three sets of findings, namely that violence is a quite prevalent and global issue, that has many detrimental consequences.

Violence towards children is a global and prevalent issue. Prevalence studies show that even though violence has different prevalences across the globe, violence is still a prevalent and global issue. Looking at violence in general on the European continent, violence is experienced by more than one out of ten children. In the UK, 16% of participants report having experienced violence (May-Chahal & Cawson, 2005), and in the Netherlands the prevalence is of 10% (Euser et al., 2013). If we focus on more specific types of violence, the prevalence varies more. In regards to physical violence, the prevalence ranges from lower prevalences in Europe (i.e., 2.3% in Germany, Witt et al., 2017; 5.4% in Denmark, Christoffersen et al., 2013), then followed by the U.S. (28.4%; Hussey et al., 2006), and Australia (32%; Mathews et al., 2023). For psychological violence, similar trends can be seen, where Europe has the lowest prevalence (2.6% in Germany, Witt et al., 2017; 5.2% in Denmark, Christoffersen et al., 2013), followed by Australia (28.5%; Mathews et al., 2023). Interestingly, if we look at prevalences worldwide, psychological violence seems to be the most prevalent, being experienced by around 36% of children worldwide (for a meta-analysis, see Stoltenborgh et al., 2012), whereas physical violence is experienced by 23% of children (for a meta-analysis, see Stoltenborgh et al., 2013). Some of these numbers might seem small, but when we consider the population of a country, the percentages reflect many individuals. As for Belgium, country in which this thesis takes place, to date no prevalence study exists on the matter of child maltreatment or violence towards children, thus not allowing to have an indication of the extent of the problem in Belgium (Vanderfaellie et al., 2023). However, some surveys have been carried out that give an indication of the problem. In Flanders, in 2017, 2000 children and adolescents were surveyed, and 38% reported experiencing verbal

violence, 25% physical violence, and 20% psychological violence (Kind en Gezin, 2017). In Wallonia, in 2016, a total of 5,742 reports of child maltreatment were made, of which 1591 were confirmed as maltreatment (Office de la naissance et de l'enfance, 2017). Specifically, among these confirmed cases, 28% involved psychological violence and 16% physical violence (Office de la naissance et de l'enfance, 2017). Although no official or nationally representative prevalence studies have yet been conducted in Belgium, these preliminary figures nonetheless highlight that this remains an issue of concern. Thus, even though prevalence rates may vary across countries and violence types, the results suggest that violence is a prevalent and world-wide issue.

Violence towards children is not only a global and prevalent issue, but it also has extensive and severe consequences. The effects of such violence can emerge in the short term and often persist into adulthood, impacting the individual's development and well-being across the lifespan (for meta-analyses, see Evans et al., 2008; Hughes et al., 2017; Wolfe et al., 2003). These consequences are multifaceted and can disrupt numerous areas of an individual's life. The impact of violence can be broadly categorized into six domains, which will be discussed in the following paragraphs: psychological, behavioral, physical, relational, academic, and professional. Each of these domains reflects a critical area in which the effects of violence can manifest.

Psychologically, having experienced violence contributes to an increased risk of mental health problems (for a meta-analysis on quasi-experimental samples, see Baldwin et al., 2023), such as depressive disorders, drug use, risky sexual behaviors (for a meta-analysis on cross-sectional and case-control findings, see Norman et al., 2012), loneliness (for a meta-analysis on cross-sectional and longitudinal studies, see de Heer et al., 2024), suicidal ideations (for a meta-analysis with cross-sectional, and longitudinal findings, see Angelakis et al., 2019), and social anxiety (for a meta-analysis with cross-sectional and longitudinal findings, see Liu et al., 2023). On a more transdiagnostic level, violence towards children is linked to alexithymia (i.e., struggles in recognizing, feeling, expressing, and describing emotions), emotional dysregulation (for a meta-analysis with cross-sectional findings, see Gruhn & Compas, 2020), and impulsivity issues (for a meta-analysis on cross-sectional and longitudinal studies, see Liu, 2019), which are all

considered as common transdiagnostic processes in many mental illnesses (for a meta-analysis on alexithymia in cross-sectional designs, see Ditzer et al., 2023; for emotion regulation in cross-sectional and longitudinal findings, see Cludius et al., 2020; for studies with cross-sectional designs on impulsivity, see Pearlstein et al., 2024).

Behaviorally, exposure to violence in childhood increases the odds of being prospectively violent by 1.8 (for a meta-analysis on longitudinal findings, see Fitton et al., 2018), particularly against the victim's partner and their offspring. For the former, having experienced any type of violence increases the risk of being violent with a partner (for a meta-analysis on cross-sectional and longitudinal designs, see Li et al., 2019), and this is particularly the case when partners are dating, rather than being married (Li et al., 2019). Having experienced violence can also influence behaviors towards children, such as increasing detrimental parenting behaviors (for a meta-analysis on cross-sectional findings, see Savage et al., 2019), perpetrating violence towards one's own offspring (for a meta-analysis with cross-sectional and longitudinal findings, see Assink et al., 2018), and this regardless of the type of violence measured (Assink et al., 2018). However, research has shown that maternal support and paternal involvement can disrupt the transgenerational transmission of violence, by reducing the link between experienced and perpetrated child maltreatment (for a longitudinal study, see Tracy et al., 2018). Moreover, the more one experiences safe, stable, and nurturing relationships, the less experienced violence transforms into perpetrated violence (for a meta-analysis on longitudinal findings, see Schofield et al., 2013).

Physically, experiencing violence is linked with decreased health-related quality of life (for a systematic review on cross-sectional and case-control findings, see Weber et al., 2016). Specifically, having experienced violence is linked with higher stress reactivity (for a longitudinal study, see Peckins et al., 2012) and obesity (for a systematic review on cross-sectional and longitudinal findings, Midei & Matthews, 2011) in adolescence, as well as obesity (for a meta-analysis, see Danese & Tan, 2014), inflammation (for a meta-analysis on cross-sectional findings, see Baumeister et al., 2016), hypothalamic-pituitary-adrenal axis dysregulation (for a review, see Van Voorhees & Scarpa, 2004), neurological issues, musculoskeletal problems, respiratory problems, cardiovascular disorders, metabolic disorders (for a

meta-analysis on cross-sectional findings, see Wegman & Stetler, 2009), and chronic fatigue (for cross-sectional findings, see Chandan et al., 2020) in adulthood.

Relationally, experiencing violence is linked with lower romantic relationship quality (for a meta-analysis on cross-sectional and longitudinal findings, see Cao et al., 2022) and more conflicts (for a longitudinal study, see Labella et al., 2018). Moreover, an individual's experience of violence also appears to diffuse to relational aspects *in their partner*, such as lower relationship satisfaction, higher intimate partner violence, and higher psychological distress (for a meta-analysis on cross-sectional and longitudinal findings, see Vaillancourt-Morel et al., 2024). However, violence also affects non-romantic relationships. In friendships, having experienced violence is associated with increased perceived threats (Handley et al., 2019), as well as being less close (for a longitudinal study, see Tung et al., 2019), which manifests in less intimate and more conflictual friendships (for a study comparing abused and non-abused children, see Parker & Herrera, 1996). These relational difficulties in friendships often lead to a lack of close connections, as experiencing violence is associated with social withdrawal, avoidance, and fragmented peer relationships (Kamis & Copeland, 2024). Several mechanisms help explain how childhood maltreatment disrupts relationships more broadly. A recent review has identified several key mechanisms that mediate the link between experiences of violence in childhood and later developmental outcomes. Specifically, individuals who have been exposed to violence are more vulnerable to heightened psychological distress, insecure attachment patterns, and impairments in self-regulation, cognition, and behavior; all of which can significantly disrupt interpersonal functioning (for a review on cross-sectional findings, see Zamir, 2022).

The consequences of childhood violence extend beyond psychological and behavioral domains and can also interfere with individual's societal functioning, particularly in *educational* and *professional* contexts. Academically, experiences of violence are consistently associated with a range of difficulties within the educational system. These include increased school absenteeism, higher dropout rates, grade repetition, the need for more classes to pass, reduced likelihood of graduation (for a meta-analysis with cross-sectional, longitudinal, and case-control studies, see Fry et al., 2018),

and overall lower academic achievement (for a meta-analysis on cross-sectional and longitudinal findings, see Zhang et al., 2025). Additionally, children who have experienced violence may be more likely to require special or individualized educational support (for a cross-sectional study, see Ryan et al., 2018). Importantly, both the type and chronicity of violence have been prospectively linked to poorer academic performance (for a longitudinal study, see Coohy et al., 2011). These academic disruptions often carry over into adulthood, negatively affecting professional outcomes. Thus, adults with a history of childhood violence may experience reduced job stability, increased employment insecurity, and greater professional precariousness (for a cross-sectional study, see Romito et al., 2003).

In summary, violence towards children represents a major societal concern due to its widespread prevalence, global nature, and profound, long-lasting consequences across psychological, behavioral, physical, relational, academic, and professional domains. These effects frequently extend into adulthood, underscoring the urgent need for prevention and intervention. Building on this foundation, the following sections will explore the underlying determinants of violence and examine the key risk factors that contribute to its occurrence.

1.3.3 The origins of violence

Various theories have been proposed to explain the occurrence of violence within families, and this section will examine the most widely recognized ones to offer a clearer overview of existing research findings. It is important to note that the focus here will be limited to psychological theories, although other perspectives have also been put forward, such as genetic, hormonal (i.e., testosterone), and neurological (i.e., lower amygdala activation) theories (Frieze et al., 2020).

One of the earliest and most recognized theories of violence is the **frustration-aggression theory**. It suggests that aggression is always a consequence of frustration (Dollard et al., 1939). However, frustration does not necessarily lead to aggression: in some individuals, it may instead result in acceptance of the situation. This theory was later criticized for being overly simplistic. Building on this, Berkowitz (1989) proposed a more nuanced version, suggesting that frustration may lead to negative affect, which can

activate aggressive traits and potentially result in aggressive behavior. Thus, frustration does not directly cause aggression but may trigger pre-existing aggressive traits in an individual. For example, a parent feeling particularly overwhelmed by parenthood could manifest in physical and emotional outbursts towards the child, if the parent has pre-existing aggressive tendencies. Although this theory might seem outdated, it continues to exert considerable influence today as evidenced by the growing number of studies published on the topic (for examples, see section 2.2.1, Frieze et al., 2020).

In contrast, **social learning theory** suggests that violent behavior is learned, imitated, and reinforced, rather than being a trait. According to this theory, individuals are not born aggressive, but could become aggressive through exposure to violent behavior and reinforcement of such actions (Bandura, 1978). This theory posits that aggression arises when individuals experience learned aversive situations and perceive incentives for aggression. When these experiences are coupled with emotional arousal and anticipated positive outcomes, aggression is more likely to occur (Bandura, 1978). For instance, an adult who grew up witnessing a parent frequently yelling at or hitting them as a means of discipline may learn this behavior as a means to discipline children. With their own children, they might then use these learned behaviors, especially if they are emotionally frustrated and if the behaviors allow them to obtain the expected result.

Similarly, the **social exchange theory** builds upon the incentive-based aspect of social learning theory, proposing that individuals adopt certain behaviors when they perceive that the rewards outweigh the costs. According to this theory, violence may occur when its perceived benefits exceed its consequences (Gelles, 1982, 2007). One might question what rewards could arise from violent behavior. According to this theory, dominance and control over another person may serve as key motivators (Gelles, 1982, 2007). For example, a parent who uses physical punishment as a means of asserting dominance over their child may find that it results in immediate compliance, and thus if the child obeys, the parent may perceive this as an effective strategy and continue using violence to maintain control.

Expanding beyond individual and relational factors, the **ecological theory** of child maltreatment shifts the focus to the broader social and environmental influences on violence. This theory draws from systems theory and adapts it to violence towards children (Belsky, 1980). This integration of

systems theory suggests that child violence happens as a result of the interaction of different systems. For instance, parents may be more predisposed to violence due to their own developmental histories (i.e., ontogenetic system; e.g., having experienced maltreatment themselves), the stresses that they face within the family (i.e., microsystem, e.g., conflict with spouse) and outside of the family (i.e., exosystem, e.g., work-related stress), and broader cultural or societal influences (i.e., macrosystem, e.g., societal norms that fail to discourage violence). This model was among the first to consider situational factors rather than focusing solely on individual dispositions.

In conclusion, numerous theories have emerged to explain the origins of violence, each offering a unique perspective on its causes. Over time, researchers have moved away from searching for a single overarching theory, recognizing that multiple frameworks can coexist without any theory fully explaining the complexity of violence. As a result, recent research has increasingly aimed to identify specific predictors of violence. Furthermore, while some of the theories mentioned above emphasize individual predispositions to aggression, many also highlight the role of situational factors in increasing the risk of violence. Thus, parents could be violent at certain moments in their life. It is therefore interesting to understand what predicts violence.

1.3.4 What predicts violence towards children?

In recent years, the study of violence towards children has largely focused on identifying its major predictors to develop strategies for its prevention. Among these, many categories of predictors have emerged. The following sections will examine in greater detail the factors that contribute to the occurrence of violence towards children, focusing on child-related, family-related, socio-economic, and intra-individual factors. Within the intra-individual domain, a distinction will be made between non-pathological and pathological predictors of violent behavior.

*First, **child-related factors*** are associated with increased risk of parental violence. Children with difficult temperaments or challenging moods (for a cross-sectional study, see Lowell & Renk, 2017), lower social competence, and children with externalizing and internalizing behaviors (for

a meta-analysis, see Stith et al., 2009) have a higher risk of experiencing violence.

Second, family-related factors, also contribute to the occurrence of violence. Family conflict, cohesion, experience of spousal violence, marital satisfaction, family size (for a meta-analysis, see Stith et al., 2009), as well as having to care for multiple children (for a longitudinal studies, see Dubowitz et al., 2011; Kotch et al., 1999) increase the risk of violence.

Third, socio-economic challenges increase the risk of violence, including being part of a single-parent or immigrant family, parental unemployment (for an umbrella review of meta-analyses, see Van Ijzendoorn et al., 2020), and lower educational levels (for a longitudinal studies, see Dubowitz et al., 2011; Kotch et al., 1999). These conditions often create environments of stress and limited resources, exacerbating vulnerabilities to violence.

Fourth, intra-individual factors within the parent seem to be the most prominent factors in predicting violence towards children (for a systematic review, see Younas & Gutman, 2023). When combined, multiple parental risk factors are significantly associated with more maltreatment (for a cross-sectional study, see Leppäkoski et al., 2023). These factors can be categorized into non-pathological and pathological predictors. We begin by examining non-pathological predictors of violence, as these factors are more widespread and commonly encountered in the general population. Following this, we will turn to less frequent but significant pathological predictors which may further exacerbate the risk of violence in specific cases. The distinction between pathological and non-pathological predictors is not theoretically indispensable, but it eases the structuring of the literature in this part of the introduction. Pathological predictors include clinically defined dimensions, whereas non-pathological predictors encompass both basic psychological processes and transdiagnostic factors that may represent risk factors for psychopathology.

Non-pathological factors that are associated with a higher risk of violence toward children include a range of parental characteristics and experiences. These encompass younger parental age (Stith et al., 2009), insecure attachment styles (for an umbrella review of meta-analyses, see Van Ijzendoorn et al., 2020), unstable emotional states (for a cross-sectional study, see Lowell & Renk, 2017), hyper-reactivity, lower self-esteem (Stith et al.,

2009), parenting stress (for a cross-sectional study, see Rodriguez & Green, 1997), emotion dysregulation (for a meta-analysis, see Lavi et al., 2021), and cognitive or emotional inflexibility (Lowell & Renk, 2017). In addition, parents' own adverse childhood experiences, such as a history of maltreatment or exposure to intimate partner violence, are significant risk factors that further elevate the likelihood of engaging in violent behaviors (for an umbrella review of meta-analyses, see Van Ijzendoorn et al., 2020).

Among the *pathological* predictors of violence toward children, parental mental health problems consistently emerge as a significant risk factor (Younas & Gutman, 2023). In particular, personality disorders appear to be especially influential. Research on parents accused of violence has found that personality disorders are among the strongest contributors to violent behavior (for a cross-sectional study, see Ben David, 2021). Specific disorders such as borderline personality disorder (for a meta-analysis, see Senberg et al., 2023), sadism (for a meta-analysis, see Eher et al., 2016), psychopathy, Machiavellianism (for a meta-analysis, see Muris et al., 2017), and narcissism (for a cross-sectional study, see Crouch et al., 2015; for a meta-analysis, see Du et al., 2022; for a meta-analysis, see Muris et al., 2017) have all been identified as strong predictors of violence toward children.

Beyond personality disorders, other psychological conditions also elevate the risk of child maltreatment. These include depression (for longitudinal studies, see Dubowitz et al., 2011; Kotch et al., 1999), substance abuse (for a longitudinal study, see Wolock & Magura, 1996), and anxiety (for a meta-analysis, see Stith et al., 2009). While these conditions are well-established predictors, they are not specific to the parenting context. Parental burnout, however, stands apart as a unique and context-specific issue. It is the only known syndrome that originates exclusively within the parenting role and has been robustly and specifically been linked to increased risk of violence towards children (for a cross-sectional study, see Mikolajczak et al., 2020).

Thus, although various factors - such as child-related, family-related, and socio-economic factors - contribute to the occurrence of violence, the concentration of risk factors is most present within intra-individual parental psychological and emotional functioning. Pathologies that are closely tied to the parenting experience, such as parental burnout, are especially important to consider. Unlike more stable or enduring disorders (e.g., personality

disorders), context-dependent conditions like burnout may offer more feasible targets for intervention. As such, understanding and addressing parental burnout provides a particularly promising avenue for preventing violence within the family. The next section will explore in depth the relationship between parental burnout and violence toward children.

1.4 The specific consequence of parental burnout: Violence towards the offspring

Parental burnout is a *significant* and *specific* predictor of violence toward children. This consequence is specific to parental burnout, as the outcome is not shared with job burnout (Mikolajczak, Brianda, et al., 2018) nor depression (Mikolajczak et al., 2020).

The initial indications of this link emerged from both qualitative and quantitative research. Initially, a 2018 qualitative study in which five mothers were interviewed provided preliminary evidence of the connection between parental burnout and violence. These mothers expressed concerns and fears that their burnout might lead them to harm their children (Hubert & Aujoulat, 2018). This qualitative observation was subsequently supported by quantitative studies conducted the same year. Cross-sectional and longitudinal research demonstrated then that parental burnout is indeed significantly associated with higher the risk of violence towards children (e.g., for cross-sectional, see Mikolajczak et al., 2018; for longitudinal, see Mikolajczak et al., 2019).

Since then, the link between parental burnout and violence has been replicated numerous times, rendering the finding robust. In fact, the link between parental burnout and violence is perhaps one of the most investigated and replicated findings in the parental burnout literature, showing that parental burnout is a substantial risk factor in violence towards children ($r = .49$; for a meta-analysis, see Mikolajczak et al., 2023). Specifically, the finding has been observed even when using different *instruments* measuring parental burnout (e.g., for the PBI, see Mikolajczak et al., 2019; for the PBA, see Szczygieł et al., 2020), different *samples* (e.g., for English-speaking and Belgian samples, see Roskam & Mikolajczak, 2020; for Hispanic samples, see Manrique-Millones et al., 2022; for Finnish sample, see Aunola et al., 2021; for Polish sample, see Szczygieł et al., 2020), different *methodologies* (e.g., for cross-sectional, see Mikolajczak et al., 2018; for longitudinal, see

Mikolajczak et al., 2019; for causal, see Brianda et al., 2020), different *approaches* (e.g., for person-centered, see Hansotte et al., 2020; for variable-centered, see Mikolajczak et al., 2018), and specific world *contexts* (i.e., Covid-19; see Perron-Tremblay et al., 2023). If we focus on parental burnout symptoms, cross-sectional studies have observed that the symptom of emotional distancing contributes the most to violence (Blanchard et al., 2021; Hansotte et al., 2020; Kalkan et al., 2022; Mikolajczak et al., 2018) and, even, that emotional distancing is the main stage in parental burnout escalating to violence (Hansotte et al., 2020).

It is now well established that parental burnout can increase the risk of violence toward children, as demonstrated by the consistency of findings across various studies and methodologies. However, while the existence of this link is repeatedly confirmed, relatively little effort has been made to explore its underlying mechanisms. A more comprehensive understanding of this link could lead to more effective interventions, ultimately breaking the cycle between parental burnout and violence. This thesis seeks to explore the unknown aspects of this link. In the following section, we will outline the specific gaps this thesis aims to address.

1.5 The unknowns in the link between parental burnout and violence

This section will outline four key gaps in the literature that this thesis seeks to address. Each gap will be presented as a research question, accompanied by the rationale behind our hypothesized answer and a brief explanation of how the question is explored within the scope of this thesis.

1.5.1 To what extent does parental burnout predict child maltreatment relative to other known risk factors?

Thus far, we have established that parental burnout is consistently and robustly associated with an increase with violence towards offspring. This finding has been confirmed across multiple studies using diverse methodologies, cultural contexts, and analytical approaches. While the strength and reliability of this link are well-documented, parental burnout is not the only factor that contributes to an increased risk of child maltreatment. Research has identified several other critical predictors of violence towards children, among which psychological disorders and personality disorders

appear to play a particularly significant role (for a meta-analysis, see Stith et al., 2009).

A substantial amount of empirical evidence has demonstrated that certain psychological disorders greatly contribute to the risk of child maltreatment. Depression, for example, has consistently been linked to heightened violence toward children, with effect sizes indicating a moderate-to-large impact (OR = 3.60; Sidebotham & Golding, 2001; $d = .55$; Stith et al., 2009). Similarly, anxiety disorders also appear to elevate the likelihood of child maltreatment ($d = .60$; Stith et al., 2009).

Beyond these mood-related disorders, personality disorders are also among the strongest predictors of violence towards children. In particular, borderline personality disorder is associated with an extremely high risk of maltreatment (OR = 8.08; Senberg et al., 2023). Furthermore, research on personality traits suggests that individuals exhibiting high levels of dark personality traits, such as sadism (for a meta-analysis, see Eher et al., 2016), psychopathy (for a meta-analysis, see Muris et al., 2017), Machiavellianism (for a meta-analysis, see Muris et al., 2017), and narcissism (Crouch et al., 2015; for meta-analyses, see Du et al., 2022; Muris et al., 2017), are significantly more prone to engage in violent behaviors toward children.

These findings suggest that psychological and personality disorders substantially increase the risk of violence toward children. However, we do not have a metric of comparing which is the most influential in predicting violence towards children, when *controlling* for the other predictors, and how parental burnout contributes to it. Thus, when introducing all the predictors simultaneously, is parental burnout among the strongest predictors of violence towards children, or does it play a more secondary role in comparison? While parental burnout is associated with an increase in violent behaviors toward children, it is unclear whether this relationship holds when examined alongside other strong predictors of child maltreatment. This question remains largely unexplored, despite its critical implications for understanding and preventing violence towards children.

To address this gap, **Chapter 2** investigates whether parental burnout remains a strong and significant predictor of violence toward the offspring when accounting for other established risk factors. Specifically, we assess whether the association between parental burnout and violence persists after controlling for the effects of psychological disorders and personality traits

commonly linked to violent behavior. This analysis helps determine whether parental burnout should be considered a primary risk factor for violence towards children or whether its influence is contingent on the presence of other psychological vulnerabilities. By disentangling these relationships, we aim to provide a clearer understanding of the size of the contribution of parental burnout in predicting violence.

1.5.2 Are there factors that moderate the link between parental burnout and violence?

While the link between parental burnout and violence is well-established, not all parents experiencing burnout engage in violent behavior. The link between parental burnout and violence is around $r = .49$ (for a meta-analysis, see Mikolajczak et al., 2023), which could suggest that not all parents in burnout are violent towards children. This raises a crucial question: For whom or in which case does parental burnout lead to violence towards the offspring? Understanding the factors that differentiate violent from non-violent burned-out parents is essential for refining intervention strategies and tailoring support systems to at-risk parents.

Some initial studies have attempted to explore the moderators of this link, such as Piraino and collaborators (2024), who examined Covid-19-related moderators, namely time spent in lockdown, the impact of lockdown-related stress, and parental task-sharing. However, their findings suggest that these factors did not significantly influence the burnout-violence link.

The next two chapters of this thesis (**Chapter 3** and **Chapter 4**) aim to address this gap by investigating two key potential moderators: insecure attachment styles acting as risk factors in the link between parental burnout and violence, and trait emotional intelligence acting as a protective factor. It should be noted that in the current thesis, we tested 13 potential moderators in the relationship between parental burnout and violence, spanning both intra- and inter-individual factors, which are fully listed and accessible on OSF(https://osf.io/5zgw9/?view_only=6e4046897ade44fb85f414dd2ae31179). Among these, only two showed statistically significant moderating effects: insecure attachment styles and emotional intelligence. Thus, this thesis presents two chapters focusing on insecure attachment and emotional intelligence, as these were prioritized for publication. This is due to publication bias commonly faced during a PhD trajectory; namely, the need

to disseminate *significant* findings in peer-reviewed journals. However, we wish to emphasize that many other tested moderators did not yield significant results, and these findings are equally valuable. We are committed to reporting them in future publications beyond the doctoral timeline, in an effort to contribute to a more balanced and complete scientific record.

In **Chapter 3**, we explore the potential moderating roles of insecure attachment styles in the relationship between parental burnout and violence toward children. Attachment theory suggests that early childhood experiences shape relational outcomes later in life (e.g., for romantic or peer relationships, see Mohammadi et al., 2016; Pallini et al., 2014). In fact, research suggests that insecure attachment styles influence behaviors in the relational context (e.g., reduced interpersonal communication competences, see Anders & Tucker, 2000; reduced commitment, see Shaver & Brennan, 1992). At the extreme, insecure attachment styles are linked with more anger and violent behaviors (Maalouf et al., 2022; Miga et al., 2010). These issues in managing relationships can also increase the susceptibility to stress-related syndromes, such as burnout (for a meta-analysis, see Warnock et al., 2024). When considering the intersection between the three variables, individuals with insecure attachment styles *and* who experience stressful events have a higher risk of being maltreating towards their partner (for a meta-analysis, see Knox et al., 2024), and insecure attachment styles seem to moderate the link between stress and detrimental parenting behaviors (Mills-Koonce et al., 2011). However, there is limited understanding whether this moderating role extends to *chronic* stress, such as burnout, and its relationship with *violence* toward children. The hypotheses investigated in this chapter are that insecure attachment styles will moderate the link between parental burnout on violence, increasing the relationship between burnout and violence. Using a pre-registered cross-sectional self-report study with almost 800 participants, this study examines whether the presence of insecure attachment amplifies the negative effects of burnout on violence. The findings from this chapter contribute to understanding how individual psychological traits, such as attachment style, can shape the response to burnout and whether these traits increase the risk of violence toward children. In addition, it allows for targeted interventions focusing on improving attachment security in at-risk populations, which could serve as a protective buffer against the escalation of violent behaviors in the context of parental burnout.

Chapter 4 shifts the focus to the potential protective role of trait emotional intelligence in moderating the relationship between parental burnout and violence toward children. Emotional intelligence is a stable personality trait that encompasses the ability to recognize, understand, manage, and regulate one's own emotions, as well as to recognize and influence the emotions of others (e.g., Zadorozhny et al., 2024). Previous research has demonstrated that emotional intelligence plays a key role in buffering against stress (e.g., Mikolajczak, Menil, et al., 2007; Mikolajczak, Roy, et al., 2007) and burnout (for a meta-analysis, see Chen et al., 2024; for a systematic review, see Mérida-López & Extremera, 2017). Specifically, it also plays a role in parental burnout, where trait emotional intelligence significantly reduces parental burnout (Lin et al., 2022; Lin & Szczygieł, 2022; Szczygieł et al., 2020). Concomitantly, lower trait emotional intelligence is associated with more violence (for a systematic review, see García-Sancho et al., 2014), likely because lower trait emotional intelligence is associated with lower self-control and lower empathy, which are linked with more violence (Chialant et al., 2016; DeWall et al., 2011).

Given that trait emotional intelligence is a stable trait that relates to burnout, and that emotional intelligence decreases the risk of violence towards children, in this chapter, we aim to investigate whether emotional intelligence serves as a protective factor that weakens the relationship between parental burnout and violence. Specifically, we hypothesize that parents with higher levels of emotional intelligence will show a weaker relationship between parental burnout and violent behaviors, as their greater capacity for emotional regulation and empathy could prevent the escalation of aggressive behaviors, even in the face of burnout. The cross-sectional study is the result of a collaboration with Professor Dorota Szczygieł (SWPS University, Poland), in which around 500 parents participated by responding to self-report measures. By examining how emotional intelligence interacts with parental burnout, this chapter provides insights into the potential for emotional intelligence to act as a buffer against the negative consequences of burnout. Furthermore, these findings can inform future interventions designed to increase emotional intelligence among parents, which may enhance their ability to cope with the stresses of parenthood and reduce the likelihood of maltreatment toward their children.

1.5.3 Why does parental burnout lead to violence?

As we have seen throughout the introduction, parental burnout is associated to an increase in violence towards children. However, the underlying processes that explain *why* parents experiencing burnout are more likely to become violent remain unclear. Is there a specific mechanism that connects burnout with aggressive behaviors toward children? In other words, what are the indirect pathways through which parental burnout is associated to an increase in violence?

One promising avenue for understanding this link lies in the role of executive functions, a term that refers to a set of cognitive processes (Goldstein & Naglieri, 2014) essential for goal-directed behavior (Diamond, 2013). One of the most used models of executive functions considers that flexibility, inhibition and updating of working memory as its core components (Diamond, 2013; Miyake et al., 2000). *Flexibility* is the ability to change thoughts or actions in accordance with the situation, reflecting the ability to adapt to changing situations (Loftis, 2016); *inhibition* is the ability to suppress ongoing or automatic responses (Kenemans, 2015); *updating* of working memory refers to the continuous process of monitoring and adjusting information as situations or contexts evolve (Van Der Linden et al., 2014).

Executive functioning seems to decline with many psychopathologies (Romer & Pizzagalli, 2021; Snyder et al., 2015). In fact, some authors consider executive dysfunction as a transdiagnostic factor in psychopathology (for a meta-analysis, see Abramovitch et al., 2021). Specifically, individuals who burn out exhibit more executive dysfunction, because exposure to chronic stress leads to an increase of cortisol (Brianda, Roskam, & Mikolajczak, 2020), which in turn can lead to cognitive dysfunction (Marin et al., 2011; Shansky & Lipps, 2013), specifically in flexibility (Beck et al., 2013), inhibition (Van Der Linden et al., 2005) and updating (Öhman et al., 2007; Oosterholt et al., 2012).

This raises the question whether the cognitive impairments resulting from burnout may play a key role in making parents more prone to violence toward their children. Indeed, executive dysfunctions are known to exacerbate violent behavior. Research has found that poor flexibility, reduced inhibition, and compromised updating of working memory are directly linked to increased aggression (Azar et al., 2017; Crandall et al., 2015; Cruz et al.,

2020; Humenik et al., 2020; Meijers et al., 2017). Individuals with these cognitive deficits struggle to regulate themselves (Hofmann et al., 2012), which leads to an increased likelihood of maltreating behaviors. This suggests that executive functions could serve as a mediator in the relationship between parental burnout and violence. In other words, it may not just be burnout itself that leads to violence, but rather the cognitive impairments caused by burnout that increase the risk of violent behaviors.

To investigate this, **Chapter 5** explores whether executive functions mediate the link between parental burnout and violence. This is done through a combination of two study designs and measurement methods to provide a comprehensive understanding of the relationship. First, we test whether executive functions mediate the link between parental burnout and violence cross-sectionally (Study 1). In this study, we use both self-report and objective measures of executive functions to ensure the robustness of our findings and to account for any potential discrepancies between perceived and actual cognitive performance. In Study 2, we extend this hypothesis longitudinally by using self-report measures for all variables to examine the temporal direction of the effect. This chapter aims to clarify whether the cognitive impairments constitute the process explaining why parental burnout leads to violence towards children.

Thus far, we have focused on parental burnout as a composite score. But when dealing with parents in burnout, we work with symptoms. In **Chapter 6**, we will move the focus from parental burnout to the symptoms of parental burnout. Most research on parental burnout has relied on a total score of burnout, where the overall level of burnout is quantified based on a combination of symptoms and experiences (e.g., exhaustion, emotional distancing, contrast with the previous parental-self, and feeling fed up). While this approach has been useful for demonstrating the general impact of parental burnout, it provides limited insight into the specific processes that contribute to the condition.

Several recent studies suggest that parental burnout does not manifest all at once, but rather unfolds progressively, following a developmental trajectory. Parental burnout seems to emerge through a gradual erosion of psychological and emotional resources. Specifically, exhaustion is often identified as the entry point into the burnout experience (Kalkan et al., 2022; Le Vigouroux et al., 2022). Over time, this exhaustion can give rise to

emotional distancing from one's offspring, as parents begin to disengage from the relational aspects of parenting in an effort to preserve their remaining energy (Roskam & Mikolajczak, 2021). This evolving pattern suggests that the symptoms of parental burnout may not only co-occur but also interact in a directional, temporal manner, where one symptom increases the likelihood of another occurring. In this way, burnout may function less like a fixed state and more like a psychological process that progressively erodes the parent's health and the relationship with their child.

While existing research has firmly established a global association between parental burnout and increased risk of violence towards children, much less is known about how specific symptoms within the burnout syndrome contribute to this outcome. In this regard, preliminary findings suggest that emotional distancing may be particularly pivotal. This symptom represents a psychological turning point, being the symptom that contributes the most to violence towards children (Blanchard et al., 2021; Hansotte et al., 2020; Kalkan et al., 2022; Mikolajczak et al., 2018). As emotional distancing increases, so, too, might the risk of harsh or aggressive responses. Despite these insights, no study to date has directly tested whether a developmental process within parental burnout symptoms contributes to the emergence of violence. Is there a process within parental burnout symptoms that leads to violence? Is it the case that a parent might start feeling exhausted, which then leads them to emotionally distance from their offspring, which in turn will increase the risk of violence?

To address this gap, **Chapter 6** aims to investigate the processual nature of parental burnout and its contribution to violence toward children using 3-wave pre-registered longitudinal data. Specifically, we examine whether exhaustion serves as the starting point that leads to emotional distancing over time, and whether this distancing subsequently predicts increased risk of violence. In doing so, **Chapter 6** seeks to uncover the internal mechanisms of parental burnout that may explain its deleterious behavioral consequences, offering insights for both theoretical understanding and clinical intervention.

1.5.4 Which violent behaviors are most influenced by parental burnout?

As extensively documented throughout this thesis, the relationship between parental burnout and violence towards children has been well established across diverse contexts and methodologies. This growing body of evidence has firmly suggested that parental burnout is a serious public health concern. However, while we now know that parental burnout increases the likelihood of violent behaviors toward the offspring, one critical question remains unanswered: which types of violent behaviors are most severely increased by parental burnout?

To date, most studies have relied on a composite score of violence, aggregating physical and psychological forms of aggression into a single measure. This approach, while methodologically efficient, prevents researchers from identifying whether certain violent behaviors are more strongly linked to burnout than others. Yet, distinguishing between types of violence is essential, as physical and psychological violence may not only differ in their immediate presentation but also in their long-term developmental and psychological consequences for children (Norman et al., 2012). Understanding whether parental burnout is associated to an increase in one form of violence over the other can offer important insights for both clinical assessment and intervention strategies, especially when considering that each type of violence can affect the child in profoundly different ways.

In **Chapter 7**, we aim to go beyond the traditional composite view of violence and bring greater granularity to the relationship between parental burnout and violent behaviors. Specifically, this chapter addresses two primary questions: Which specific violent behaviors are most affected by parental burnout? And to what extent (i.e., effect size) are these behaviors elevated in burned out parents compared to parents who do not report burnout symptoms? Given the novelty of this investigation, we do not advance specific a priori hypotheses about the relative impact of burnout on physical versus psychological violence. However, based on the strong overall correlation between parental burnout and the violence composite score ($r = .49$; for a meta-analysis, see Mikolajczak et al., 2023), it is plausible that the composite score may obscure variability in how different violent behaviors relate to burnout. Some forms of violence might be more strongly associated

with parental burnout, while others may show weaker or even negligible associations. To explore this, we present a group-comparison approach, contrasting the frequency of violent behaviors between burned-out parents and control parents. The data that was analyzed for this chapter is the result of a fruitful collaboration with Professor Maria-Elena Brianda (Université de Liège), Dr. Marie Bayot (Université de Liège), and the promoter and co-promoter of this thesis. Data has been acquired from past intervention-based studies. The exploratory analyses are carried out in two distinct samples that measure parental burnout differently (i.e., using either the *Parental Burnout Inventory* or the *Parental Burnout Assessment*), where within each sample the burnout and the control groups are case-control matched to control for strong predictors of violence towards children. The goal is to disentangle the nuanced effects of parental burnout on specific types of violence, thereby enriching our understanding of how burnout manifests behaviorally within the parent-child relationship and offering more targeted intervention and prevention efforts.

1.6 Aims and research questions

In conclusion, this thesis starts from the premise that parental burnout is a chronic stress-related condition, specific to the parental role, and primarily results from an imbalance between parental demands and available resources. It is increasingly recognized as a condition of societal concern due to its relatively high prevalence, the substantial burden it places on families and healthcare systems, and its array of detrimental consequences. Among these, one of the most consistent and alarming outcomes is the association between parental burnout and increased violence toward one's children. While the conceptualization of violence toward offspring is multifaceted, shaped by historical context, cultural norms, and the intended framework of analysis (e.g., clinical, legal, academic), research across disciplines shows that exposure to such behaviors has wide-ranging and long-lasting effects, spanning psychological, behavioral, physical, relational, academic, and even professional domains in later life. However, despite robust findings linking parental burnout and violence, many questions remain unanswered. This thesis aims to address the following questions:

1. To what extent does parental burnout predict child maltreatment relative to other known risk factors (**Chapter 2**)?
2. Are there risk and protective factors that moderate this link?
 - a. Do insecure attachment styles act as risk factors in the link between parental burnout and violence (**Chapter 3**)?
 - b. Does emotional intelligence act as a protective factor in the link between parental burnout and violence (**Chapter 4**)?
3. Why does parental burnout lead to violence?
 - a. Do executive function issues mediate the link between parental burnout and violence (**Chapter 5**)?
 - b. Is there a process within parental burnout symptoms that explains why burnt out parents become violent (**Chapter 6**)?
4. Which violent behaviors are most influenced by parental burnout (**Chapter 7**)?

The current thesis uses different study designs and measurement types across chapters. For the sake of clarity, find hereafter a table that summarizes, for each chapter, the study design and measurement types employed to answer these questions.

	Study Design		Measurement type	
	Cross-sectional	Longitudinal	Self-report measures	Objective measures
Chapter 2	x		x	
Chapter 3	x		x	
Chapter 4	x		x	
Chapter 5	x	x	x	x
Chapter 6		x	x	
Chapter 7	x		x	

Moreover, given the variety of samples used throughout this thesis, a summary table has been provided to offer a clear overview of all study samples. The table is presented hereafter.

	Sample Size (N)	Sample Characteristics
Chapter 2	680	88.50 % mothers, $M_{age} = 38.60$ years
Chapter 3	794	64.40 % mothers, $M_{age} = 38.00$ years
Chapter 4	506	76.30 % mothers, $M_{age} = 35.16$ years
Chapter 5	Sample 1: 134 Sample 2: 545	Sample 1: 85.00 % mothers, $M_{age} = 44.00$ years Sample 2: 86.00 % mothers, $M_{age} = 38.13$ years
Chapter 6	1466	73.70 % mothers, $M_{age} = 39.30$ years
Chapter 7	Sample 1: 426 Sample 2: 308	Sample 1: 86.40 % mothers, 92.50% were aged between 19-24 years Sample 2: 71.4 % mothers, 16.90% were 30-35, 19.50% were 35-39, 19.8% were 45-49.

Chapter 2: Parental burnout and borderline personality stand out to predict child maltreatment

Parental burnout is a severe disorder resulting from the exposure to chronic stress in the parental role, that can translate into neglectful and violent parental behaviors towards the offspring. This study (N = 1003 parents) aims to examine the relative weight of parental burnout, job burnout, depression, generalized anxiety disorder, borderline personality, sadism, psychopathy, Machiavellianism, narcissism, and child abuse potential, in predicting violence and neglect towards the offspring. Social desirability was controlled. When all predictors are entered together in the model, violence and neglect towards the offspring are best predicted by borderline personality and parental burnout. Our results also indicate that sadism is a robust predictor of violence, however weaker than parental burnout and borderline personality. These results emphasize the importance of preventing parental burnout and supporting parents with borderline personality.

Reference

Schitteck, A., Roskam, I. & Mikolajczak, M. (2023). Parental burnout and borderline personality stand out to predict child maltreatment. *Scientific Reports*, 13, 12153. <https://doi.org/10.1038/s41598-023-39310-3>

2.1 Introduction

Parental burnout is a severe disorder resulting from the exposure to chronic stress in the parental role and affecting around 5 to 8% of parents (Mikolajczak & Roskam, 2018). Parental burnout research recently boomed and unveiled the strong repercussion parental burnout has on parental behaviors towards the offspring. Parental burnout drastically increases neglectful and violent behaviors, and this has been observed in correlational (Mikolajczak, Brianda, et al., 2018), cross-lagged (Mikolajczak et al., 2019) and experimental (Brianda, Roskam, Gross, et al., 2020) designs.

However, violence and neglect (henceforth child maltreatment) are not only a consequence of parental burnout. Mood disorders and several personality traits also enhance the risk of child maltreatment (Krakowski et al., 1986; Pailing et al., 2014). As regards mood disorders, this is particularly the case for depression (Dubowitz et al., 2011) and stress/anxiety disorders (Stith et al., 2009). As regards personality traits, the most documented risk factors are borderline personality (Laulik et al., 2016), sadism (Berner et al., 2003), psychopathy (Turner et al., 2014), Machiavellianism (Clemente & Diaz, 2021) and narcissism (Crouch et al., 2015). Other child abuse risk factors (e.g., history of abuse, loneliness, ...) have been gathered in the Child Abuse Potential (Milner, 1994) which is logically also a strong predictor of child maltreatment.

While many psychological disorders or traits increase the risk of child maltreatment, no study has ever compared their relative weight in a single model. Whether parental burnout deserves specific attention is therefore unknown. Controlling for the effect of other predictors is all the more important as they are not independent from each other. The aim of this study is to examine the relative weight of parental burnout, job burnout, depression, generalized anxiety disorder, borderline personality, sadism, psychopathy, Machiavellianism, narcissism, and child abuse potential, in predicting violence and neglect towards the offspring. We expected that parental burnout, job burnout, depression, generalized anxiety disorder, borderline personality, sadism, psychopathy, Machiavellianism, narcissism, and child abuse potential, would be positively correlated with violence and neglect towards the offspring. As regards to relative weight of each of the aforementioned variables when entered together in the same model, we did

not have specific hypotheses, although some variables (e.g., parental burnout, borderline personality, and child abuse potential) were more expected to stand out because their bivariate correlations with child maltreatment in previous studies were of large magnitude. Considering that violence towards the offspring is a taboo subject in current society, it is subject to social desirability. Thus, we included it as a variable in both regression models, allowing to interpret results whilst controlling for social desirability.

2.2 Method

2.2.1 Procedure

The study was designed and carried out in accordance with relevant guidelines and regulations, such as the Declaration of Helsinki, and it received approval from the ethical committee of Cliniques Universitaires Saint-Luc (Belgium). Participants had to be parents and had to have at least one child still living at home. The study was created on Qualtrics, and it was posted on various online groups, websites, social media networks. Participants gave their free and informed consent prior to participating in the study. As an additional motivation, after participating parents could sign up to take part to a raffle by leaving their e-mail address (automatically disconnected from their questionnaire to ensure anonymity), with the possibility of winning 250 euros. Statistical analyses were conducted using SPSS, version 28 (IBM, 2020).

2.2.2 Participants

In total, 1494 parents participated to the study. Given our aim to compare predictors' relative weights, only participants who completed the entire survey were kept ($N = 680$; 88.5 % mothers). Survey participants were recruited through social media, websites, youth movement groups and word of mouth. Analyses were carried out to determine whether values were missing due to random reasons, or due to specific reasons. T-tests revealed that the values were not missing at random, in fact missing participants tended to be more women ($t(998) = -2.9, p = .003$), slightly less well educated ($t(998) = 2.28, p = .005$), mostly not working ($t(998) = -23.4, p < .001$), slightly poorer ($t(998) = 5.28, p < .001$), and with a higher level of parental burnout ($t(998) = 25.1, p < .001$). The authors would also like to point out

that missingness was proportionate with the length of the study (i.e., we observed a consistent decrease in responses as the questionnaires went on). However, although we observed a consistent decrease in responses for most of the study, there was a sudden drop of participation when the participants were faced with the sadism measure, showing how uncomfortable it can be when answering that questionnaire. For ethical reasons, we did not force the respondents to answer all the questions, thus leaving us with 680 participants. In the current sample, the average age was 38.6 years. Most parents had completed higher education, such as bachelor's degree (41.8%%) and master's degree (29.3%), followed by higher secondary education (17.4%), third cycle education (5.9%), lower secondary education (4.7%), and primary education (1%). Almost half of the sample (41.0%) had a monthly income of 2500-4000 Euros, followed by 4000-5500 Euros (27.4%), 1000-2500 Euros (17.5%), 5500-7000 Euros (10.9%), higher than 7000 Euros (2.6%), and 0-1000 Euros (0.6%). Most parents were either married (47.6%) or legally cohabitating (35.9%), and 16.5% were in single-parenting situations. The majority of parents lived in Belgium (82.1%) or France (16.2%). About 89.3% of the sample had between 1 and 3 children, and for more than half of the parents (53.1%) the first child was between 1 and 12 years of age (*Mean* = 11 years; *Standard Deviation* = 8.19). Thus, compared to the population of Belgium and France, the current sample was over-representative of mothers and not fathers, slightly over-educated, just-representative in terms of income, representative in terms of married and legal-cohabitating parents, slightly over-representative of single-parenting situations, and representative of the populations in terms of number of children.

2.2.3 Measures

Parental burnout was measured using the Parental Burnout Assessment (PBA; $\alpha = .97$; Roskam et al., 2018), which encompasses 23 items (e.g., *I'm so tired out by my role as a parent that sleeping doesn't seem like enough*) rated on a 7-point frequency scale: Never (0), a few times a year (1), once a month or less (2), a few times a month (3), once a week (4), a few times a week (5), every day (6). Total score was computed by summing item responses together, and for all measures hereafter, except if stated otherwise. **Job burnout** was assessed using the Maslach Burnout Inventory General Survey (Maslach et al., 1997), which encompasses 16 items rated (e.g., *I feel*

used up at the end of the work day) on the same 7-point Likert frequency scale as above ($\alpha = .88$). **Depression** was measured with the Patient Health Questionnaire (Kroenke et al., 2001), including 9 items (e.g., *little interest or pleasure in doing things*) representing each DSM symptom of depression. Participants indicated how often they have experienced specific symptoms during the last two weeks on a frequency scale: Not at all (0), Several Days (1), More than Half the Days (2), Nearly Every Day (3) ($\alpha = .89$). **Generalized Anxiety** was assessed with the GAD-7 (Spitzer et al., 2006), a 7-item questionnaire (e.g., *feeling nervous, anxious or on edge*) measuring the presence of anxiety symptoms during the last 14 days on a 4-point frequency scale: Not at all (0), Several days (1), More than half the days (2), and nearly every day (3) ($\alpha = .92$). **Borderline Personality** was assessed with the Borderline Evaluation of Severity over Time (BEST; Pfohl et al., 2009), which is a 15-item (e.g., *going to extremes to try to keep someone from leaving you*) questionnaire ($\alpha = .86$). For the first 12 items, the Likert scale goes from “None/Slight” (1) to “Extreme” (5), whereas for items 13-15, the scores go from “Almost Never” (1) to “Almost Always” (5). **Sadism** was measured using the Assessment of Sadistic Personality (ASP; Plouffe et al., 2017), which is a 9-item questionnaire (e.g., *I think about hurting people who irritate me*) rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) ($\alpha = .82$). **Psychopathy**, **Machiavellianism**, and **narcissism** were measured using the Short Dark Triad Scale (Jones & Paulhus, 2014), a 27-item questionnaire (e.g., *I like to get revenge on authorities*) in which each aforementioned variable is measured with 9 items rated on a 5-point Likert scale from “Disagree strongly” (1) to “Agree strongly” (5) (Machiavellianism $\alpha = .78$, narcissism $\alpha = .64$, psychopathy $\alpha = .71$). Total score for the three subscales were created by averaging the items. **Child Abuse Potential** was assessed using the Brief Child Abuse Potential (BCAP; Ellonen et al., 2019; Ondersma et al., 2005), a questionnaire encompassing 21 items (e.g., *my family has problems getting along*) rated on a binary scale: agree (0) or disagree (1) ($\alpha = .86$). Total score was computed by averaging the items. **Violence** and **neglect** were measured using the Neglect and Violence Scales (Mikolajczak, Brianda, et al., 2018). The former encompasses 17 items (e.g., *I sometimes don't react when my child tells me something*), the latter 15 items (e.g., *I sometimes spank or slap my child*), all rated on a 8-point frequency

scale: never (0), less than once a month (1), about once a month (2), a few times a month (3), once a week (4), several times a week (5), every day (6), several times a day (7) (for violence $\alpha = .80$, for neglect $\alpha = .72$). Total scores were created by averaging the items. **Social desirability** was measured using the short form of the Marlowe-Crowne Social Desirability scale (Reynolds, 1982), which is a 12-item (e.g., *I sometimes feel resentful when I don't get my way*) questionnaire rated on a binary scale: true (1) or false (0) ($\alpha = .60$).

2.2.4 Statistical Analyses

Analyses were computed with list-wise deletion, thus only keeping participants who responded to all the items. In order to test our hypotheses, we calculated bivariate correlations between variables, and then we computed hierarchical regression analyses, by firstly introducing the control variable (i.e., social desirability) and secondly the remaining variables. Hierarchical regression models were tested with and without a bootstrapping of 1000 samples to ensure that presented results are robust.

2.3 Results

Correlation estimates and their significance level can be seen in **Table 1**. As expected, with the exception of Narcissism, all variables were positively and significantly correlated to both neglect and violence.

Table 1*Bivariate intercorrelations between variables*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. MBI	680	32.14	16.60	—												
2. PBA	680	24.05	23.47	.36**	—											
3. PHQ-9	680	6.83	5.11	.45**	.62**	—										
4. GAD-7	680	5.98	4.78	.38**	.53**	.78**	—									
5. Narcissism	680	2.72	.49	-.13**	-.03	-.07	-.09*	—								
6. Psychopathy	680	1.89	.53	.12**	.08*	.14**	.16**	.17**	—							
7. Machiavellianism	680	2.64	.61	.11**	.07	.15**	.16**	.14**	.47**	—						
8. ASP	680	1.69	.46	.05	.11**	.11**	.10*	.16**	.41**	.33**	—					
9. BCAP	680	1.31	.22	.36**	.52**	.68**	.62**	-.06	.24**	.24**	.11**	—				
10. BEST	680	25.13	8.66	.39**	.61**	.70**	.64**	-.04	.27**	.22**	.18**	.65**	—			
11. Neglect	680	1.62	.49	.24**	.43**	.33**	.26**	-.06	.12**	.11**	.12**	.25**	.48**	—		
12. Violence	680	1.45	.45	.17**	.54**	.37**	.34**	-.02	.21**	.15**	.20**	.36**	.56**	.53**	—	
13. Desirability	680	18.14	2.39	-.21**	-.14**	-.17**	-.17**	-.04	-.39**	-.33**	-.27**	-.23**	-.29**	-.19**	-.18**	—

Note. * $p < .05$. ** $p < .01$. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time.

Hierarchical regression analyses (see **Table 2** and **Table 3**) were used to examine the relative weight of the various predictors of violence and of neglect while controlling for social desirability. We decided to leave narcissism in the model because the absence of bivariate correlation could be due to high social desirability in narcissistic individuals.

When predicting violence, the global model was significant ($F(11, 668) = 41.01, p < .001; R^2 = .40$). In this model, only four predictors remained significant: Parental burnout ($t(668) = 9.15, p < .001$) and borderline personality ($t(668) = 9, p < .001$) stood out as strong predictors of violence; sadism also stood out but to a lesser extent ($t(668) = 2.1, p = .04$). Job burnout ($t(668) = -2.06, p = .04$) was also significant, but it *negatively* predicted violence (thus, compared to bivariate correlations, its sign reversed). The model remained the same even after bootstrapping of 1000 samples.

Concerning neglect, the global model was significant ($F(11, 668) = 24.38, p < .001; R^2 = .29$). Among all the predictors, only borderline personality ($t(11, 668) = 7.9, p < .001$) and parental burnout ($t(11, 668) = 5.9, p < .001$) stood out as positive predictors of neglect. Child abuse potential also stood out but it was *negatively* related to neglect ($t(11, 668) = -2.9, p = .004$) (thus, compared to bivariate correlations, its sign reversed). The model remained the same even after bootstrapping of 1000 samples.

Table 2

Hierarchical regression analysis: Variables predicting violence, with desirability controlled

Effect	Standardized Estimates	SE	<i>F</i>	<i>t</i>	<i>p</i>	R square
Model predicting violence			41.01		< .001**	.40
Desirability	.002	.01		.052	.96	
MBI	-.07	.001		-2.06	.04*	
PBA	.37	.001		9.15	< .001**	
PHQ-9	-.10	.01		-1.82	.07	
GAD-7	-.03	.01		-.50	.62	
Narcissism	-.004	.03		.12	.91	
Psychopathy	.06	.03		1.70	.09	
Machiavellianism	.01	.03		.23	.82	
ASP	.07	.03		2.1	.04*	
BCAP	-.03	.09		-.75	.45	
BEST	.44	.003		9.0	< .001**	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Bootstrap of 1000 samples.

Table 3

Hierarchical regression analysis: Variables predicting neglect, with desirability controlled

Effect	Standardized Estimates	SE	<i>F</i>	<i>t</i>	<i>p</i>	R square
Model predicting neglect			24.38		< .001**	.29
Desirability	-.06	.01		-1.60	.11	
MBI	.05	.001		1.3	.19	
PBA	.26	.001		5.9	< .001**	
PHQ-9	.01	.01		.14	.89	
GAD-7	-.10	.01		-1.9	.06	
Narcissism	-.05	.03		-1.4	.16	
Psychopathy	-.003	.04		-.08	.94	
Machiavellianism	.02	.03		.53	.57	
ASP	.02	.04		.62	.53	
BCAP	-.14	.11		-2.9	.004**	
BEST	.42	.003		7.9	< .001**	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Bootstrap of 1000 samples.

2.4 Discussion

The aim of the current study was to examine the relative weight of various predictors of child maltreatment. Our findings suggest that violence and neglect towards the offspring are best predicted by borderline personality and parental burnout. Both variables are consistently significant across both violence and neglect; they are robust with relatively high effect sizes, even when social desirability is controlled for. This corroborates previous findings that parental burnout has specific repercussions on children, and it also adds to prior literature concerning the implications of borderline personality. Because borderline personality and parental burnout are highly correlated, this suggests that the former may be a vulnerability factor for the latter. The

fact that parental burnout predicts both neglect and violence even when borderline personality is controlled for, suggests that parental burnout has significant consequences on the offspring even in non-borderline parents. Finally, our results also corroborate previous research that sadism is a robust predictor of violence (Kirsch & Becker, 2007). We will not dwell on the suppressor effects of job burnout and BCAP (i.e., reversion of the sign when we control for all the other predictors), as their bivariate correlations were positive.

The implications of these findings are consequential, both for research and clinical practice. To begin, the importance of parental burnout prevention is key, as it is a robust and consistent predictor of violence and neglect towards the offspring. Knowing that parental burnout develops in stages and that it begins with emotional exhaustion (Roskam & Mikolajczak, 2021) and knowing that it is especially when parents are emotionally distant from their children that neglect and violence kick in (Hansotte et al., 2020), identifying parents at the exhaustion stage (i.e., before the stage of distancing) is crucial in order to treat the parents and, by doing so, preventing neglect or violence to occur. Also, the current study identified borderline personality as another factor of tremendous importance in predicting violence and neglect towards the children. Knowing this, prevention should be reinforced. Until 2015, few programs to support parenting in parents with borderline personality existed but things are starting to change (Gray et al., 2019; Renneberg & Rosenbach, 2016); the current findings suggests that these endeavors should be supported.

As advised by reviewers, additional analyses were performed. First, the previous regression models were re-analyzed by adding socio-demographic variables. In predicting neglect, results show that parental burnout, narcissism, abuse potential, being a man, and having younger children increases the risk of neglect. In predicting violence, parental burnout, borderline personality, and lower levels of education increase the risk of violence (results can be viewed in **supplementary materials 1 and 2**). Second, moderation analyses were conducted to see whether the observed effects varied based on socio-demographic variables. Analyses revealed that borderline personality disorder increases the prediction of neglect more so in men than in women. Also, Machiavellianism predicts more neglect in older parents compared to younger ones. Regarding violence towards the offspring, moderation analyses revealed that violence was predicted more by child abuse

potential in older parents, and also by borderline personality disorder in younger parents. Age of children never showed a moderating effect in neither the prediction of neglect nor of violence. Moderation analyses can be viewed in **supplementary materials (3 to 8)**. These results show that even when adding socio-demographic variables, parental burnout and borderline personality disorder still stand out in predicting child maltreatment.

Despite its strengths, this study also has limitations. The main one is that the study is correlational, precluding causal interpretations. However, the causal effect of parental burnout on violence and neglect towards the offspring has already been demonstrated (Brianda, Roskam, Gross, et al., 2020). Also, the authors did not account for the fact that some parents in the sample could be from the same family, this precluding the independence of observations. However, considering that the vast majority of participants were mothers, it is not very likely that this bias had an effect on the statistical analyses. Future research should be conducted to assess whether borderline personality is a precursor of parental burnout, whether/how borderline personality interacts with parental burnout, and whether the interaction has an additive effect on the violent and neglectful behavioral outbursts.

2.4.1 Data availability

All data have been made publicly available via Open Science Framework and can be accessed at

https://osf.io/47q25/?view_only=b6c6ea4ffd6b4b9486c5a467b2be72f0

2.5 Supplementary materials

Supplementary material 1

Hierarchical regression analysis: Variables predicting neglect, with desirability controlled, and socio-demographic variables added

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting neglect			16.71		< .001**	.31
Desirability	-.08	.01		-2.13	.03*	
MBI	.07	.001		1.95	.05	
PBA	.29	.001		6.28	< .001**	
PHQ-9	-.02	.01		-.31	.78	
GAD-7	-.07	.01		-1.26	.20	
Narcissism	-.08	.04		-2.17	.04*	
Psychopathy	-.02	.04		-.43	.68	
Machiavellianism	.02	.03		-.37	.74	
ASP	.03	.04		.69	.43	
BCAP	-.13	.12		-2.67	.02*	
BEST	.43	.01		8.14	< .001**	
Gender	-.09	.06		-2.40	.02*	
Age	-.05	.01		-.91	.57	
Child's Age	.19	.01		3.26	.02*	
Marital Status	.001	.03		.03	.98	
Education Level	.04	.02		.97	.33	
Work Regimen	.02	.02		.52	.58	
Income	.07	.02		1.90	.07	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Bootstrap of 1000 samples.

Supplementary material 2

Hierarchical regression analysis: Variables predicting violence, with desirability controlled, and socio-demographic variables added

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting violence			27.49		< .001**	.43
Desirability	-.01	.01		-.36	.71	
MBI	.05	.001		-1.53	.18	
PBA	.38	.001		9.29	< .001**	
PHQ-9	-.08	.01		-1.41	.22	
GAD-7	-.03	.004		-.64	.48	
Narcissism	.01	.03		-.34	.73	
Psychopathy	.06	.04		1.53	.21	
Machiavellianism	-.002	.03		-.05	.98	
ASP	.06	.04		1.74	.12	
BCAP	-.05	.10		-1.13	.28	
BEST	.44	.004		9.07	< .001**	
Gender	-.01	.05		-.19	.86	
Age	-.13	.01		-2.48	.31	
Child's Age	.15	.01		2.87	.18	
Marital Status	-.03	.02		-.74	.49	
Education Level	-.08	.02		-2.38	.02*	
Work Regimen	-.01	.02		-.34	.21	
Income	.08	.02		2.25	.09	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Bootstrap of 1000 samples.

Supplementary material 3

Hierarchical regression analysis: Variables predicting neglect, with desirability controlled, and age of first child as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting neglect			25.07		< .001**	.33
Desirability	-.07	.01		-1.8	.06	
MBI	.07	.002		1.1	.27	
PBA	.19	.002		2.4	.05	
PHQ-9	-.04	.01		-.39	.74	
GAD-7	-.06	.01		-.68	.52	
Narcissism	-.01	.05		-.14	.89	
Psychopathy	.04	.07		.53	.59	
Machiavellianism	-.03	.05		-.38	.70	
ASP	.01	.04		.20	.81	
BCAP	-.21	.06		-3.0	.004**	
BEST	.36	.16		4.07	< .001**	
MBI*Age Child	.001	.01		.01	.98	
PBA*Age Child	.16	.001		2.10	.07	
PHQ-9*Age Child	.04	.001		.35	.74	
GAD-7*Age Child	-.04	.001		-.43	.64	
Narcissism*Age Child	-.24	.004		-1.29	.18	
Psychopathy*Age Child	-.13	.005		-.82	.42	
Machiavellianism*Age Child	.19	.004		1.04	.27	
ASP*Age Child	-.04	.004		-.28	.77	
BCAP*Age Child	.07	.01		.31	.76	
BEST*Age Child	.22	.001		1.37	.29	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Age Child” consist of interaction term to test the moderating effect of the age of the first child. Bootstrap of 1000 samples.

Supplementary material 4

Hierarchical regression analysis: Variables predicting violence, with desirability controlled and age of first child as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting violence			22.59		< .001**	.42
Desirability	-.03	.01		-.09	.91	
MBI	-.11	.002		-1.98	.07	
PBA	.31	.002		4.31	.01*	
PHQ-9	.04	.01		.41	.73	
GAD-7	-.08	.01		-.92	.34	
Narcissism	.05	.05		.90	.39	
Psychopathy	.02	.06		.37	.74	
Machiavellianism	.04	.05		.72	.48	
ASP	.03	.06		.48	.62	
BCAP	-.06	.14		-.98	.34	
BEST	.42	.01		5.02	< .001**	
MBI*Age Child	.08	.001		.94	.40	
PBA*Age Child	.07	.001		1.01	.33	
PHQ-9*Age Child	-.18	.001		-1.70	.10	
GAD-7*Age Child	.07	.001		.72	.37	
Narcissism*Age Child	-.21	.003		-1.20	.20	
Psychopathy*Age Child	.13	.004		.90	.35	
Machiavellianism*Age Child	-.13	.003		-.78	.41	
ASP*Age Child	.11	.004		.81	.40	
BCAP*Age Child	.04	.01		.20	.83	
BEST*Age Child	.11	.001		.69	.62	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Age Child” consist of interaction term to test the moderating effect of the age of the first child. Bootstrap of 1000 samples.

Supplementary material 5

Hierarchical regression analysis: Variables predicting neglect, with desirability controlled, and gender of parent as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting neglect			14.1		< .001**	.31
Desirability	-.07	.01		-1.7	.09	
MBI	-.05	.01		-.18	.85	
PBA	.09	.01		.25	.81	
PHQ-9	-.29	.04		-.86	.42	
GAD-7	.30	.06		.65	.54	
Narcissism	.24	.21		1.20	.20	
Psychopathy	-.45	.23		-1.20	.05	
Machiavellianism	.23	.22		1.02	.38	
ASP	-.01	.27		-.06	.96	
BCAP	-.62	.69		-2.1	.04*	
BEST	1.41	.03		4.0	< .001**	
MBI*Gender Parent	.11	.01		.36	.69	
PBA*Gender Parent	.21	.004		.60	.56	
PHQ-9*Gender Parent	.28	.02		.81	.45	
GAD-7*Gender Parent	-.39	.03		-.80	.46	
Narcissism*Gender Parent	-.40	.11		-1.51	.12	
Psychopathy*Gender Parent	.49	.12		1.9	.07	
Machiavellianism*Gender Parent	-.26	.12		-.94	.42	
ASP*Gender Parent	.03	.14		.12	.92	
BCAP*Gender Parent	.68	.35		1.6	.10	
BEST*Gender Parent	-1.13	.02		-2.8	.03*	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Gender Parent” consist of interaction term to test the moderating effect of the gender of the parent. Bootstrap of 1000 samples.

Supplementary material 6

Hierarchical regression analysis: Variables predicting violence, with desirability controlled, and gender of parent as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting violence			22.95		< .001**	.42
Desirability	.01	.01		.38	.73	
MBI	-.43	.01		-1.6	.07	
PBA	.43	.01		1.37	.40	
PHQ-9	-.36	.05		-1.19	.57	
GAD-7	.03	.05		.07	.95	
Narcissism	.03	.18		.13	.91	
Psychopathy	.06	.21		.29	.79	
Machiavellianism	-.29	.26		-1.45	.45	
ASP	.42	.23		2.03	.06	
BCAP	-.40	.80		-1.46	.32	
BEST	1.46	.05		4.5	.04*	
MBI*Gender Parent	.38	.003		1.40	.13	
PBA*Gender Parent	-.04	.01		-.12	.94	
PHQ-9*Gender Parent	.26	.03		.80	.69	
GAD-7*Gender Parent	-.04	.03		-.09	.95	
Narcissism*Gender Parent	-.03	.09		-.11	.91	
Psychopathy*Gender Parent	-.001	.11		-.01	.98	
Machiavellianism*Gender Parent	.39	.13		1.52	.41	
ASP*Gender Parent	-.41	.12		-1.76	.11	
BCAP*Gender Parent	.53	.41		1.37	.37	
BEST*Gender Parent	-1.17	.02		-3.20	.25	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Gender Parent” consist of interaction term to test the moderating effect of the gender of the parent. Bootstrap of 1000 samples.

Supplementary material 7

Hierarchical regression analysis: Variables predicting neglect, with desirability controlled, and age of parent as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting neglect			15.86		< .001**	.34
Desirability	-.08	.01		-2.2	.02*	
MBI	-.11	.01		-.59	.57	
PBA	-.06	.01		-.23	.87	
PHQ-9	-.40	.03		-	.19	
				1.39		
GAD-7	.08	.03		.28	.76	
Narcissism	-.04	.17		-.30	.79	
Psychopathy	.34	.21		1.86	.15	
Machiavellianism	-.50	.17		-2.9	.03*	
ASP	.05	.18		.33	.74	
BCAP	-.34	.49		-1.9	.14	
BEST	1.09	.03		5.0	.01*	
MBI*Age Parent	.17	.001		.90	.39	
PBA*Age Parent	.32	.001		1.36	.38	
PHQ-9*Age Parent	.45	.001		1.57	.13	
GAD-7*Age Parent	-.16	.001		-.60	.50	
Narcissism*Age Parent	-.05	.005		-.19	.87	
Psychopathy*Age Parent	-.46	.005		-	.12	
				2.05		
Machiavellianism*Age Parent	.73	.004		3.26	.01*	
ASP*Age Parent	-.04	.005		-.19	.85	
BCAP*Age Parent	.24	.01		.94	.47	
BEST*Age Parent	-.70	.001		-3.1	.11	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Age Parent” consist of interaction term to test the moderating effect of the age of the parent. Bootstrap of 1000 samples.

Supplementary material 8

Hierarchical regression analysis: Variables predicting violence, with desirability controlled, and age of parent as a moderator

Effect	Standardized Estimates	SE	F	t	p	R square
Model predicting violence			28.40		< .001**	.48
Desirability	-.02	.01		-.67	.49	
MBI	-.26	.01		-1.58	.14	
PBA	.25	.01		1.12	.42	
PHQ-9	-.03	.03		-.13	.89	
GAD-7	-.30	.02		-1.26	.22	
Narcissism	.11	.12		.81	.40	
Psychopathy	.15	.17		.91	.44	
Machiavellianism	-.37	.17		-2.5	.12	
ASP	.13	.19		.92	.47	
BCAP	-.48	.39		-3.07	.02*	
BEST	1.68	.02		8.73	<.001**	
MBI*Age Parent	.21	.001		1.21	.22	
PBA*Age Parent	.10	.001		.47	.71	
PHQ-9*Age Parent	-.02	.001		-.08	.93	
GAD-7*Age Parent	.28	.001		1.18	.23	
Narcissism*Age Parent	-.19	.003		-.88	.34	
Psychopathy*Age Parent	-.16	.004		-.81	.46	
Machiavellianism*Age Parent	.56	.004		2.81	.07	
ASP*Age Parent	-.07	.005		-.38	.76	
BCAP*Age Parent	.68	.01		2.95	.02*	
BEST*Age Parent	-1.35	.001		-6.96	.01*	

Note. N = 680, excluding cases listwise. Desirability = Social Desirability; MBI = Maslach Burnout Inventory General Survey; PBA = Parental Burnout Assessment; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; ASP = Assessment of Sadistic Personality; BCAP = Brief Child Abuse Potential; BEST = Borderline Evaluation of Severity over Time. Variables that are “variable name*Age Parent” consist of interaction term to test the moderating effect of the age of the parent. Bootstrap of 1000 samples.

Chapter 3: Spiraling down: fearful attachment style moderates the link between parental burnout and violence

Objective: The aim of the current pre-registered cross-sectional study was to examine whether in parents with high anxious (characterized with a negative model of self), dismissing (characterized with a negative model of others), and fearful attachment styles (characterized with a negative model of self and of others), the link between parental burnout and violence towards the offspring is stronger. **Background:** Past research has shown that parental burnout exacerbates violence towards the offspring, but the correlation is not perfect ($r = .49$), which suggests that not all parents in burnout are violent, and that moderators might therefore be at play. **Method:** 794 participants answered online questionnaires one time, through Prolific. Parental burnout, violence, and attachment styles were measured through the Parental Burnout Assessment, the Parental Violence Scale, and the Relationship Questionnaire. Multiple regression analyses were performed to test the moderating role of anxious, dismissing, and fearful attachment styles. **Results:** Parental burnout and all attachment styles are significantly related to violence. However, only fearful attachment style significantly potentiated the relation between parental burnout and violence. **Conclusion:** In parents with high fearful attachment style, the link between parental burnout and violence towards the offspring is stronger. Results are discussed in light of the role of internal models of self and others. **Implications:** Anxious, dismissing, and fearful attachment styles should systematically be investigated when dealing with burnt out parents, as some may be associated with a higher risk of violence towards the offspring.

Reference

Schitteck, A., Roskam, I., & Mikolajczak, M. (2024). Spiraling Down: Fearful Attachment Style Moderates the Link Between Parental Burnout and Violence. *Journal of Family Relations*, 2024, 1-11.
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3.1 Introduction

Violence against children can be defined as being a type of child maltreatment, that occurs to children under age (World Health Organization, 2022a, 2022b), that can take different forms (e.g., physical, psychological and verbal; see Norman et al., 2012). Violence against children is serious matter, not only because of its widespread prevalence (i.e., one of two children worldwide, for a systematic review, see Hillis et al., 2016) but also because it has serious and persistent effects. Whether violence is physical (e.g., slaps, blows, throwing objects at the child) or emotional (e.g., screams, insults, humiliations, threats of abandonment), its effects are visible in the short, medium and long term (for meta-analyses, see Evans et al., 2008; Hughes et al., 2017; Wolfe et al., 2003) and across a wide range of important life spheres. On a psychological level, experiencing violence as a child has been linked with negative emotional and behavioral outcomes in childhood (for a meta-analysis, see Wolfe et al., 2003) and adolescence (for a meta-analysis, see Evans et al., 2008), as well as mental illness in adulthood (for a meta-analysis, see Hughes et al., 2017). On a physical level, the experience of violence is related to higher stress reactivity in adolescents (Peckins et al., 2012), substance use, disease and risk-taking behaviors in adulthood (Hughes et al., 2017). On an academic/professional level, authors have identified that experiencing violence in childhood and adolescence is related to academic drop-out and school absenteeism (for a meta-analysis, see Fry et al., 2018), and it is linked with less stability in the occupational domain (i.e., less regularity in employment, more precariousness, less retirement; Romito et al., 2003).

The serious consequences of childhood violence have led researchers to devote strenuous efforts to uncovering its predictors, which have proven to be numerous (for an umbrella review, see Van Ijzendoorn et al., 2020; for a review, see Austin et al., 2020). Some are trait-like predictors (e.g., parental personality, parent's experience of maltreatment, attachment style; Van Ijzendoorn et al., 2020; Waters et al., 2002), others are state-like predictors (e.g., maternal depression and post-traumatic stress disorder, paternal stress, parental substance abuse; Austin et al., 2020). Among state-like predictors, parental burnout has recently been shown to be a strong predictor of child violence (Mikolajczak et al., 2020; Schitteck et al., 2023b). Parental burnout

is a stress-related syndrome specific to the parental role, which can develop when the parent does not have enough resources to face the stressors related to their parenthood. It can manifest up to four symptoms, such as exhaustion in the parental role, perceiving that they are not the parent they used to be, feeling fed up with parenting, and feeling emotionally distant from their offspring (Mikolajczak et al., 2021; Roskam et al., 2018).

Parental burnout strongly increases violence towards one's children (Mikolajczak et al., 2019; Szczygieł et al., 2020), as shown in its concerning large correlation ($r = .49$; for a meta-analysis, see Mikolajczak et al., 2023). This link is robust, as it has been observed in correlational (Szczygieł et al., 2020), cross-lagged (Mikolajczak et al., 2019) and experimental (Brianda, Roskam, Gross, et al., 2020) designs. The link between parental burnout and violence is causal, because when parental burnout is treated, violence and neglect towards the offspring decreases proportionally to the decrease in burnout symptomatology (Brianda, Roskam, Gross, et al., 2020).

To what extent, if any, do trait-like predictors of violence strengthen the effect of state-like predictors such as parental burnout? Considering that not all burned out parents are violent ($r = .49$; if burned out parents were all violent, the correlation would be closer or equal to 1; for a meta-analysis, see Mikolajczak et al., 2023), it might suggest that moderators are at play. In this paper, we examined the hypothesis that in parents with high anxious, dismissing, and fearful attachment styles, the link between parental burnout and violence towards the offspring could be stronger. Bowlby (1973) formulated the first theory on attachment as a lasting psychological and emotional link between individuals, and it translates into a pattern of behaviors that activate in relational situations. In Bowlby's (1973) bidimensional model, individuals have two internalized models: the *internal model of self* that can be positive or negative (e.g., a positive model reflecting the belief that the self is capable of being autonomous and is worthy, whereas a negative model would be characterized by the difficulty of being autonomous and believing to be unworthy), and the *internal model of others*, which can also be positive or negative (e.g., the positive model reflecting a trust in others' intentions, whereas the negative indicates an untrusting nature towards others).

From the bidimensional model, three insecure attachment styles can be identified: anxious, dismissing, and fearful (Bartholomew, 2016). *Anxious*

attachment has a negative model of self, but positive model of others, which results in a preoccupied state with relationships. *Dismissing* attachment is characterized by a positive model of self, but negative model of others, resulting in lack of interest in intimate relationships. *Fearful* attachment has a negative model of self and negative model of others, thus neither trusting themselves or others, translating into a fear of intimacy and social avoidance (Bartholomew, 2016). Interestingly, Bartholomew's (2016) model does not categorize individuals in one type of attachment style, as Bowlby's (1973). Bartholomew's (2016) model considers attachment styles in a continuous manner, meaning that one individual can have varying degrees of anxious, dismissing, and fearful attachment styles. However, more often than not, one type of attachment style will be more predominant in individuals compared to the others.

Considering that attachment style is quite stable across time (Fraley & Roisman, 2019; J. D. Jones et al., 2018), that some individuals are more anxiously, dismissingly, and fearfully attached than others (Bartholomew, 2016), that anxious, dismissing, and fearful attachment styles can exacerbate the link between stress and detrimental parental behaviors (Mills-Koonce et al., 2011), and that anxious, dismissing, and fearful attachment styles are strong predictors of violence (for a meta-analysis, see Ogilvie et al., 2014), we hypothesized that in parents with high anxious, dismissing, and fearful attachment styles, the link between parental burnout and violence towards the offspring would be stronger. Considering that no prior research in parental burnout literature has investigated this hypothesis, we are unable to disentangle between the hypothesized moderating role for each attachment style. Also, since the causal relation between parental burnout and violence has already been established, we have chosen a cross-sectional method to unveil the links between variables and their roles.

3.2 Methods

3.2.1 Procedure

The study and the statistical analyses have all been pre-registered on the Open Science Framework (https://osf.io/5zgw9/?view_only=6e4046897ade44fb85f414dd2ae31179). There was one deviation from the pre-registration: instead of performing

simple-slope analyses on IBM SPSS (IBM, 2020), they were performed on Jamovi (The jamovi project, 2021), because it allows to have more in-depth analyses (such as significance for each level of the moderator on the link between parental burnout and violence). There was no other deviation from the protocol or planned analyses. The study has been approved by the Ethics Committee of the Cliniques Universitaires Saint-Luc (Belgium) and it is part of a larger project on the moderators of the consequences of parental burnout. Sample size calculations were done using G*Power prior to recruiting participants, in order to ensure enough power for analyses. The achieved sample size allows to detect even small effects with a power of .80. Participants were recruited on Prolific (<https://www.prolific.ac>), which is a participant recruitment website created in Oxford, United Kingdom. Prolific allows to connect researchers to reliable participants, and it is now widely used around the world by top-ranked universities. It allows fast, high-quality and reliable data for the researcher. They can enter their research proposal and select screening criteria for specific participants to participate (e.g., only participants who have children). Parents on Prolific all had an equal chance to participate to the study. In order to avoid self-selection bias, participants were not informed that the study was about parental burnout, but rather on parenthood in general. The data were collected between June and July 2022. Participants who did not meet the following criteria were excluded from all analyses: participants who were under 18 years old, participants who were not parents (even though Prolific allows to filter participants, we added this question in order to ensure that the participants were indeed parents), and participants who wrongly answered at least one attention-check.

3.2.2 Participants

Of the 914 people who responded to the study, 794 met the inclusion criteria mentioned above and were included in the analyses. Parents (Mean age = 38, SD = 10.04) were 64.4% women, 35.4% men, 0.1% non-binary/third gender, and 0.1% preferred not to say. Participants reported the number of children they lived with ($M = 1.84$, $SD = .91$), the age of their youngest ($M = 7.21$, $SD = 6.91$) and oldest child ($M = 11.1$, $SD = 8.63$). Most parents had completed an undergraduate degree (47.2%), followed by higher secondary education (28.2%), graduate education (16%), post-graduate (4.5%), lower secondary education (3.1%), and primary education (.9%).

Most parents worked full-time (65.9%), part-time (19.3%) or were stay-at-home parents (8.8%). Most of the parents reported having a biparental family type (73%), followed by single parents (13.9%), blended family (9.6%), or other (2.4%). Of the biparental family type, 98.9% were other-sex, and 1.1% were same-sex parents. The net monthly income was mostly between 1092.26 and 2727.92 US dollars (37.8%), between 2729.02 and 4364.68 US dollars (29.3%), and between 0 and 1091.17 US dollars (20.2%).

3.2.3 Measures

After signature of informed consent, the following sociodemographics were collected: age and gender of the respondent, being a parent, number of children they live with (biological and non-biological), number of children they have in total (biological and non-biological), age of the youngest child still living at home, age of the oldest child, educational level (primary education; lower secondary education; higher secondary education; undergraduate education, graduate education, postgraduate education), working status (unemployed, part-time, full-time, stay-at-home parent, pensioner, on a break, unable to work), country of residence (USA, UK, Australia, Other), family type (biparental, single parents, blended family, other), and net monthly household income (between 0 and 1091.17 US dollars; between 1092.26 and 2727.92 US dollars; between 2729.02 and 4364.68 US dollars; between 4365.77 and 6001.43 US dollars; between 6002.53 and 7638.19 US dollars; above 7638.19 US dollars).

Parental burnout was assessed using the *Parental Burnout Assessment* (Cronbach's alpha in the current sample was of .93), which is a 23-item self-reported questionnaire (Roskam et al., 2018). Parents rate each item on the following response scale: never (0), a few times a year, once a month or less, a few times a month, once a week, a few times a week, every day (6). The items form four factors: exhaustion (e.g., "I'm so tired out by my role as a parent that sleeping doesn't seem like enough"), contrast (e.g., "I don't think I'm the good father/mother that I used to be to my child(ren)"), feeling fed up (e.g., "I can't stand my role as a father/mother anymore"), and emotional distancing (e.g., "Outside the usual routines (lifts in the car, bedtime, meals), I'm no longer able to make an effort for my child(ren)"). Higher scores reflect a higher level of parental burnout.

Violence towards offspring was measured using the *Parental Violence Scale* (Mikolajczak et al., 2018) (Cronbach's alpha in the current sample was of .78), which is a 15-item questionnaire. Participants respond to each item on an 8-point frequency scale: never (1), less than once a month, about once a month, a few times a month, once a week, several times a week, every day, several times a day (8). The scale measures verbal (e.g., "I sometimes denigrate my child"), physical (e.g., "When I am angry, I sometimes throw things at my child"), and psychological violence (e.g., "I sometimes threaten to abandon my child if s/he is not good"). Higher scores reflect a higher presence of violent behaviors.

Attachment style was measured using the *Relationship Questionnaire* (Bartholomew & Horowitz, 1991), which is a 3-item questionnaire, to which participants respond on a 7-point Likert scale: it does not describe me at all (1), it describes me very much (7). Each item represents a paragraph describing one of the four attachment styles (e.g., for dismissing attachment style, "I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me"). Each participant has three scores for attachment styles. Higher scores on a given paragraph reflect the predominant attachment style in the participant.

Considering that these questionnaires were part of a much larger study, three attention-checks were introduced in the general survey (e.g., "In the following question, select the number between three and five"), to make sure that participants did not respond randomly or inattentively to the questions. Attention-check items consisted of statements to which the participant had to give the correct response, and these items were dispersed in questionnaires, allowing to detect the person's attention when answering the variables' questionnaires.

3.2.4 Statistical analyses

Participants were excluded based on prior mentioned criteria, before performing any data processing or analysis. Only participants who had answered to all the questionnaires were kept for the analyses. Scores were centered before performing the analyses, by subtracting the variable's mean from the participants' scores. Assumption checks, such as linearity, multicollinearity, independent residuals, homoscedasticity, normal

distribution of residuals, and outliers were tested and dealt with as prescribed by statistical guidelines (Field, 2017). Considering the expected deviations in normality, analyses were performed using bootstrapping of 1000 samples (Field, 2017). Descriptive statistics and moderation analyses using multiple regressions were performed using SPSS version 28 (IBM, 2020). For moderation analyses, parental burnout, anxious, dismissing, fearful attachment styles, and control variables were introduced in a multiple regression in which child violence was the dependent variable. If interaction terms in the multiple regression were significant, Jamovi's MedMod package was used to perform simple slope analyses (The jamovi project, 2021). Simple slope analyses allow to (i) visually see how the moderator interacts in the link between the dependent and independent variable, (ii) and statistically gauge how the link between the dependent and independent variables statistically changes (significance and size) at different levels of the moderator.

3.3 Results

Pearson's correlations among the variables are shown in **Table 1**. As expected, parental burnout was positively and strongly correlated with violence. While anxious and dismissing attachment styles were positively but somewhat weakly correlated with violence, fearful attachment was moderately correlated with it. Anxious and fearful attachment style were positively yet weakly correlated with parental burnout.

Table 1
Pearson's Correlations between Study Variables

Variable name	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Parental Burnout	794	32.4	26.8	—				
2. Violence	794	23.2	7.91	.40***	—			
3. Dismissing	794	4.45	1.60	.03	.17***	—		
4. Anxious	794	3.28	1.59	.15***	.17***	-.15***	—	
5. Fearful	794	3.94	1.69	.20***	.25***	.22***	.32***	—

Note. Parental Burnout: Skewness = 1.19; Kurtosis = 0.93. Violence: Skewness = 2.09; Kurtosis = 6.79. Dismissing: Skewness = - 0.16; Kurtosis = - 0.65. Anxious = Skewness = 0.32; Kurtosis = - 0.64. Fearful: Skewness = - 0.04; Kurtosis = - 0.90. * $p < .05$. ** $p < .01$. *** $p < .001$.

As shown in **Table S1** (Supplementary Materials), moderation analyses showed that when no control variables were included in the model, only fearful attachment style significantly interacted with parental burnout in the prediction of violence. When controlling for the main socio-demographic variables predicting child maltreatment (see **Table 2**; namely age of the parent, number of children living with, age of the youngest child, age of the oldest child, income, gender, and educational level), fearful attachment style still significantly interacted with parental burnout in the prediction of violence. Dismissing attachment style also showed a weak (but significant) moderating effect, which only appeared when gender and/or educational level were included in the controls, and disappearing in any other case. Thus, the moderating hypothesis is consistently corroborated only for one of the three attachment styles – fearful attachment style. Considering that all attachment styles were also introduced in the model, this allows to safely suggest that it's the individual variance in fearful attachment style that has a moderating role in the link between parental burnout and violence, and not its shared variance with the other attachment styles.

Table 2
Moderation Analyses Controlling for Socio-Demographic Variables

Effect	Standardized Estimate	SE	95% CI		<i>t</i>	<i>p</i>
			<i>LL</i>	<i>UL</i>		
Parental burnout	.34	.01	.27	.40	10.12	< .001***
Dismissing attachment style	.14	.16	.08	.21	4.35	< .001***
Anxious attachment style	.09	.17	.02	.15	2.62	.001**
Fearful attachment style	.08	.16	.02	.15	2.43	.02*
Parental burnout x Dismissing attachment style	.07	.01	.01	.14	2.19	.03*
Parental burnout x Anxious attachment style	.06	.01	-.01	.13	1.61	.11
Parental burnout x Fearful attachment style	.11	.01	.04	.18	3.00	.003**
Age of parent	-.29	.04	-.40	-.18	-5.30	< .001***
Number of children living with parent	.05	.29	-.01	.12	1.62	.11
Income	-.08	.22	-.14	-.01	-2.33	.02*
Age of youngest child	.06	.07	-.06	.18	0.99	.32
Age of oldest child	.07	.06	.03	.28	2.36	.02*
Gender of parent	-.13	.52	-.19	-.06	-3.97	< .001***
Educational level	.11	.28	.05	.17	3.55	< .001***

Note. The predictor is parental burnout in the three multiple regressions, and the outcome variable is always violence towards the offspring. The analyses have been performed with bootstrapping of 1000 samples. Interaction term is constituted by multiplying parental burnout with the moderator (both previously centered).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Simple slope analyses (see **Table 3** and **Figure 1**) revealed that the interaction was significant at all levels of fearful attachment style, meaning that in parents with high fearful attachment, the link between parental burnout and violence is stronger. Thus, when a parent exhibits a *highly* fearful attachment style, the link between parental burnout and violence towards the offspring is *particularly* stronger. As shown in Figure 1, parents at highest risk to be violent towards their offspring are those combining a high level of parental burnout with a highly fearful attachment style.

Table 3

Simple Slope Analyses for the Interaction between Fearful Attachment Style and Parental Burnout, Predicting Violence

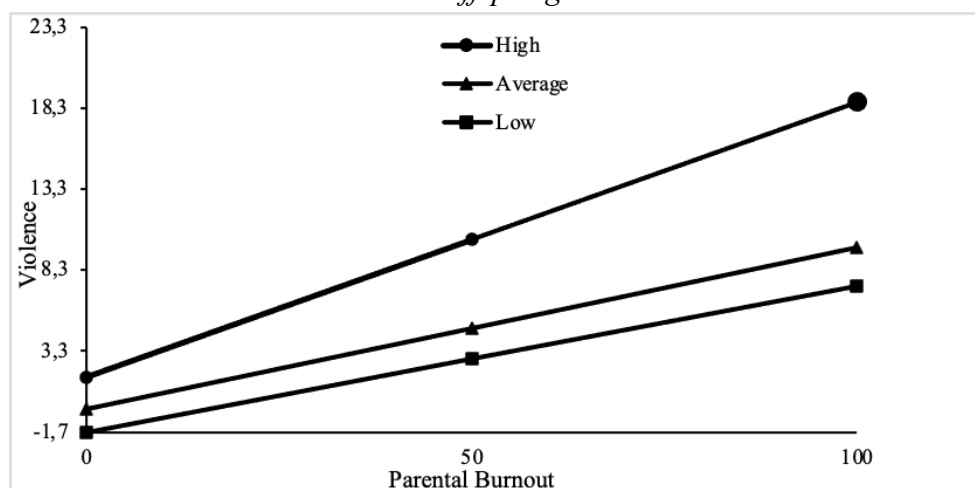
Levels of the moderator	Unstandardized Estimates	SE	95% CI		Z	p
			LL	UL		
Low (-1SD)	.06	.02	.03	.09	4.13	< .001***
Average (Mean)	.10	.01	.08	.12	8.84	< .001***
High (+1SD)	.14	.02	.10	.18	6.74	< .001***

Note. Simple slope analyses for three levels of fearful attachment (low, average, high), and its effect on the relation between parental burnout and violence towards the offspring.

*p < .05. **p < .01. ***p < .001.

Figure 1

Moderating role of fearful attachment style in the link between parental burnout and violence towards the offspring



Note. This figure shows the link between parental burnout and violence at different levels of fearful attachment style (low, average, high).

3.4 Discussion

The present study first suggests that parental burnout as well as anxious, dismissing, and fearful attachment styles are all significant predictors of violence towards the offspring. In addition, and in accordance with our hypothesis, fearful attachment potentiates the relation between parental burnout and violence: the higher the levels of fearful attachment, the higher the link between parental burnout and violence towards their children. However, in contradiction to our hypothesis, anxious and dismissing attachment styles did not significantly moderate the link between parental burnout and violence towards offspring: anxious and dismissing attachment did not potentiate the link between parental burnout and violence. Importantly, these results cannot be attributed to a lack of statistical power as our sample size would have been sufficient to detect very small effects.

The fact that anxious and dismissing attachment styles were non-significant moderators could be an indicator of the implication of the internal models, and more broadly internal resources. In fact, anxious attachment style has a positive internal model of others, meaning that they trust others and can

rely on them (Ognibene & Collins, 1998), whereas dismissing attachment style has a positive internal model of self, meaning that they trust and rely on themselves (e.g., higher sense of self-competence, see Brennan & Morris, 1997; Bylsma et al., 1997; and higher sense of self-esteem, see Huntsinger & Luecken, 2004). We can hypothesize that parents experiencing burnout and having anxious or dismissing attachment styles would resort to less violence than those with fearful attachment style, because they would have at least a possible source of help, either from others or themselves. In the case of fearful attachment, both internal models are negative. With a negative image of both self and others, the exhausted parent has few options for dealing with the stress of parenthood and the violent impulses that can result. Because they do not trust other's intentions, fearfully attached parents may not seek help when in need (Ognibene & Collins, 1998). They may thus spiral down, with the first outburst of violence resulting from parental burnout increasing their negative self-image, which may further strengthen their stress; and yet they may refuse to seek help to break the spiral, because they don't trust others.

The present study adds findings to the literature, but its limitations must also be acknowledged. Firstly, the study relies on a cross-sectional design precluding to infer causality. Intervention studies should be conducted, in which an experimental group undergoing therapy aimed at securing the parents' attachment style would be compared to a waiting list control group. This would allow to determine whether the treatment of fearful attachment style reduces violence in burned out parents, which would therefore corroborate causally the moderating role of attachment styles. Secondly, the length of the study might have biased the responses of participants who wished to finish the study hastily. However, three attention checks (one being at the very end of the study) were introduced to assess the participant's attention when answering the questions. This enabled us to only keep participants who had been attentive until the very end. Thirdly, measuring anxious, dismissing, and fearful attachment style with only one scenario item does not enable us to test the reliability of the item. However, we selected the Relationship Questionnaire (Bartholomew & Horowitz, 1991) because it is one of the most widely used questionnaires assessing adult attachment style and it has shown good validity (Wongpakaran et al., 2021).

In spite of its limitations, the present findings open many avenues for both research and practice. Research wise, studies should for instance go

deeper into the role that seeking help plays in the relation between parental burnout, attachment styles, and violence. In fact, to the authors' knowledge, studies often focus on the parents' perceived social support rather than their ability to ask for help when they need (e.g., for parental burnout, see Lin et al., 2022; e.g., for attachment style, see Florian et al., 1995). It could be a fruitful research avenue, especially if the study also covers help-seeking behaviors concerning violent outbursts towards the offspring. Furthermore, based on prior literature, anxious, dismissing, and fearful attachment styles should be also tested as potential precursors in parental burnout. In fact, insecure attachment styles have been associated with an enhanced risk of burnout (for a systematic review, see West, 2015), and attachment styles have been associated with an increase in child maltreatment (for a meta-analysis, see Lo et al., 2019). It would be fruitful to investigate whether anxious, dismissing, and fearful attachment styles strengthen the risk of child maltreatment, because of an increase in parental burnout (authors can be contacted to request mediation analyses conducted on the current dataset). The present findings also have implications for prevention. Knowing that fearful attachment style can exacerbate the risk of violence in burned out parents, clinicians should try to spread the word where they could meet help-avoiding parents, for example at school events. Knowing that they could struggle to seek for help, finding ways to spread the word is crucial. If fearfully attached parents desire to get help, then implementing attachment-focused therapy for families would be suitable (Hughes, 2007).

In conclusion, parental burnout, dismissing, anxious and fearful attachment styles predict violence. Fearful attachment has a moderating role in the link between parental burnout and violence. The higher the fearful attachment, the stronger the link between parental burnout and violence towards the offspring. Future studies and interventions may need to consider more systematically the attachment style when working with parents in parental burnout.

3.4.1 Data availability statement

Data of the study can be consulted on Open Science Framework (https://osf.io/5zgw9/?view_only=6e4046897ade44fb85f414dd2ae31179)

3.5 Supplementary materials

Table S1

Moderation Analyses including All Predictors in One Regression

Effect	Standardized Estimate	SE	95% CI		<i>t</i>	<i>p</i>
			<i>LL</i>	<i>UL</i>		
Parental burnout	.32	.10	.25	.38	9.54	< .001***
Dismissing attachment style	.16	.16	.10	.23	4.92	< .001***
Anxious attachment style	.10	.17	.03	.17	2.93	.003**
Fearful attachment style	.11	.16	.04	.17	3.03	.003**
Parental burnout x Dismissing attachment style	.06	.01	-.01	.13	1.90	.06
Parental burnout x Anxious attachment style	.06	.01	-.01	.14	1.74	.08
Parental burnout x Fearful attachment style	.10	.01	.03	.17	2.69	.007**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Chapter 4: Reducing child maltreatment in parental burnout: The mitigating role of emotional intelligence

Purpose: Parenthood is a life changing transition, filled with both good and bad. Sometimes, parenthood serves as a hub for enduring intense stress, which can precipitate the development of parental burnout (PB). PB has been shown to have serious consequences, one of the most significant being an increase of violence towards the offspring. Considering that trait emotional intelligence (EI) involves increased self-control and empathy, higher trait EI could decrease the link between PB and violence. The present study aimed to determine whether (and, if so, to what extent) trait EI attenuates the link between PB and violence. **Methods:** 506 parents answered an online cross-sectional survey. **Results:** Trait EI attenuates the link between PB and violence: the higher the parent's EI, the lower the link between PB and violence. However and interestingly, even in parents who have high EI, the link between PB and violence, although reduced, persists. **Conclusions:** Trait EI can contribute to mitigate the effect of parental burnout on violence, thus also showing that some factors/contexts prevent EI from fully manifesting itself and the current study both illustrates and discusses this interesting phenomenon.

Reference

Schittek, A., Szczygieł, D., M., Roskam, I., & Mikolajczak, M. (under review). Reducing Child Maltreatment in Parental Burnout: The Mitigating Role of Emotional Intelligence. *Journal of Family Violence*.

4.1 Introduction

Parenthood can be one of the most meaningful transitions in life (e.g., Kuersten-Hogan & McHale, 2021), breeding a sense of fulfilment (Nelson et al., 2014). However, parenthood is not always smooth sailing. Most of the time, parenthood brings new challenges and changes (i.e., physiological, psychological, relational, see Kuersten-Hogan & McHale, 2021; neurological, see Abraham et al., 2014; Kim, 2021), that require substantial adaptation. At certain times, parents can be faced with too many challenges, with too few resources at hand. This context can lead parents to burn out. Parental burnout (PB) is a seriously common (i.e., around 8% in Poland, country in which the current study took place) and global issue (for a 42-country study, see Roskam et al., 2021). Parents experiencing PB exhibit exhaustion in their parenting role (which seems to be the starting point, see Roskam & Mikolajczak, 2021), feel fed up with parenthood, experience a sense of contrast with the parent they used to be, and feel emotionally distant from their offspring (Roskam et al., 2018).

However, PB does not only impact the unwell parent, but also its surroundings. As shown in other health issues, unwell parents usually have an impact on the family (for a review, see Beardselee et al., 1998), and PB has expectedly been shown to also affect the family system (Mikolajczak et al., 2019). Specifically - and unsurprisingly given that PB is contextualized in parenthood - the offspring seems to be particularly at risk, as research has consistently shown that PB increases violent behaviors towards them (e.g., for longitudinal, see Mikolajczak et al., 2019; for experimental, see Brianda et al., 2020), and even above and beyond other child maltreatment risk factors (Schitteck et al., 2023b).

Considering that the link between PB and violence is strong but not perfect ($r = .49$, for a meta-analysis, see Mikolajczak et al., 2023), it is likely that the link between PB and violence is moderated. Trait emotional intelligence (EI) seems a plausible candidate to moderate the aforementioned link. Trait EI is a stable (e.g., Zadorozhny et al., 2024) trait (Petrides, 2009) that refers to emotion-related dispositions, such as *well-being* (dispositional mood), *self-control* (regulating emotions/impulses), *emotionality* (perception and/or expression of emotions), and *sociability* (interpersonal use and regulation of emotions). In other words, trait EI refers to one's emotional self-

efficacy (Pérez et al., 2005). Given that trait EI is an excellent predictor of resistance to a variety of stressors (e.g., Mikolajczak, Menil, et al., 2007; Mikolajczak, Roy, et al., 2007) and that PB is a stress-related disorder (Mikolajczak & Roskam, 2018), past research has investigated the relationship between trait EI and PB, and has expectedly shown that higher trait EI reduced (yet not removed) the risk of parental burnout (Lin et al., 2022; Lin & Szczygieł, 2022; Szczygieł et al., 2020). However, no study has investigated whether trait EI could attenuate the link between PB and violence towards the offspring. One could expect that burned out parents with high trait EI would engage in less violent behaviors towards their offspring. This expectation stems from the fact that people with higher trait EI typically exhibit greater self-control and empathy –qualities associated with fewer violent outbursts (Chialant et al., 2016; DeWall et al., 2011). Additionally, higher trait EI has been linked to less aggressive behaviors overall (for a systematic review, see García-Sancho et al., 2014).

Based on the aforementioned rationale, we expect trait EI to moderate the link between PB and parental violence. More specifically, we expect the link between PB and violence to decrease proportionally to the increase in trait EI.

4.2 Methods

4.2.1 Participants

Participants were eligible to take part in the study if they still lived with at least one child (aged from 3 to 19 years of age). 506 Polish parents participated to the study. On average, the participants were 35.16 years old ($SD = 5.85$) and were mostly women (76.3%). Parents had on average 2 children ($M = 1.88$, $SD = 0.97$), with the youngest child being 5 and a half years old ($M = 5.66$, $SD = 3.97$) and the oldest being around 10 ($M = 10.26$, $SD = 4.57$). 6.9% of the parents reported having children with special needs. On average, participants spent 7 hours per day with their offspring ($M = 7.27$, $SD = 3.84$). Most participants were from a biparental family structure (80.8%), followed by single parents (8.7%), blended families (6.1%), and multi-generational households (3.0%). Regarding education, most participants held a university degree (53.0%), while 19.8% completed an

undergraduate degree, 17.8% had secondary education, and 9.5% had primary education. Additionally, most participants reported having a job (78.9%).

4.2.2 Procedure

This study was performed in line with the principles of the Declaration of Helsinki and received the approval of the Ethics Committee of SWPS University in Poland (WKE/S/18/III/115). Data were collected through an online questionnaire and were part of a larger study in which perfectionism was also measured, but which was not used in the current manuscript. Parents were recruited through social media (e.g., Facebook, parenting websites) between September 2022 and February 2023. Participants gave their consent and were informed that the data would remain anonymous and that they could withdraw at any moment. No remuneration was given in exchange for their participation. The final data output did not contain any missing values, as only complete answers were saved on the online questionnaire platform.

4.2.3 Measures

Sociodemographic variables were asked after informed consent. Questions concerned the age of the parent, their gender, number of children, age of the youngest child, age of the oldest, if the child had special needs, hours spent with the child per day, type of family, level of education, working situation.

Trait EI was measured using the Trait Emotional Intelligence Questionnaire - Short Form (original version, see Petrides, 2009; Polish version, see Szczygieł et al., 2015), which is a 30-item self-report questionnaire. Participants answer by selecting their response on a 7-point Likert scale, ranging from “completely disagree” (1) to “completely agree” (7). After reversing the items that need reversal, the total trait EI is calculated by averaging the item scores. A higher total score reflects higher trait EI (in the current sample, $\alpha = .92$, $\omega = .93$).

Parental Burnout was measured using the Parental Burnout Assessment (original version, see Roskam et al., 2018; Polish version, see Szczygieł et al., 2020), which is a 23-item self-report questionnaire encompassing four dimensions: exhaustion in the parental role (e.g., “I’m so tired out by my role as a parent that sleeping doesn’t seem like enough”), emotional distancing from the children (e.g., “Outside the usual routines (lifts

in the car, bedtime, meals) I'm no longer able to make an effort for my child(ren)"), contrast with the parent they used to be (e.g., "I don't think I'm the good father/mother that I used to be to my child(ren)"), and feeling fed up with the parental role (e.g., "I can't stand my role as a father/mother anymore"). Participants respond to each item on a 7-point frequency scale, ranging from "never" (0) to "every day" (6). The total PB score is computed by summing all the items; a higher score reflects a higher level of PB (in the current sample, $\alpha = .97$, $\omega = .97$).

Violence towards the offspring was measured using the shortened version of the Parental Violence Scale (full scale first used in Mikolajczak et al., 2018; short-form subsequently used in Mikolajczak et al., 2019, 2020). The scale is a 3-item self-report questionnaire that measures verbal (e.g., "I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.)"), psychological (e.g., "I sometimes threaten to abandon my child if s/he is not good") and physical violence (e.g., "When I am angry, I sometimes throw things at my child"). Participants answer to each item on a 8-point frequency scale, ranging from "never" (0) to "several times a day" (7). The total score is calculated by averaging the answers to all the items. The final total score reflects the frequency of violent behaviors, such that a higher score reflects a higher frequency of violent behaviors (in the current sample, $\alpha = .75$, $\omega = .78$).

4.2.4 Statistical analyses

All analyses were carried out using SPSS (IBM, 2020). Assumptions were checked prior to statistical tests. If assumption checks revealed that (expectedly) variables deviated from normality, more robust methods were preferred: Spearman's ρ for correlations (Schober et al., 2018), and bootstrapping of 1000 samples for moderation analyses (Field, 2017). If the moderation turned out to be significant, simple slope's graph and statistics were computed. Variables were centered prior to moderation analyses.

4.3 Results

Preliminary analyses revealed that PB, violence and trait EI were, as expected, non-normally distributed. Spearman's ρ correlation analyses revealed that trait EI is negatively correlated with both PB and violence

towards the offspring, whereas PB was positively correlated with violence (see **Table 1**). Moderation analyses (with 1000 bootstraps) indicated that PB and trait EI significantly interact in predicting violence: the more trait EI increases, the weaker is the link between PB and violence (see **Table 2**). As shown in **Figure 1**, parents in burnout who have a high level of trait EI are significantly less violent towards their children than parents in burnout who have a low level of trait EI. Note that simple slope analyses reveal that simple slopes are significant at the three levels of trait EI: when EI is low (-1SD), average, and high (+1SD) (see **Table 3**). Thus, the effect of PB on violence decreases as trait EI increases (see the standardized estimates in **Table 3**), but persists (see p -values in **Table 3**).

Table 1
Spearman's Rho Correlations between Study Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Min - Max	1.	2.	3.
1. PB	506	36.76	31.27	0.00 - 137.00	-		
2. Violence	506	1.97	1.08	1.00 - 6.67	.47***	-	
3. Trait EI	506	4.79	0.88	2.00 - 6.63	-.53***	-.40***	-

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2
Multiple Regression Moderation Analyses

Effect	Standardized Estimates	<i>SE</i>	95% CI		<i>t</i>	<i>p</i>
			<i>LL</i>	<i>UL</i>		
PB	.32	.002	.01	.02	7.00	< .001***
Trait EI	-.25	.06	-.42	-.18	-5.59	< .001***
Interaction	-.15	.001	-.007	-.002	-3.61	< .001***

Note. The predictor is PB and the outcome variable is violence towards the offspring. The moderator is trait EI. The analyses have been performed with bootstrapping of 1000 samples. Interaction term is constituted by multiplying PB with the moderator (both previously centered).

* $p < .05$. ** $p < .01$. *** $p < .001$.

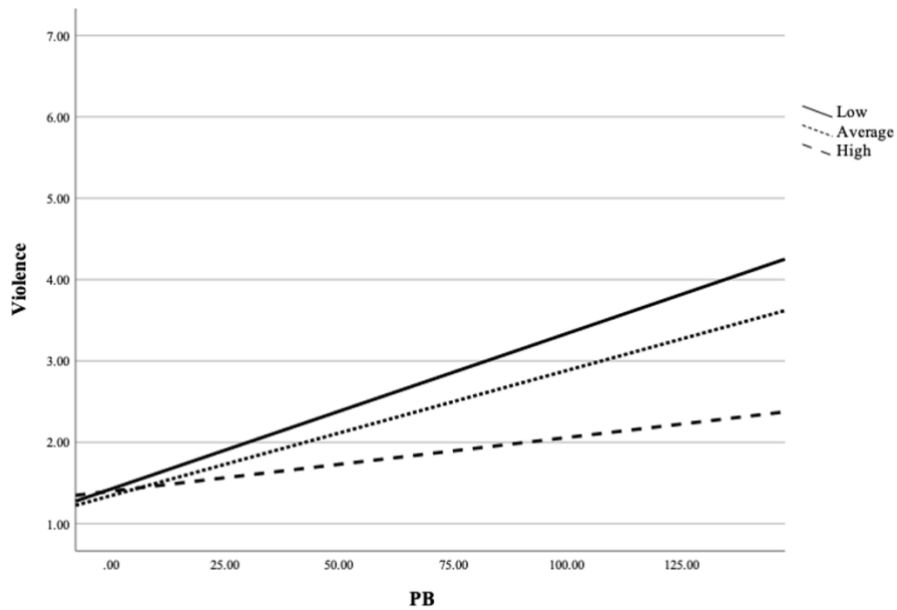
Table 3
Simple Slope Analyses for the Moderation

Level of the Moderator	<i>n</i>	Standardized Estimates	<i>SE</i>	<i>t</i>	<i>p</i>
Low ($\leq 1\ SD$)	168	.50	.003	7.53	< .001***
Average	170	.40	.003	5.65	< .001***
High ($\geq 1\ SD$)	168	.22	.002	2.95	.004**

Note. The table shows the effect of PB (predictor) on violence towards the offspring (outcome), at different levels (Low, Average, High) of trait EI (moderator).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 1
Graphic Representation of the Moderation



Note. Simple slope graphic representation of the moderating effect of EI at three levels (low, average, and high) in the link between PB and violence towards the offspring.

4.4 Discussion

The current paper sought to examine whether trait EI would attenuate, or even buffer, the link between PB and violence towards the offspring. In a nutshell, results show that while a high level of EI can significantly reduce the impact of PB on violence, it never completely eliminates it. The two parts of the previous sentence are of equal importance and we will discuss them sequentially. The first part dovetails and extends mounting empirical evidence showing that trait EI should seriously be considered and tackled when dealing with burned out parents, not just for the parents' sake, as past research showed (Lin, Szczygieł, et al., 2022; Lin & Szczygieł, 2022; Mikolajczak, Raes, et al., 2018; Szczygieł et al., 2020), but also for the children's sake in that it significantly reduces the risk of violence towards the offspring. It is interesting to note that the link between PB and violence proportionally decreases as EI levels increase, thus indicating that it is not only high EI that is interesting to achieve, but any increase in trait EI allows to reduce violence towards the offspring. In other words, it's not only when EI is high that the link between PB and violence is reduced, but already achieving an average level of trait EI significantly reduces the link between PB and violence.

The second part of our findings also deserves attention: although trait EI greatly reduces the link between PB and violence, it does not eliminate it entirely. Even in parents with high trait EI, the link between PB and violence is still significant, with a β of .22. This suggests two key implications. *First*, targeting trait EI alone cannot be the only treatment avenue to the problem of maltreatment in burned out parents, and perhaps other existing treatment options already have this canceling effect. Thus, treatments for PB that target a broader range of factors are essential (Bayot et al., 2024; Brianda, Roskam, Gross, et al., 2020). However, it is plausible that treatments that *both* target PB and moderators in the link between PB and violence, such as trait EI, are most effective in reducing violence towards the offspring. *Second*, the fact that trait EI does not completely cancel out the effect of PB on violence might also suggest that a very fundamental, rudimental, process is at play in the link between PB and violence: There might be a mediator between PB and violence that precludes trait EI to fully cancel the aforementioned link. Inhibition is a potential mediator that is related to both burnout and violence.

In the literature, inhibition has been identified as a core protective factor against violence (e.g., DeWall et al., 2011; Madole et al., 2020; Meijers et al., 2017; Philipp-Wiegmann et al., 2011; Pratt et al., 2014), but it has also been shown to decrease as burnout increases (for a systematic review, see Deligkaris et al., 2014). It is therefore possible that even parents with high trait EI lack the inhibition capacities to achieve their (normally) better self-control abilities, thus still resulting in violent outbursts.

The current results hold implications for both research and clinical practice. *For research*, the current study illustrates that some factors or contexts prevent EI from fully manifesting itself or from fully manifesting some of its dimensions. Burnout may clearly be such context, partly because of the decrease of inhibitory capacities but also via other mechanisms that should be unveiled. Other contexts or factors may act alike and future studies would benefit from uncovering them. *For clinical practice*, the current research adds to previous research in emphasizing the need to tackle EI in burned out parents. Related to the point mentioned just above, it also emphasizes the need to take into account in so doing the factors that may compromise or decrease the likelihood that EI can manifest itself. To take an example related to the topic of the current paper, it would mean that practitioners should take into account the decreased inhibition capacities of parents in burnout when working with them on emotion regulation: they should preferentially (or at least also) be taught strategies that can be mobilized even when inhibitory control is low.

Several limitations of the current study should be considered when interpreting and generalizing results. *First*, the cross-sectional nature of the study does not allow to say whether a manipulation of EI (e.g., through a treatment or a training) would result in a decrease in the link between PB and violence. However, a primary cross-sectional step typically serves as an essential precursor for the development of treatments that then allow for experimental manipulations testing the effect of a given variable on a given outcome. *Second*, the current sample is a community sample that, by definition, does not include many parents who are in severe burnout or severely violent; our findings may not be generalizable to these more extreme cases of PB and violence. It is probable that the same effects should be observed. However, considering that past research has shown that violent versus non-violent individuals fundamentally differ on certain personality

traits (Singh et al., 2022), and that these profiles may differ based on gender (Varley Thornton et al., 2010), more evidence is needed to ascertain that trait EI reduces the link between PB and violence, *in all cases*. *Third*, the sample consists of mostly middle-aged, well-educated mothers, which is a common limitation in parenting research altogether and limits generalization of the findings to other populations.

In summary, trait EI offers a promising avenue to support both parents and children facing PB. Trait EI plays a pivotal role in significantly decreasing the link between PB and violence towards offspring. Nonetheless, it is essential to acknowledge that trait EI alone does not serve as an absolute solution. Even among parents with high trait EI, a reduced but still significant link between PB and violence persists.

Chapter 5: Why does parental burnout lead to violence? Testing the mediating role of executive functions

Background: Parental burnout is a stress-related condition specific to the parental role, that has been shown to be a strong predictor of violence towards the offspring. However, it remains unknown *why* parental burnout leads to violence. **Objective:** This chapter aimed to understand whether executive functions, specifically inhibition, flexibility, and updating of working memory, mediate the link between parental burnout and violence. Previous research has independently shown that job burnout increases cognitive complaints, and that executive function problems are a precursor of violence. Based on these findings, we expected that an increase in parental burnout would lead to a decrease in executive functions, which in turn would lead to more violence towards the offspring. **Methods:** In Study 1, we tested the mediating hypothesis cross-sectionally, combining self-reported and objective assessments of executive functions. In Study 2, we assessed the direction of the links between variables through a three-wave longitudinal study using only self-reported measures. **Results:** Parental burnout was consistently associated with increased self-reported executive function problems across all domains, both cross-sectionally and longitudinally. However, difficulties in executive functioning did not reliably mediate the relationship between parental burnout and violence. While parental burnout was consistently associated with more self-reported executive function problems, these difficulties did not consistently predict increased violent behavior. Additionally, objectively measured executive functions were not significantly related to either parental burnout or violence. **Conclusion:** Parental burnout is consistently linked to poorer self-reported in executive functions, but the executive functions-violence pathways appear complex and potentially context-dependent. Findings emphasize the need for ecologically valid, context-sensitive executive function assessments and interventions tailored to cognitively strained parents.

Reference

Schitteck, A., Roskam, I. & Mikolajczak, M. (2025). Why does parental burnout lead to violence towards the offspring? Testing the mediating role of executive functions.

5.1 Introduction

Although parenthood is often described as one of life's most meaningful experiences, it also represents a profound and life-altering transition (Russell, 1974). While the experience is generally positive, becoming a parent is frequently perceived as a crisis (LeMasters, 1957), as it introduces a wide array of new and serious amount of stressors. As a result, parenthood can often feel overwhelmingly demanding. In some cases, the demands exceed the parent's available resources and coping strategies. When this imbalance between parenting demands and resources becomes chronic, it can give rise to parental burnout (Mikolajczak & Roskam, 2018).

Parental burnout is conceptualized as a response to enduring and overwhelming stress in the parental role (Mikolajczak et al., 2019; Mikolajczak, Raes, et al., 2018), resulting from a prolonged imbalance between parental demands and resources (Mikolajczak & Roskam, 2018). The condition is characterized by several core symptoms: profound exhaustion related to the parental role, a sense of emotional distancing from one's children, a feeling of contrast from the parent one used to be, and a sense of being fed up with the parental role (Roskam et al., 2018). Recent research suggests that parental burnout unfolds as a process rather than a sudden onset (Roskam & Mikolajczak, 2021). These dimensions dynamically influence one another, contributing to a reinforcing cycle of burnout (Blanchard, Hoebeke, et al., 2023; Roskam & Mikolajczak, 2021).

The relevance of parental burnout is underscored by two particularly compelling findings. First, parental burnout is quite prevalent. In Belgium, the context in which the present studies were conducted, the prevalence is estimated at approximately 8%, indicating that one in twelve parents experience significant symptoms of burnout (Roskam, Aguiar, et al., 2021). Second, parental burnout carries far-reaching consequences, not only for the individual experiencing it but also for their immediate environment. For the affected parent, burnout is associated with an increase in sleep disturbances, increased alcohol consumption, and somatic complaints (Mikolajczak et al., 2020). The repercussions extend into the family system, where burnout is linked to greater conflict with one's partner and, critically, to more frequent harmful or violent behaviors toward children (Mikolajczak et al., 2020). This last finding is of importance, as experimental and longitudinal studies have

consistently shown that it is parental burnout that leads to an increase in violence, and not the other way around (Brianda, Roskam, Gross, et al., 2020; Mikolajczak et al., 2019).

Violence is a form of child maltreatment that encompasses a range of maladaptive behaviors directed at individuals under the age of 18 (World Health Organization, 2022a). Violence can take many forms, including physical and emotional abuse, and it is typically perpetrated by parents or authority figures within the child's immediate environment (World Health Organization, 2022b). Numerous factors have been identified as predictors of violence against children, including socioeconomic, contextual, and individual variables (Stith et al., 2009). However, both in terms of frequency and effect size, parental characteristics appear to be among the most critical predictors (Stith et al., 2009). Of these, parental mental health conditions emerge as particularly influential (Stith et al., 2009).

Over the past decade, parental burnout has gained increasing recognition as a serious mental health condition that has detrimental consequences on children. Empirical research demonstrated that higher levels of parental burnout were associated with increased violent behavior towards one's children. This relationship has been documented across various research designs (e.g., for cross-sectional, see Mikolajczak et al., 2018; for longitudinal, see Mikolajczak et al., 2019; for causal, see Brianda et al., 2020). Moreover, despite the culturally variable definitions and expressions of child maltreatment, the association between parental burnout and violence towards children has demonstrated remarkable cross-cultural consistency. This link has been substantiated across diverse populations and countries (e.g., for English-speaking and Belgian samples, see Roskam & Mikolajczak, 2020; for Hispanic samples, see Manrique-Millones et al., 2022; for Finnish sample, see Aunola et al., 2021; for Polish sample, see Szczygieł et al., 2020).

However, while the relationship between burnout and violence has been clearly established, less is known about the mechanisms underlying this link. Specifically, it remains unclear *how* parental burnout translates into violent behaviors. The following section explores the role of executive functioning as a potential mediator between parental burnout and violence towards children.

5.1.1 Executive functions as the missing link between parental burnout and violence

Executive functions represent an umbrella term (Goldstein & Naglieri, 2014) that encompasses top-down cognitive processes enabling individuals to regulate behavior in pursuit of goal-directed outcomes (Diamond, 2013). They are referred to as “functions” because they manifest as observable behaviors resulting from internal cognitive operations (Burgess et al., 2006). Executive functions begin developing in childhood, mature substantially in young adulthood, and continue to evolve across the lifespan (McCloskey et al., 2008). While these functions are typically associated with activity in the frontal lobes (Brower & Price, 2001; Scott & Schoenberg, 2011), they emerge from the coordinated interaction of multiple brain regions, most notably the prefrontal cortex, cerebellum, and basal ganglia (Goldstein & Naglieri, 2014; Salthouse et al., 2003).

Defining executive functions, however, remains a complex task. Scholars note that current definitions are often underspecified and provisional (Baggetta & Alexander, 2016; Pennington & Ozonoff, 1996), and the field is characterized by a diversity of models (Goldstein & Naglieri, 2014). Some researchers argue that executive functions exceed the limits of existing theoretical frameworks due to their conceptual and functional complexity (Jurado & Rosselli, 2007). Despite these definitional challenges, most known and contemporary models converge on three core components: flexibility, inhibition, and updating of working memory (for original models, see Diamond, 2013; Miyake et al., 2000; Miyake & Friedman, 2012; for use of the original models in recent samples, see Brimmell et al., 2025; Karr et al., 2022). These components are distinct yet highly interrelated, such that impairment in one domain is likely associated with difficulties in others (Diamond, 2013; Miyake et al., 2000; Miyake & Friedman, 2012).

Flexibility refers to the capacity to shift cognitive or behavioral responses in accordance with situational demands, allowing individuals to adapt by disengaging from previously relevant responses (Loftis, 2016). *Inhibition* involves the suppression of prepotent or ongoing responses, and comprises two types: proactive inhibition, a top-down process led by the prefrontal cortex, and reactive inhibition, a bottom-up process where behavioral cues signal the need for inhibition to the prefrontal cortex

(Kenemans, 2015). Proactive inhibition typically occurs before the onset of a behavior, while reactive inhibition occurs in response to already-initiated behavior. The third core component, *updating of working memory*, involves the continuous monitoring, adding, and removing of information from working memory in real-time (Van Der Linden et al., 2014). Working memory itself is essential for a range of everyday tasks, such as reading, engaging in conversation, or following instructions, as it allows individuals to temporarily retain and manipulate information until a goal is achieved (Baer et al., 2016). If the information proves relevant beyond the immediate task, it may be encoded into long-term memory. In this way, working memory acts as a functional bridge between short-term experience and long-term consolidation (Pritchard & Alloway, 2002).

Overall, executive functions play a central role in navigating daily life. They are critical to academic achievement, occupational success, interpersonal functioning, and both physical and mental well-being (Snyder et al., 2015). As directive processes, executive functions initiate and coordinate a wide range of activities, including reasoning, emotional regulation, and behavior (McCloskey et al., 2008), making them foundational to adaptive functioning.

While executive functions are crucial for managing everyday tasks, they are notably susceptible to the effects of illness. Executive functions tend to decline in many forms of psychopathology (Romer & Pizzagalli, 2021; Snyder et al., 2015). Some scholars even propose that executive dysfunction serves as a transdiagnostic factor across various mental health conditions (for a meta-analysis, see Abramovitch et al., 2021). Specifically, burnout is associated with decreased executive functioning (for a meta-analysis, see Gavelin et al., 2022). That is because burnout can lead to prolonged increases in cortisol (Brianda, Roskam, & Mikolajczak, 2020), which in turn result in general impairments in executive functions (Deligkaris et al., 2014; Marin et al., 2011), specifically in flexibility (Beck et al., 2013), inhibition (Van Der Linden et al., 2005), and updating in working memory (Öhman et al., 2007; Oosterholt et al., 2012). It is worth noting that executive functions have also been conceptualized, albeit to a lesser extent, as transdiagnostic factors in psychopathology. The majority of this work has focused on children and adolescents (for a genetic analysis, see Freis et al., 2022; for meta-analyses on children and youth, see Mercier et al., 2018; Sadozai et al., 2024; Snyder

et al., 2019). However, in an eight-year longitudinal study on adolescents, it seems that the relationship between executive functions and psychopathology changes across ages (Freichel et al., 2025). In fact executive function deficits were found to predict subsequent psychopathology in early adolescence, whereas in later adolescence, executive functions appeared to function both as risk factors and as consequences of psychopathology (Freichel et al., 2025). Accordingly, while most research in adulthood conceptualizes executive function deficits primarily as consequences of mental illness, we remain alert to their potential role as transdiagnostic risk factors.

Executive functions also play a central role in parenting behaviors, such as those involving violence. Deficits in flexibility, inhibition, and working memory have been associated with increased violence (Azar et al., 2017; Crandall et al., 2015; Cruz et al., 2020; Humenik et al., 2020; Meijers et al., 2017), likely due to their foundational role in self-regulation (Hofmann et al., 2012). Thus, individuals with diminished executive function capacities often struggle to regulate their impulses and emotions, which may increase the likelihood of maltreating behaviors.

Specifically, impairments in *inhibition* can contribute to violence by limiting the ability to suppress impulsive or dominant responses. As such, violent individuals seem to exhibit lower inhibition (i.e., reduced neural activity for inhibition regions, Pawliczek et al., 2013), whereas strong inhibitory control has been shown to reduce both the likelihood and intensity of violent acts (Finkel & Hall, 2018). In terms of *flexibility*, a lack of adaptive shifting can lead to persistent maladaptive behaviors. Individuals who cannot switch from ineffective responses to more constructive ones may be more prone to aggressive actions. For example, in justice-involved populations, lower flexibility is linked to more coercive parent–child interactions (Zarling et al., 2023). Regarding *updating in working memory*, three major explanations have been proposed as to why it might be linked to violence. First, working memory shares neural circuitry with emotion regulation systems, allowing for more controlled (Haakon & Kanske, 2013) and less reactive behavior (Deater-Deckard et al., 2010). Second, better working memory is also associated with better decision-making and reduced violent tendencies, as individuals are more able to rely on past experiences and contextual information for carrying on present behavior (Afonso et al., 2012; Romero-Martínez et al., 2021). Third, from an information-processing

standpoint (Crick & Dodge, 1996), impaired working memory reduces an individual's capacity to retain and evaluate situational cues while selecting appropriate responses (McQuade et al., 2013). With limited updating of working memory, individuals may misinterpret social signals and resort to maladaptive behaviors (Granvald & Marciszko, 2016). Thus, working memory issues could hinder one's ability to process and integrate relational information, which could result in increased aggression.

In sum, research shows that executive functions play a pivotal role in navigating everyday life, but they also seem to particularly decline in the context of psychopathology, specifically burnout. This decline in executive functions is associated with an increased risk of violence.

5.1.2 Aims and hypotheses

Based on previous literature, this chapter proposes that executive functions may serve as the underlying mechanism linking parental burnout to violence towards children. We expect that executive functions may play a mediating role. Specifically, it is expected that higher levels of parental burnout are associated with greater difficulties in flexibility, inhibition, and updating of working memory, which in turn increase the risk of violent behaviors toward children. Given that executive functions can be assessed through both objective tasks and self-report measures, this chapter employs both approaches to provide a more comprehensive understanding. The mediating hypothesis will initially be examined cross-sectionally and subsequently using a longitudinal design, which enables the assessment of directionality, an important element in mediation analyses.

5.2 Methods

5.2.1 Study 1

Participants

The initial sample was comprised of 145 parents. After removal of multivariate outliers (superior to 3 standard deviations), the final sample consisted of 134 parents. They were mostly women (85%), who on average were 44 years of age ($SD = 8.94$), with 2 children in total ($M = 2.10$; $SD = .90$), on average 2 living at home ($M = 1.95$; $SD = .85$), and spent on average 90% of the time with their child ($M = 89.97$; $SD = 23.44$). The vast majority

had either a bachelor's (42.4%) or a master's degree (31.7%), worked full time (65.5%), and earned around 1001-2500 Euros (51.1%). Most parents reported being in a biparental family structure (59.7%).

Procedure

Participants, recruited on social media, reported to the UCLouvain laboratory on the day and at the time agreed upon with the investigator. After signing the informed consent form, participants were then seated in front of a computer to complete the first measurements (i.e., self-report measures and Go/No-Go task). Then, other neuropsychological testing was performed with the investigator. To be able to assign these different measurements to the same participant, a code was created that would be used and requested in all the tasks. This code was created as follows: first two letters of their mother's first name, first two letters of their father's, and last two digits of the participant's year of birth. For example, if a participant's mother is Mary, their father Charles, and they were born in 1996, their code would be MACH96.

Measures

Participants first provided *descriptive data*, such as age, gender, number of children they live with, number of children they have in total, percentage of time (in the week) spent with the children, level of education, working regimen, type of family, net monthly income.

Parental burnout was measured using the Parental Burnout Assessment (PBA; Roskam et al., 2018), a 23-item questionnaire to which participants responded by selecting an answer on a 7-point frequency scale ranging from "Never" (0) to "Every day" (6) (e.g., "I'm so tired out by my role as a parent that sleeping doesn't seem like enough"). Higher scores reflect higher levels of parental burnout ($\alpha = .97$).

Violence toward the offspring was assessed using the Parental Violence Scale (Mikolajczak et al., 2018), a 15-item questionnaire. Participants rated each item on an 8-point frequency scale ranging from "Never" (1) to "Several times a day" (8) (e.g., "When I am angry, I sometimes throw things at my child"). Higher scores reflect more frequent violent behaviors ($\alpha = .61$).

Executive functions, namely inhibition, flexibility, and updating of working memory, were measured using both (i) self-reported questionnaires

and (ii) neuropsychological tasks. For the self-reported assessment of executive functions, we used selected items from the BRIEF-A questionnaire (Roth, 2005). We selected 22 items that assessed inhibition (e.g., “I find it hard to wait for my turn”; $\alpha = .69$), flexibility (e.g., “I have difficulty moving from one activity or task to another”; $\alpha = .74$), and updating of working memory (e.g., “I have difficulty doing work or activities that require more than one step”; $\alpha = .83$). Participants indicated whether each behavior had “never been a problem” (1), “sometimes been a problem” (2), or “often been a problem” (3) over the past month. Higher scores on each subscale reflect greater reported difficulties in inhibition, flexibility, or updating.

Regarding the neuropsychological tasks, inhibition was measured using a computerized Go/No-Go task (Wright et al., 2014), which was presented via the Testable.org platform. The task was presented to participants as a sequence of rapidly changing screens. It consisted of 60 randomized trials, of which 48 were Go trials and 12 were No-Go trials. In the Go trials, participants were instructed to press the letter “P” on the keyboard when a yellow square appeared (“When you see the yellow square, press the letter ‘P’ on the keyboard”). In the No-Go trials, participants were instructed *not* to press any button when a blue square appeared on the screen (“When you see the blue square, don’t press any button”). The order of trials was randomized for each participant. Each trial was preceded by a fixation cross displayed for 500 milliseconds (ms), followed by the stimulus (yellow or blue square), which remained on the screen for 1000ms. The task was designed to create a prepotent tendency to respond by including a higher number of Go trials, thus encouraging participants to respond quickly and automatically. Consequently, when a No-Go trial appeared, participants had to suppress this automatic response. Our primary interest was in participants’ responses to the No-Go trials, as these required active inhibition. Inhibition was assessed in two ways, mainly by (i) measuring the number of errors on No-Go trials (fewer errors indicate better inhibitory control), and (ii) measuring the reaction times during No-Go trials (longer reaction times suggest that participants effectively withheld a response, also indicating better inhibition).

Flexibility was assessed using the paper-pencil Trail Making Test (TMT; Arbuthnott & Frank, 2000), which includes two sequential parts. In Part A, participants were instructed to connect a series of numbered circles

(e.g., 1–2–3–4–5, etc.) in ascending numerical order as quickly and accurately as possible. This section primarily assessed the participant's comprehension of the task instructions and attention ability. Part B, which evaluates flexibility, required participants to alternate between numbers and letters in ascending and alphabetical order (e.g., 1–A–2–B–3–C, etc.). This switching task challenges the participant's ability to shift attention between two cognitive sets. Faster completion time and a lower number of errors in Part B were interpreted as indicators of better flexibility.

Updating of Working Memory was measured using the Paced Auditory Serial Addition Test (PASAT; ; Gronwall, 1977). In this task, participants listened to a prerecorded sequence of single-digit numbers and were instructed to continuously add each new number to the one that immediately preceded it, reporting the result aloud (e.g., if the sequence was 3–5–2, participants would respond 8 ($3+5$), then 7 ($5+2$), and so on). The task required participants to inhibit prior calculations, update the current number in working memory, and perform the mental addition in real time. Before beginning the main task, participants listened to a short 34-second practice version, during which they could ask questions. After having made sure that the participants understood the task through the practice recording, the main task began, lasting approximately 4 minutes and 18 seconds. The researcher recorded all verbal responses on a standardized answer sheet, noting both correct answers and errors. Only the number of errors was used for analysis, with a higher error count reflecting a lower capacity for updating working memory.

Exclusion criteria

Participants who were under 18 years of age, were not parents, were not currently living with at least one child and for at least 50% of the time, or who constituted outliers, were excluded from analyses.

Statistical analyses

Participants were excluded based on prior mentioned criteria, before performing any data processing or analysis. Scores were centered before performing the analyses. Descriptive statistics and correlations analyses were performed using jamovi (The jamovi project, 2021). For the mediation models, we first computed a model in which parental burnout was the

predictor, violence towards the offspring the outcome, and every executive function variable was introduced as a mediator at the same time. This allowed to control for shared variance between executive function measures, thus allowing to only observe specific (and non-shared) effects of each mediator. The mediation model was estimated using the open software R (RStudio Team, 2020), using the “lavaan” package (Rosseel, 2012).

5.2.2 Study 2

Participants

In total, 559 parents participated, but 14 participants were excluded for being multivariate outliers. For the final sample at time 1 a total of 545 participants answered, at time 2 348, and at time 3 297. Between, time 1 and time 2, participants did not significantly differ for gender ($\chi^2 = 4.09, p = .25$), work regimen ($\chi^2 = 5.49, p = .48$), nor income ($\chi^2 = 9.25, p = .10$). Participants also did not differ for age ($t = -0.73, p = .46$) and number of children ($t = 1.07, p = .27$). However, time 2 participants had more master's degrees ($\chi^2 = 12.88, p = .01$), and spent more time with their children ($t = -2.09, p = .04$), than participants at time 1. Participants who answered time 3 did not differ with the rest of the sample for gender ($\chi^2 = 2.42, p = .49$), working regimen ($\chi^2 = 5.56, p = .47$), income ($\chi^2 = 6.16, p = .29$), age ($t = -1.03, p = .30$), number of children ($t = 1.04, p = .30$), nor time spent with their children ($t = -1.42, p = .16$). However, participants at time 3 had more master's degrees than other times ($\chi^2 = 13.66, p = .01$).

Thus, at time 1, participants were on average 38.13 years old ($SD = 6.19$), mostly women (86%), with 2 children ($SD = 1.30$), and spent most of the time with their children ($M = 97.83, SD = 10.27$). Majority had a master's degree (52%), worked full-time (71%), and earned between 2501-4000 Euros (28%), and 4001-5500 Euros (36%).

Procedure

Parents were recruited on social media. After giving their informed consent, parents were asked to answer questionnaires across three time points (separated by 6 months, between March 2023 and March 2024). Parents, at the end of the first and second wave, gave an email address by which they could be contacted to participate to following measurement occasions. Their contact information was separated from the variables measured in the study.

Measures

Parental burnout, violence and self-report inhibition, flexibility, and updating of working memory, were all measured as in study 1.

Exclusion criteria

Parents were excluded for the same reasons as in study 1.

Statistical analyses

Variables were centered to reduce potential multi-collinearity. Statistical tests' assumptions were checked prior to carrying on with the analyses. Correlations were performed using Jamovi's "Regression" package (The jamovi project, 2021), and longitudinal cross-lagged panel models were estimated using the open software R (RStudio Team, 2020), using the "lavaan" package (Rosseel, 2012). Cross-lagged models were estimated to allow to test prospective mediation effects of problems in inhibition, flexibility, and updating, between parental burnout and violence towards the offspring. Only one model with all executive functions was run in order to account for shared variance between the executive functions (as in study 1). The model was estimated using FIML estimation method, which allows a smaller loss of data, thus allowing to maintain more power. Fit indices of each model were reviewed prior to interpreting paths. Considering that the χ^2 and the Root Mean Square Error of Approximation (RMSEA) are particularly sensitive to sample size (Kenny et al., 2015; Kline, 2016), we also decided to review less sensitive fit estimates. Thus, we considered adequate fit when at least two of the less sensitive indices (i.e., Comparative Fit Index - CFI, Standardized Root Mean Square Residual - SRMR, Tucker Lewis Index - TLI) met the following criteria : the CFI above .90, the SRMR below .08 (Kline, 2016), and the TLI above .90 (Tucker & Lewis, 1973). χ^2 and RMSEA were also reported as they are still one of the most reported indices in path analysis (where χ^2 should ideally be non-significant and RMSEA should be below .08).

5.3 Results

5.3.1 Study 1

Correlations

Pearson's correlations were estimated between parental burnout, violence, and executive function measures. Results can be viewed in **Table 1**. Correlations show that parental burnout is positively correlated with violence, an increase in errors for the TMT task, and self-reported issues in flexibility, inhibition, and updating of working memory. No correlations were detected with the other objective measures of executive functions. Violence was positively correlated with an increase in issues of self-report flexibility and self-report inhibition.

Table 1
Pearson's Correlations between Study Variables

Variable name	<i>n</i>	<i>M</i>	<i>SD</i>	1	2
1. Parental Burnout	134	26.96	25.70	—	
2. Violence	134	21.61	4.87	.28**	—
3. Error TMT-B	134	0.21	0.51	.17*	.07
4. RT TMT-B	134	2.23	0.58	.02	.03
5. Error No/Go	134	0.39	0.65	-.05	.14
6. RT No/Go	134	978.01	37.52	.05	-.15
7. Error PASAT	134	4.56	4.56	.16	.03
8. Self-report Flexibility Problems	134	9.81	2.60	.25**	.20*
9. Self-report Inhibition Problems	134	12.59	2.97	.35***	.30***
10. Self-report Updating Problems	134	13.78	3.72	.33***	.12

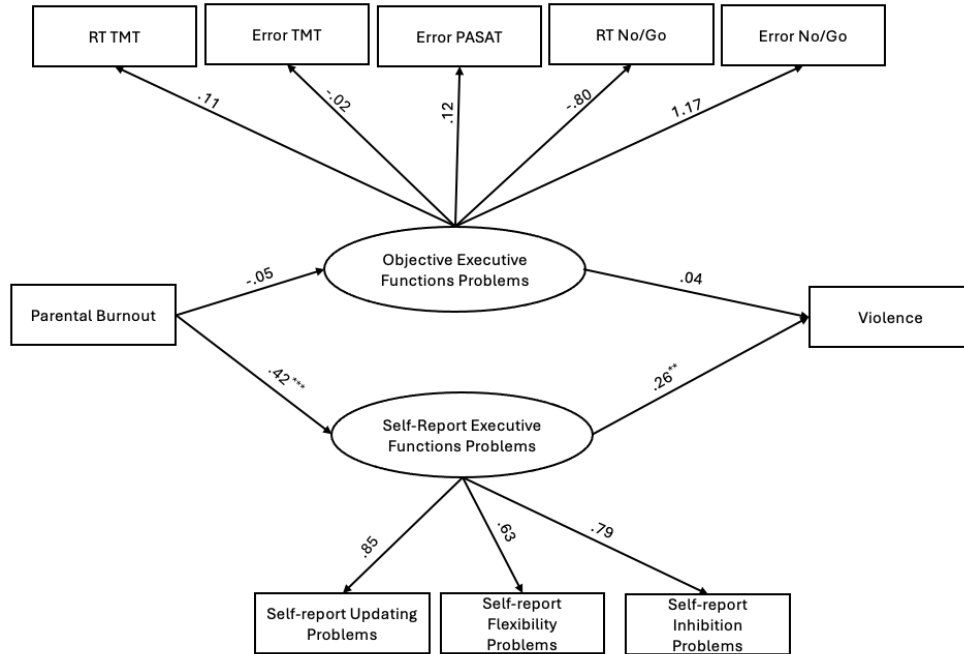
Note. * $p < .05$. ** $p < .01$. *** $p < .001$. RT = Reaction time.

Mediation

An initial model was estimated creating latent variables for objective and self-report measures of executive functions, estimating whether objective or self-report executive functions would mediate the link between parental burnout and violence. The first model estimated showed adequate fit ($\chi^2 = 72.19$, $p < .001$; CFI = .92; TLI = .89; RMSEA = .09; SRMR = .09). Results of the first model (as shown in **Figure 1**) indicated that the link between parental burnout and violence seems to be mediated by an increase in self-reported issues in executive functions. The mediating path of objective executive functions was not significant. However, when looking at the loadings of the components of objective executive functions, they indicated that objective executive functions' components did not create a single latent construct (i.e., objective executive functions). Thus, a second model was estimated, where executive functions (objective and subjective) were not estimated as latent constructs.

Figure 1

Latent Model Estimating the Mediating Role of Objective and Subjective Executive Functions Between Parental Burnout and Violence

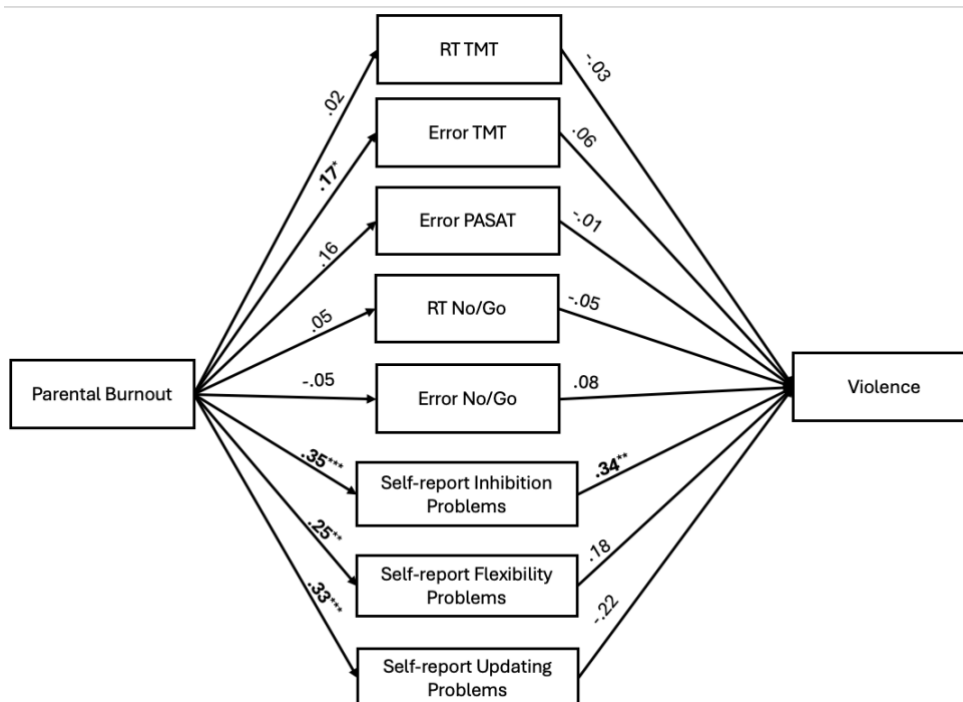


Note. * $p < .05$. ** $p < .01$. *** $p < .001$. RT = Reaction time.

We estimated a second model (see **Figure 2**), trying to account for the latent factor issues encountered for objective executive functions. Thus, we estimated a model with only observed variables. The model showed a better fit than the previous one: $\chi^2 = 40.28$, $p = .02$; CFI = .97; TLI = .93; RMSEA = .07; SRMR = .07. The results show that parental burnout is associated with an increase in errors in the TMT task, as well as more self-report issues in inhibition, flexibility and updating of working memory. However, only self-reported issues in inhibition are associated with violence towards the offspring. Thus, the current results suggest that parental burnout increases violence towards children, mainly through an increase in self-reported issues with inhibition.

Figure 2

Model Estimating the Mediating Role of Objective and Subjective Executive Functions Between Parental Burnout and Violence Using Observed Variables



Note. * $p < .05$. ** $p < .01$. *** $p < .001$. RT = Reaction time.

5.3.2 Study 2

Correlations

Correlations can be viewed in **Table 2**. Across all time points, parental burnout is positively correlated with more problems in inhibition, flexibility, and updating in working memory. Similarly, self-reported problems in inhibition, flexibility and updating in working memory are positively correlated with violence towards children across all three measurement occasions.

Table 2
Pearson's Correlations between Study Variables

Variable name	<i>n</i>	<i>r</i>
Parental Burnout Time 1 and Violence Time 1	545	.40***
Parental Burnout Time 1 and Inhibition Problems Time 1	545	.36***
Parental Burnout Time 1 and Flexibility Problems Time 1	545	.45***
Parental Burnout Time 1 and Updating Problems Time 1	545	.44***
Violence Time 1 and Inhibition Problems Time 1	545	.22***
Violence Time 1 and Flexibility Problems Time 1	545	.20***
Violence Time 1 and Updating Problems Time 1	545	.13***
Parental Burnout Time 2 and Violence Time 2	348	.44***
Parental Burnout Time 2 and Inhibition Problems Time 2	348	.38***
Parental Burnout Time 2 and Flexibility Problems Time 2	348	.48***
Parental Burnout Time 2 and Updating Problems Time 2	348	.45***
Violence Time 2 and Inhibition Problems Time 2	348	.27***
Violence Time 2 and Flexibility Problems Time 2	348	.22***
Violence Time 2 and Updating Problems Time 2	348	.17**
Parental Burnout Time 3 and Violence Time 3	297	.51***
Parental Burnout Time 3 and Inhibition Problems Time 3	297	.40**
Parental Burnout Time 3 and Flexibility Problems Time 3	297	.45***
Parental Burnout Time 3 and Updating Problems Time 3	297	.45***
Violence Time 3 and Inhibition Problems Time 3	297	.28***
Violence Time 3 and Flexibility Problems Time 3	297	.32***
Violence Time 3 and Updating Problems Time 3	297	.25***

Note. Parental burnout time 1 ($M = 34.59$, $SD = 28.00$), time 2 ($M = 31.73$, $SD = 26.40$), time 3 ($M = 33.59$, $SD = 28.86$). Violence time 1 ($M = 22.15$, $SD = 6.34$), time 2 ($M = 21.23$, $SD = 5.11$), time 3 ($M = 21.14$, $SD = 4.82$). Inhibition problems time 1 ($M = 11.69$, $SD = 2.77$), time 2 ($M = 11.57$, $SD = 2.81$), time 3 ($M = 11.62$, $SD = 2.91$). Flexibility problems time 1 ($M = 9.24$, $SD = 2.56$), time 2 ($M = 9.42$, $SD = 2.50$), time 3 ($M = 9.43$, $SD = 2.62$). Updating of working memory problems time 1 ($M = 13.24$, $SD = 3.81$), time 2 ($M = 13.15$, $SD = 3.72$), time 3 ($M = 13.20$, $SD = 4.07$). * $p < .05$. ** $p < .01$. *** $p < .001$.

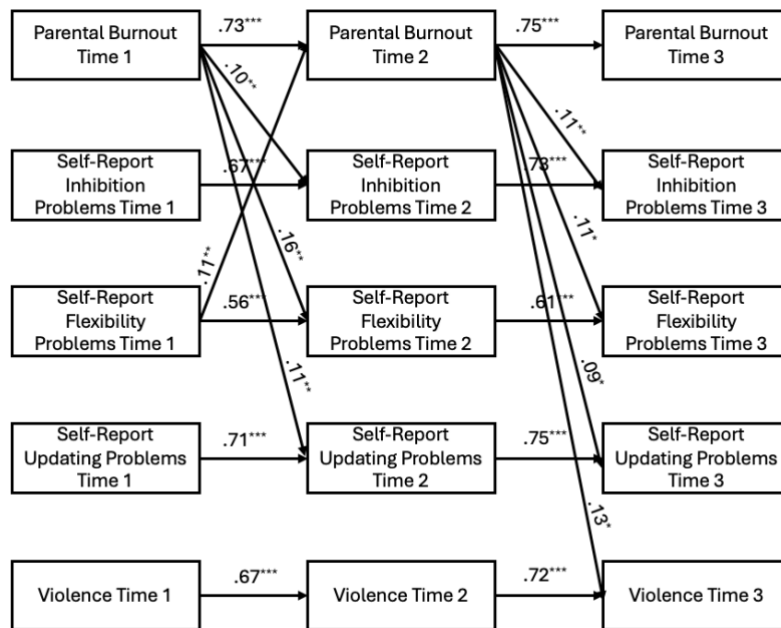
Mediation

In the initial estimated model with centered predictors, we observed unexpected negative betas between updating of working memory issues and violence, suggesting that more problems in updating would result in less violence. Considering that these results are not consistent with literature, nor clinically, this could suggest that there is a problem in the data. Reversed betas can be due to (more commonly) two reasons: common method bias or multicollinearity. Common method bias is particularly present in studies that use the same method of collection in several variables (in this case, the use of self-report measures). We assessed common method bias using Herman's Single-Factor Test. This method tests whether there is a common latent factor for all variables, namely the common method bias, that explains more than 50% of shared variance of variables. Thus, we conducted an EFA with all variables, and results did not meet the threshold indicating common method bias. In fact, in this sample we observed 46% of shared variance between variables. Thus, perhaps multicollinearity is more the issue. We decided to re-compute analyses using factorial scores (instead of centered scores), as they allow to reduce multicollinearity issues even more. Factorial scores are calculated by weighting variables based on their factor loadings.

Thus, we estimated a second model with factorial scores for each variable, and the model showed adequate fit ($\chi^2 = 206.82$, $p < .001$; CFI = .95; TLI = .89; RMSEA = .07; SRMR = .09). Results can be viewed in **Figure 3**. The results suggest that between time 1 and time 2, parental burnout is prospectively associated with an increase in self-reported issues in inhibition, flexibility and updating of working memory. Moreover, more issues in flexibility are also associated with a prospective increase in parental burnout. Between time 2 and 3, parental burnout is prospectively associated with an increase in self-reported issues in inhibition, flexibility, and updating of working memory, and violence towards the offspring. Self-reported issues in inhibition, flexibility, or updating are not prospectively associated with violence. Thus, in this model, issues in inhibition, flexibility and updating do not mediate the link between parental burnout and violence.

Figure 3

Cross-Lagged Model Estimating the Mediating Role of Subjective Executive Functions Between Parental Burnout and Violence



Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

However, these longitudinal results should be interpreted with caution. Even though we used factorial scores to reduce multicollinearity between variables, there remains still substantial shared variance between executive function variables (see **Table 3**). This high degree of shared variance likely attenuated the ability to detect distinct mediational pathways, as the model struggled to isolate the unique contributions of individual executive functions due to their conceptual and statistical overlap.

Table 3
Pearson's Correlations between Self-Report Executive Functions

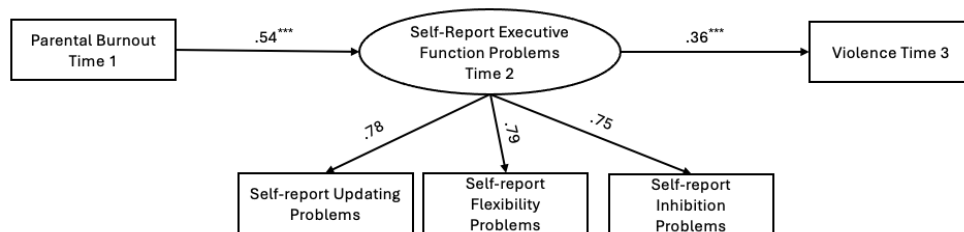
Variable name	<i>r</i>
Problems Updating Time 1 and Problems Inhibition Time 1	.58***
Problems Updating Time 1 and Problems Flexibility Time 1	.63***
Problems Inhibition Time 1 and Problems Flexibility Time 1	.55***
Problems Updating Time 2 and Problems Inhibition Time 2	.59***
Problems Updating Time 2 and Problems Flexibility Time 2	.61***
Problems Inhibition Time 2 and Problems Flexibility Time 2	.59***
Problems Updating Time 3 and Problems Inhibition Time 3	.66***
Problems Updating Time 3 and Problems Flexibility Time 3	.62***
Problems Inhibition Time 3 and Problems Flexibility Time 3	.63***

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

To address this, we estimated a model that would explicitly account for the shared variance between the executive functions by creating a latent executive function construct. In this model, parental burnout at Time 1 predicted the latent problems in executive function at Time 2, which then predicted violence at Time 3. This approach reduces model complexity and increases statistical power and interpretability by avoiding the estimation of multiple overlapping pathways. Moreover, it aligns with contemporary theoretical perspectives on executive functioning, which posit that diverse executive function tasks reflect a common underlying cognitive capacity. Consequently, this model enables a more theoretically and statistically valid assessment of whether general executive functioning mediates the link between early parental burnout and later violent outcomes. The model fit was acceptable ($\chi^2 = 49.11$, $p < .001$; CFI = .91; TLI = .89; RMSEA = .10; SRMR = .08), and results indicated that higher parental burnout at Time 1 predicted more problems in executive functioning at Time 2, which in turn were associated with higher levels of violent behavior at Time 3. Results can be viewed in **Figure 4**.

Figure 4

Longitudinal Model Estimating the Mediating Role of Latent Subjective Executive Functions Between Parental Burnout and Violence

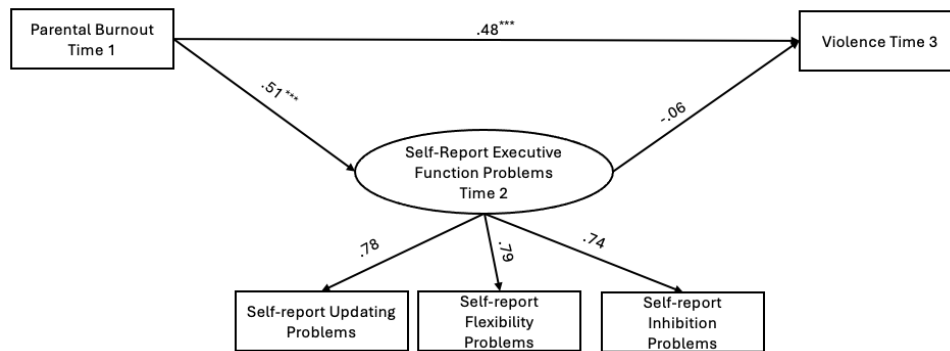


Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

However, this model did not clarify whether the association between parental burnout and violence was mediated by increased problems in executive functioning, over and above any direct effect of parental burnout. To address this, we re-estimated the model by including a direct path from parental burnout at Time 1 to violence at Time 3. The addition of this direct path substantially improved the model fit ($\chi^2 = 6.48$, $p = .17$; CFI = .99; TLI = .98; RMSEA = .03; SRMR = .02), and the mediating role of executive functioning was no longer supported. As shown in **Figure 5**, the direct association between parental burnout and subsequent violence emerged as significantly stronger, effectively diminishing the indirect pathway through executive functioning. These findings suggest that parental burnout has a more immediate and robust effect on later violent behavior, than when including the indirect path through problems in executive functioning.

Figure 5

Longitudinal Model Estimating the Full Mediating Role of Latent Subjective Executive Functions Between Parental Burnout and Violence



Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Exploratory analyses

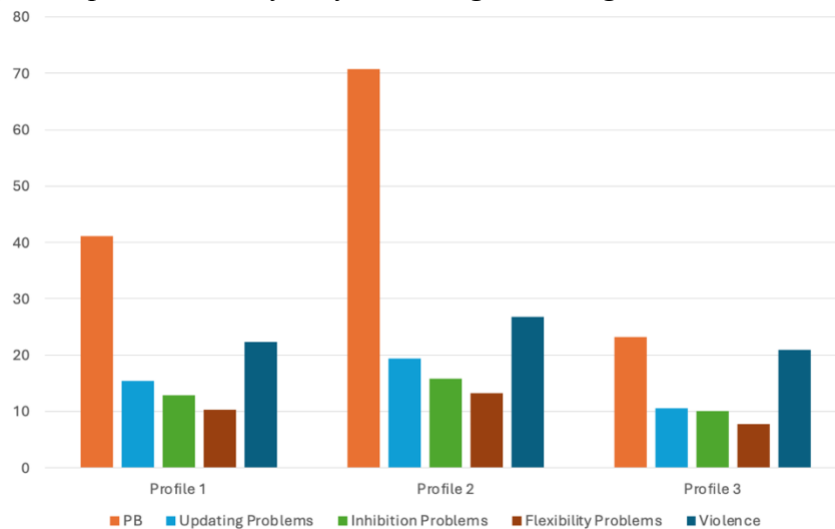
We decided to run exploratory analyses that would allow to unravel *how* the variables are related to one another. Mediation models assume that relationships between variables apply mostly uniformly across all participants. However, some different profiles of parents might exist that could explain why mediation models did not fully work.

Therefore, we conducted a **Latent Profile Analysis (LPA)** to explore whether distinct profiles characterized by varying levels of parental burnout, executive dysfunction, and violence would emerge. The aim was to determine whether certain subgroups, such as parents exhibiting high burnout and high violence but low executive function problems, might account for the limited support observed in the mediation models. The presence of such a profile would suggest that some parents can exhibit violent behaviors in the context of burnout without executive impairments, thus challenging the mediation pathway. Conversely, if the profiles identified align with the expected pattern (i.e., increased parental burnout accompanied by heightened violence and greater executive difficulties), alternative explanations must be considered for the lack of mediation effects. For this analysis, we used data from Time 1 of Study 2, our largest sample, as larger samples are required for robust LPA results.

We conducted LPA where we introduced parental burnout, problems in inhibition, flexibility, and updating, and violence towards the offspring. Results revealed that the solution with three different profiles showed the best fit (i.e., entropy = .80, AIC = 16078.90, BIC = 16173.40; a graphic representation can be viewed in **Figure 6**). Profile 1 was named *medium parental burnout, medium executive dysfunctions and medium violence* ($M_{\text{Parental Burnout}} = 41.06$, $M_{\text{Updating Problems}} = 15.41$, $M_{\text{Inhibition Problems}} = 12.87$, $M_{\text{Flexibility Problems}} = 10.31$, $M_{\text{Violence}} = 22.38$), profile 2 was named *high parental burnout, high executive dysfunctions and high violence* ($M_{\text{Parental Burnout}} = 70.75$, $M_{\text{Updating Problems}} = 19.43$, $M_{\text{Inhibition Problems}} = 15.86$, $M_{\text{Flexibility Problems}} = 13.32$, $M_{\text{Violence}} = 26.83$), and profile 3 was named *low parental burnout, low executive dysfunctions and low violence* ($M_{\text{Parental Burnout}} = 23.29$, $M_{\text{Updating Problems}} = 10.57$, $M_{\text{Inhibition Problems}} = 10.10$, $M_{\text{Flexibility Problems}} = 7.74$, $M_{\text{Violence}} = 20.87$). Thus, results suggest that systematically, burnout is mostly present when there are more executive dysfunctions and more violence. However, it should be mentioned that the three profiles seem to mostly be distinguished based on parental burnout (as it varies more), compared to violence or executive function issues.

Figure 6

Graphic Representation of Profiles Emerged Through LPA



Thus, the LPA allows us to rule out that the absence of mediation effects was due to parental profiles that were incompatible with the proposed mediation model. In fact, the identified parent profiles are consistent with the mediation hypotheses. Therefore, the following discussion will explore alternative explanations for why the expected mediation effects were not observed.

5.4 Discussion

Previous research has predominantly examined the associations between either burnout and executive functions (for a meta-analysis, see Gavelin et al., 2022), or between executive functions and violent behavior (Azar et al., 2017; Crandall et al., 2015; Cruz et al., 2020; Humenik et al., 2020; Meijers et al., 2017). To the best of our knowledge, the present study is the first to simultaneously investigate the interrelations among parental burnout, executive functioning, and violence within a single framework, by testing whether parental burnout would lead to a decrease in flexibility, inhibition, and updating in working memory, which in turn would lead to more violence. Results of both studies were inconsistent across study designs and measurements of executive functions (self-report or objective). Thus, the results open to numerous questions and implications that will be discussed in the following paragraphs. We begin by discussing the results regarding subjective executive functions before moving to the results regarding objective executive functions, and finally discuss both together.

Parental burnout leads to more self-reported (subjective) problems in inhibition, flexibility and updating in working memory, both cross-sectionally and longitudinally. This finding aligns with prior research in occupational settings, which has documented similar associations between professional burnout and impairments in executive functioning (for a meta-analysis, see Gavelin et al., 2022). Our results contribute to the growing body of literature by extending these findings to the parental domain, suggesting that burnout in caregiving contexts may similarly impair core cognitive processes. One plausible explanation for this association is rooted in the physiological impact of chronic stress. Burnout has been linked to dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis (for a systematic review see, Chow et al., 2018), particularly through elevated

cortisol levels (Marin et al., 2011; Shansky & Lipps, 2013). In the context of parental burnout, elevated cortisol has also been documented (Brianda, Roskam, & Mikolajczak, 2020). Chronic cortisol elevation disrupts the functioning of the prefrontal cortex (Blix et al., 2013), which plays a central role in executive functioning (Marin et al., 2011; Shansky & Lipps, 2013), thereby offering a neurobiological pathway through which burnout may lead to cognitive difficulties. While most literature conceptualizes executive dysfunction as a consequence of burnout, recent theoretical developments in occupational burnout propose that cognitive complaints may be a symptom of burnout itself (Schaufeli et al., 2020), rather than a consequence. To investigate whether cognitive difficulties observed in our study reflect a distinct consequence of parental burnout or rather constitute part of the same overarching construct, we conducted an exploratory factor analysis (EFA). Results from this analysis (see **Table S1**) indicated that parental burnout and executive function difficulties loaded on separate factors, supporting the interpretation that these are conceptually distinct constructs. This suggests that executive dysfunction can be considered as a separate construct to burnout, and that it is more likely a consequence of parental burnout (as observed in the longitudinal results), rather than a developmental component embedded within the burnout construct.

Issues in self-report inhibition, flexibility and updating in working memory do not robustly mediate the link between parental burnout and violence. Cross-sectionally, self-report executive issues, specifically inhibition, seem to mediate the link between parental burnout and violence. However, longitudinally, we do not robustly observe this effect. These results are not consistent with prior research, where executive dysfunction has been linked to violence and aggression. There are five possible explanations as to why we did not observe these links.

First, self-reported and objectively measured executive functions have been associated with aggression and violence, but predominantly in confirmed perpetrators (Azar et al., 2017; Cruz et al., 2020; Humenik et al., 2020; Meijers et al., 2017). In contrast, our sample did not include parents with a history of frequent violence, nor did it consist of a fully clinical population experiencing burnout or formally diagnosed with executive dysfunction. The use of simple random sampling in this context may have compromised the representativeness of our sample, resulting in a discrepancy

between the clinical populations examined in previous studies and our actual participant group. This mismatch could explain the unexpected findings, as our sample did not fully align with those used in previous literature.

Second, it is possible that we don't have enough variability in our variables, that has led to potential relationships to disappear in more complex models (but appear in simple correlations). For instance, both the violence measure and the executive function measure (i.e., both for the self-report measures having only a 3-level Likert answer option for parents who do not formally have executive dysfunctions, and for the objective measures suffering from floor effects) show low variability. Thus, having lower variability in both violence and executive functions could have led to a masking of effects between the two when introducing them in mediation models.

Third, it is possible that the self-report measure of executive dysfunction is too decontextualized. In literature, it has been observed that executive function performance is context-specific (Miller et al., 2023; Wilkey, 2023), and some contexts, such as stressful (Shields et al., 2016), unpredictable contexts that require constant adaptation (Mittal et al., 2015), such as a household with children, are more taxing on executive functions. When answering the executive dysfunction measure, parents are asked whether certain behaviors constitute problems “never”, “sometimes” or “often” in life, thus they will likely answer averaging all their behaviors in their parenthood, relational, friendship, work domains. Thus, it is possible that parents may exhibit executive function issues in the household (perhaps being more taxing) and not in other contexts. The measure of executive dysfunction that we used does not capture context-specific effects, as it measures general cognitive difficulties and does not reflect specific high-stress parenting context executive functions. Thus, we should consider whether measuring executive dysfunction in the specific context of parenthood could change results.

Fourth, considering that the correlations between executive function variables and violence are smaller than between parental burnout and executive functions, it is possible that we do not have enough power to detect the unexpected smaller relations between executive dysfunctions and violence. In fact, based on prior research (e.g., Azar et al., 2017; Crandall et al., 2015; Cruz et al., 2020; Humenik et al., 2020; Meijers et al., 2017), we

expected greater relations between executive function issues and violence (i.e., around .30, but we almost always observed smaller correlations, which on *average* were around .22). Thus, hypotheses should be re-tested in bigger samples that would perhaps have more adequate power.

Fifth, the inconsistent association between problems in executive functioning and subsequent violent behavior could suggest that the link between the two is not universal but contextual. One possibility is that the link is moderated by a range of contextual factors. For instance, child-related characteristics could moderate this link. For example, research suggests that although parents with children with autism show more executive function problems (Hughes et al., 1997), children with autism are at lower risk of child maltreatment (Maclean et al., 2017). However, the lack of research in parental executive functions limits us in presenting further moderating models, but we could imagine that child temperament and perceived vulnerability of the child could further influence this link. Children who appear more fragile may elicit greater regulatory effort from parents, while those with difficult temperaments may increase parental frustration, thereby exacerbating the behavioral consequences of executive functioning deficits. Moreover, cultural norms and societal attitudes toward aggression and child-rearing could shape how executive functions impairments manifest behaviorally. For instance, in contexts with strong anti-violence norms, individuals may exert greater effort to inhibit aggressive impulses despite executive function difficulties. Together, these future models could underscore that the executive functions-violence pathway is rather shaped by a complex interplay of environmental moderators.

Objective executive functioning measures did not show significant associations with either parental burnout or violent behavior, whereas self-reported executive functioning difficulties did. Two concurrent explanations may account for this discrepancy. Our sample included relatively few parents experiencing high levels of burnout, pronounced cognitive complaints, or frequent violent behaviors. This lack of clinical severity likely gave rise to floor effects in the objective executive functioning tasks. Although the selected tasks were chosen based on their widespread use in the literature, floor effects are not uncommon in non-clinical populations. Previous studies have similarly reported limited sensitivity of these tasks in healthy samples, such as for the Go/No-Go (Eigsti et al., 2006; Schulz et al.,

2007; Zhao et al., 2017), the Trail Making Test (Chan et al., 2015; Lim et al., 2013), and the Paced Auditory Serial Addition Task (Diehr et al., 2003; Fos et al., 2000; Walker et al., 2021). As a result, the restricted variability in objective executive functioning scores likely obscured potential relationships with burnout and violence, limiting the ability to detect meaningful associations in our models. It is important to acknowledge that the initial aim of the study was to recruit parents experiencing burnout in order to explore specific processes within this group, with the intention of comparing them to a control sample. However, recruiting burned-out parents proved to be highly challenging. According to feedback from some participants who ultimately decided not to take part, the requirement to travel to Louvain-la-Neuve added significant logistical burdens to already overwhelmed individuals. Others cited the length of the testing sessions or their own fatigue as barriers to participation. Consequently, we shifted to a simple random sampling approach, which, in retrospect, was not ideally aligned with the specific measures of executive functions.

But why do self-report and objective measures of executive functions yield different results? Recent research has increasingly demonstrated that these two measurement approaches frequently fail to correlate, both at the general level of executive functioning (Heilmann, 2022) and for specific domains of executive functions (Howlett et al., 2022). This persistent lack of convergence raises two central questions: Do self-report and objective tasks actually assess the same underlying construct (Jurado & Rosselli, 2007)? And are objective tasks ecologically valid representations of real-life executive functioning (Jurado & Rosselli, 2007)? Regarding the first question, several explanations have been proposed to account for discrepancies between self-report and objective assessments (Dang et al., 2020). *First*, objective tasks typically measure responses to novel, decontextualized stimuli within a highly controlled environment, whereas self-reports require participants to provide a meta-cognitive evaluation of their functioning across diverse, real-world contexts. *Second*, objective tasks assess actual performance, often through metrics such as reaction times or error rates, whereas self-reports reflect subjective perceptions of performance. *Third*, objective tasks usually capture an individual's optimal performance under ideal conditions (also called “maximal performance” in the literature on measurement) because of the instructions given (e.g., “press

on the squares *as fast* as possible”, “do X *as accurately* as possible”, etc.), whereas self-reports tend to capture typical functioning in everyday situations. As for the second question, the issue of ecological validity in neuropsychological testing is long-standing (Dawson & Marcotte, 2017). Two types of ecological validity are relevant here: verisimilitude, namely the degree to which a task mimics real-life cognitive demands, and veridicality, namely the extent to which task performance predicts actual functioning in daily life (Chaytor & Schmitter-Edgecombe, 2003). Laboratory-based executive functioning tasks are often designed with clear goals and minimal distractions, failing to simulate the chaotic, unpredictable nature of real-life contexts such as parenting. Furthermore, high performance on tasks like the Trail Making Test may not necessarily reflect effective flexibility in complex, real-world environments such as coordinating children's schedules or managing household responsibilities. Taken together, these conceptual and methodological limitations, alongside sample-specific floor effects observed in our data, likely contributed to the discrepancy between findings from self-report and objective measures in our study. These results highlight the pressing need for more ecologically valid assessment tools tailored to the specific cognitive demands of parenting. Diercks et al. (2022) propose that measuring parental executive functions should better reflect the emotionally charged, context-dependent nature of parenting. Among the solutions they suggest, two seem particularly feasible. First, assessing executive functions in-home may capture real-world challenges like clutter or chaos that strain parents' executive functions. In fact, some researchers have begun assessing executive functions of parents in the home (e.g., Yatziv et al., 2018), where the emotional climate and everyday parenting dynamics are more accurately reflected. In-home assessments offer greater ecological validity and may reveal cognitive patterns related to parenting that are not typically observed in lab settings. Additionally, aspects of the home environment, such as clutter or chaos, can further highlight executive function difficulties within a specific context. Second, Diercks et al. (2022) suggest ecological momentary assessment as a promising tool to track within-subject executive function variability in response to child behavior. This type of study design may help identify how parents respond to child cues in real time, offering a richer view of their executive functions in action. Finally, it should be acknowledged that the differing results observed between self-reported and objective measures

of executive function may partly stem from shared method variance, as self-report measures tend to produce inflated associations when variables are assessed using the same method (Spector et al., 2019).

The results of the current chapter should be interpreted with caution, as the current studies present several limitations that should be acknowledged. *First*, the sample was not specifically composed of parents experiencing clinically significant levels of burnout, marked executive dysfunction, or severe violent behavior. Consequently, the generalizability of the findings to high-risk populations is limited. Future research should aim to replicate these results in more targeted samples, such as parents with burnout, elevated levels of violence, or significant executive functioning difficulties. *Second*, although the longitudinal design strengthens the inference of temporal ordering among variables, it does not allow for definitive conclusions regarding causality. Experimental approaches are needed to establish whether parental burnout causally contributes to executive functioning deficits. One possible avenue would involve intervention studies examining whether reducing parental burnout leads to measurable improvements in executive functioning over time. *Third*, the executive functions' measures employed, both self-report and objective, may lack ecological validity within the specific context of parenting. Parenting involves complex, dynamic, and often high-stress cognitive demands that may not be fully captured by standard executive function tasks or general self-assessments. Future research should prioritize the development and use of context-sensitive measures that more accurately reflect executive functioning in the daily realities of caregiving. *Fourth*, the current manuscript focuses exclusively on biological mediators (i.e., executive functions) in the link between parental burnout and violence. Yet, a substantial body of evidence indicates that many predictors of violence are psychological or social in nature. A meta-analysis that compared predictors of violence (Stith et al., 2009), highlights that psychological factors within the parent (e.g., anger and hyper-reactivity, anxiety, and broader psychopathology) are among the strongest predictors of violence. In addition, social predictors of violence have also been identified (e.g., perceiving the child as problematic, family conflict, low family cohesion). Thus, while this chapter emphasizes a biological pathway, it is important to acknowledge that psychological and social mediators are also very likely to play a significant role. Future research should therefore adopt a more integrative approach to

provide a fuller understanding of the mechanisms at play and to avoid the reductionism implicit in a solely biological focus.

Even though the study has meaningful limitations, it should be mentioned that the results bring new insights in the cognitive processes in parental burnout, allowing for new research avenues to be tested. Given the link that we observed between parental burnout and issues in inhibition, cognitive flexibility, and working memory updating, and given that parental burnout is a developmental process that starts with exhaustion (Roskam & Mikolajczak, 2021; Schitteck et al., 2024), future research should investigate at which stage of parental burnout these executive function issues begin to manifest. Additionally, given that executive dysfunction is context-sensitive, it is essential to consider contextual influences, as mentioned in the previous paragraphs, when examining whether the link between executive functioning and violence may emerge under specific conditions. Gaining a deeper understanding of these mechanisms could inform the development of more targeted and effective prevention strategies aimed at reducing the risk of violence toward children.

The findings of this chapter also have clinical relevance. Clinicians should be aware that parents experiencing parental burnout are at heightened risk of developing subjective difficulties in executive functions, particularly in inhibition, flexibility, and updating of working memory. These impairments are not trivial. In fact, they can interfere with a parent's ability to manage daily responsibilities, regulate emotions, and respond adaptively to challenging situations. As such, parenting support programs should be designed with consideration for the cognitive load faced by burned-out parents. For example, interventions could be simplified to avoid overwhelming already depleted cognitive resources. Incorporating cognitive offloading strategies, such as the use of checklists or visual schedules, may help reduce working memory demands for example. In addition, clinicians may find it helpful to include stress-reduction techniques such as mindfulness, which can restore executive functions (for a systematic review, see Whitfield et al., 2022). The results underscore the importance of identifying and addressing cognitive difficulties in parents experiencing burnout, not only to support their own mental and physical health, but also to reduce the risk of negative outcomes within the broader family system.

In conclusion, the take-home message of this chapter is threefold. First, while prior research has linked burnout to executive dysfunction and the latter to violent behavior, our studies did not find robust evidence that executive function impairments fully mediate the relationship between parental burnout and violence. This may be due to limited variability in the sample, the context-insensitive nature of current executive function assessments, or the influence of moderating factors such as cultural norms and child characteristics. Second, parental burnout is consistently associated with self-reported difficulties in executive functions, namely inhibition, cognitive flexibility, and updating of working memory, and this both cross-sectionally and longitudinally. Third, self-reported and objective measures of executive functioning yielded divergent findings: only self-reports were associated with burnout and violence. This underscores the need for assessment tools that better capture the dynamic, high-stress cognitive demands of parenting. Together, these findings highlight the importance of addressing cognitive difficulties in parents experiencing burnout, both to support their well-being and to inform more targeted intervention and prevention strategies within family systems.

5.5 Supplementary materials

Table S1

	Factor		Uniqueness
	1	2	
Parental Burnout Items			
Item 1	0.52		0.61
Item 2	0.72		0.44
Item 3	0.68		0.43
Item 4	0.69		0.40
Item 5	0.70		0.52
Item 6	0.83		0.35
Item 7	0.80		0.32
Item 8	0.70		0.43
Item 9	0.88		0.25
Item 10	0.77		0.38
Item 11	0.70		0.54
Item 12	0.82		0.29
Item 13	0.71		0.55
Item 14	0.55		0.72
Item 15	0.74		0.38
Item 16	0.81		0.40
Item 17	0.78		0.46
Item 18	0.79		0.44
Item 19	0.76		0.46
Item 20	0.53		0.75
Item 21	0.64		0.50
Item 22	0.73		0.45
Item 23	0.77		0.34
Executive functions items			
Updating Item 1		0.58	0.61
Inhibition Item 1		0.21	0.93
Flexibility Item 1		0.52	0.69
Updating Item 2		0.60	0.60

	Factor		Uniqueness
	1	2	
Inhibition Item 2		0.44	0.81
Updating Item 3		0.62	0.62
Flexibility Item 2		0.35	0.86
Updating Item 4		0.47	0.76
Inhibition Item 3		0.32	0.88
Flexibility Item 3		0.41	0.79
Updating Item 5		0.71	0.50
Inhibition Item 4		0.14	0.98
Inhibition Item 5		0.40	0.82
Flexibility Item 4		0.43	0.77
Updating Item 6		0.70	0.55
Inhibition Item 6		0.66	0.61
Updating Item 7		0.61	0.62
Inhibition Item 7		0.43	0.82
Flexibility Item 5		0.50	0.72
Flexibility Item 6		0.53	0.61
Updating Item 8		0.65	0.56
Inhibition Item 8		0.26	0.87

Note. 'Maximum likelihood' extraction method was used in combination with a 'oblimin' rotation. Factor 1 (Parental Burnout) explains 27.87% of variance; Factor 2 (Executive Functions) explains 13.44% of variance.

BRIEF-A Questionnaire

Instructions : This form lists behaviors. We would like to know whether, during the past month, you have exhibited any of these behaviors. Please answer all the questions as best as you can, without skipping any. Select the response that corresponds to your answer, knowing that the response options are:

- The behavior is Never a problem (1)
- The behavior is Sometimes a problem (2)
- The behavior is Often a problem (3)

Items

BRIEF-A (Translated English Version for Comprehension)		
Inhibition	Flexibility	Updating of Working Memory
I tap my fingers or move my legs	I have difficulties switching from one activity or task to another	I have difficulties concentrating on tasks (such as household chores, reading, or work)
I have difficulties sitting still	I have difficulties accepting viewpoints different from my own when solving problems at work, with friends, or in daily tasks	I have difficulties completing work or activities that require more than one step
I have trouble waiting for my turn	I have difficulties considering a new approach to solve a problem when I am stuck	I forget what I was doing in the middle of an activity
I make inappropriate sexually-oriented comments	I feel uncomfortable when I have to face changes	I have trouble staying on a single topic when I speak
I make decisions that put me in a difficult situation (legally, financially, socially)	I am unsettled by unexpected changes in my daily life	I have a limited attention span
People say that I am easily distracted	I have trouble overcoming the difficulties/problems I encounter	I easily forget instructions
I do things in a hurried manner		I have difficulties remembering things, even for a few minutes (such as directions, phone numbers)
I am impulsive		I have difficulties doing more than one thing at a time

BRIEF-A (French Version Used in the Study)

Inhibition	Flexibilité	Mise à Jour de la Mémoire de Travail
Je tapote avec mes doigts ou remue mes jambes	J'ai des difficultés pour passer d'une activité ou d'une tâche à l'autre	J'ai des difficultés pour me concentrer sur les tâches (comme les tâches ménagères, la lecture ou le travail)
J'ai des difficultés pour rester tranquillement assis(e)	J'ai des difficultés à accepter des points de vue différents du mien pour résoudre les problèmes dans le cadre du travail, avec les amis ou dans les tâches quotidiennes.	J'ai des difficultés pour faire un travail ou des activités qui nécessitent plus d'une étape
J'ai du mal à attendre mon tour	J'ai des difficultés à envisager une nouvelle approche pour résoudre un problème quand je suis bloqué(e)	J'oublie ce que j'étais en train de faire en plein milieu d'une activité
Je fais des commentaires inappropriés à connotation sexuelle	Je suis gêné(e) quand je dois faire face à des changements	J'ai du mal à rester sur un seul sujet lorsque je parle
Je prends des décisions qui me mettent dans une situation difficile (légalement, financièrement, socialement)	Je suis perturbé(e) par des changements imprévus dans ma vie quotidienne	J'ai une capacité d'attention limitée
Les gens disent que je suis facilement distrait(e)	J'ai du mal à surmonter les difficultés/problèmes que je rencontre	J'oublie facilement les instructions
Je fais les choses de manière précipitée		J'ai des difficultés à me souvenir des choses, même pendant quelques minutes (comme les trajets, les numéros de téléphone)
Je suis impulsif(ve)		J'ai des difficultés pour faire plus d'une chose à la fois

Chapter 6: Parental burnout stages and their link to parental violence: A longitudinal study

Background: Parental burnout's (PB) literature has blossomed, showing that PB is a major predictor in child maltreatment. But it is unclear at what PB stage parents become violent. **Methods:** 1466 parents answered a pre-registered three-wave longitudinal survey. **Results:** PB seems to start with exhaustion, which catalyzes the development of all other PB symptoms. There seems to be a process relating PB symptoms to violence towards the offspring: exhaustion is prospectively linked to an increase in emotional distancing and feeling fed up, which are then linked to a prospective increase in violence. **Conclusions:** Researchers would benefit from focusing more on the symptoms of PB, to increase nuance and give even more concrete suggestions for clinical practice. Clinicians should focus on reducing exhaustion as it seems to be the starting point of PB, and be alert to child maltreatment when emotional distancing or feeling fed up are mentioned. Implications are discussed.

Keywords: Parenthood, Exhaustion, Emotional Distancing, Fed Up, Contrast, Cross-Lagged, Maltreatment.

Reference

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6.1 Introduction

Parenthood has long been regarded as a major transition in an individual's life, that is often followed by physiological, psychological, relational (Kuersten-Hogan & McHale, 2021), and neurological changes (Abraham et al., 2014; Kim, 2021), which involve a great deal of adjustment. Although parenthood is very rewarding and meaningful, it can be difficult, especially when demands and stresses increase, without a corresponding increase in internal and external resources. When parenthood demands exceed resources *chronically*, some parents (around 8% in Belgium, see Roskam et al., 2021) may experience parental burnout (PB) (Mikolajczak et al., 2019; Mikolajczak & Roskam, 2018). PB has recently been conceptualized as a stress-related syndrome, manifesting in four symptoms: exhaustion, emotional distancing with the children, feeling fed up with the parental role, and perceiving a contrast with the parent that one used to be (Roskam et al., 2018).

Yet, parents do not seem to suddenly exhibit all four PB symptoms at once. Some studies have suggested that exhaustion is the entry point to PB (Kalkan et al., 2022; Le Vigouroux et al., 2022), whereas others suggested that it is emotional distancing (Blanchard et al., 2021). However, the conclusions of these studies are limited by their cross-sectional design. A longitudinal study (Roskam & Mikolajczak, 2021) observed that there are prospective relations between symptoms: exhaustion seems to be the starting point, followed by emotional distancing from one's child. However, this study measured burnout with an outdated measure of PB: the Parental Burnout Inventory (PBI; Roskam et al., 2017). In recent years, the Parental Burnout Assessment (PBA; Roskam et al., 2018) has become the gold standard for measuring PB. It is thought to be a better measure than the PBI as it was created using an *inductive* approach, generating the items from exhausted parents' speeches and experiences. The PBA encompasses four symptoms as mentioned in the first paragraph. Although Roskam and Mikolajczak (2021)'s study shows a process in PB symptoms, the temporal succession of symptoms as measured by the PBA is not known. Thus, the first aim of the current study is to identify, if any, systematic prospective relationships between PB symptoms using the PBA.

Even though PB is specific to the parental role, it does not only affect the parents, but the whole family system (i.e., parental couple relationship and relationship with the child, e.g., for a meta-analysis, see Mikolajczak et al., 2023). Specifically, PB increases violence against one's children. The robustness of this effect has shown through different *empirical methodologies* (e.g., for cross-sectional, see Mikolajczak et al., 2018; for longitudinal, see Mikolajczak et al., 2019; for causal, see Brianda et al., 2020), different *instruments* measuring PB (e.g., for the PBI, see Mikolajczak et al., 2019; for the PBA, see Szczygieł et al., 2020), different *samples around the world* (e.g., for Belgian and English-speaking samples, see Roskam & Mikolajczak, 2020; for Hispanic samples, see Manrique-Millones et al., 2022; for Finnish sample, see Aunola et al., 2021; for Polish sample, see Szczygieł et al., 2020), and different *approaches* (e.g., for person-centered, see Hansotte et al., 2020; for variable-centered, see Mikolajczak et al., 2018). However, most research solely focused on the global PB score. Only few cross-sectional studies have investigated the relation of *each PB symptom* on violence towards the offspring, which suggested that the symptom of emotional distancing would contribute the most to violence (Blanchard et al., 2021; Hansotte et al., 2020; Kalkan et al., 2022; Mikolajczak et al., 2018) and, even, that violence may appear only when the stage of emotional distancing is reached (Hansotte et al., 2020). However, the cross-sectional nature of these studies does not allow us to safely say whether violence appears at the first stage of PB, or whether it appears later on. Understanding this is not only crucial for better identifying and treating the parent, but also for prevention purposes and further protecting the children. Thus, the second aim of the study is to understand whether there is the *process* in PB symptoms that leads to violence.

6.1.1 Hypotheses

Based on the rationale, two hypotheses have been posited (one per study aim).

Hypothesis 1 – The process of PB: we expect exhaustion to be the first symptom, associated with a prospective increase in emotional distancing. For the remaining symptoms (i.e., feeling fed up, and contrast with the previous parental self), past PB research does not allow us to make a priori hypotheses.

Hypothesis 2 – The process of PB that leads to violence: we expect exhaustion to be prospectively associated to an increase in emotional

distancing, which in turn will be prospectively related to an increase in violence. For the two remaining symptoms (i.e., feeling fed up, and contrast with the previous parental self), previous literature is too scarce to postulate hypotheses relating to violence.

6.2 Method

6.2.1 Participants

At time 1, a total of 1490 participants answered the survey (888 English-speaking, 602 French-speaking). Missing value analyses revealed that participants who dropped out at time 2 were on average younger (M missing = 37.82, M non-missing = 40.36, $t(1488) = 6.84$, $p < .001$), more fed up with the parental role (M missing = 5.27, M non-missing = 3.39, $t(1488) = -5.95$, $p < .001$), more emotionally distant (M missing = 3.00, M non-missing = 2.00, $t(1488) = -5.80$, $p < .001$), and more violent (M missing = 1.90, M non-missing = 1.22, $t(1488) = -6.47$, $p < .001$). χ^2 also showed that participants who dropped out at time 2 were more likely to be: women ($\chi^2(1) = 48.65$, $p < .001$, $\phi = .18$), more educated ($\chi^2(5) = 78.39$, $p < .001$, $\phi = .23$), work part time ($\chi^2(10) = 201.53$, $p < .001$, $\phi = .37$), and earned slightly more money ($\chi^2(5) = 12.95$, $p < .001$, $\phi = .09$), than expected by chance. Participants who dropped out at time 3 were not significantly different to participants at time 2. Considering the *amount* and the *non-random nature* of the missingness between waves, it is preferred to avoid using imputation (Bennett, 2009), Full Information Maximum Likelihood (FIML) was therefore preferred, and the aforementioned reasons for missingness were all controlled for in the estimated models. 24 multivariate outliers were detected and, thus, removed ($>3SD$). The total final sample consisted of 1466 participants. Of the final sample, participants were mostly mothers (73.7%), on average 39.3 years old ($SD = 7.27$), and on average had 2 children ($M = 2.15$, $SD = 0.97$). Most participants (56%) were married, and mostly completed upper secondary education (26.4%) or a bachelor's degree (36.1%). Professionally, most parents worked full time (56.2%) and mostly earned between 2500-4000£ monthly (38.1%) or between 1000-2500£ monthly (23.6%).

6.2.2 Procedure

Prior to data collection, the study received the approval of the ethics committee. The current study was part of a larger project conducted between July 2022 and May 2023, regarding parental burnout and children's outcomes (every wave spaced 4 months apart: Time 1 in July-August 2022, Time 2 in November-December 2022, Time 3 in April-May 2023). The participants were recruited using two strategies: a French-speaking snowball sample, and an English-speaking Prolific sample. French-speaking parents were recruited through social-media, word of mouth, and schools. The English-speaking sample was recruited through Prolific, a participant-recruitment platform that aims to connect researchers to high quality samples, in exchange for remuneration. Researchers can use filters to reach only specific participants (in this case, parents). Considering that the past studies showed similar relationships between PB and violence in French-speaking and English-speaking samples (e.g., Mikolajczak et al., 2019), both samples were merged together into a single final sample. Prior to participating to the study, participants first gave their informed consent. They were informed that they could withdraw at any moment, and that their data would remain anonymous. Participants who decided to take part in the study were required to answer each item without the option to skip or omit any. Moreover, participants who answered wrongly to one of three attention checks were immediately dismissed from analyses. Participants who wished to take part in the study answered an online survey (more details about the questionnaires in the "Measures" section). Participants who did not meet the following criteria were excluded from all analyses: participants who did not have at least one child still living at home, who did not answer correctly to one of the three attention-checks, who were underage (under 18 years of age), and who did not respond to all three measurement occasions. Three attention-check items (e.g., "It is important that you pay attention to this study. Please select Disagree") were randomly inserted in the survey to make sure that participants did not respond randomly or inattentively.

6.2.3 Measures

After the informed consent, the following sociodemographic variables were collected: gender, age, number of children, educational level, working

regimen, and net monthly household income. All measures were assessed at three time points.

Parental burnout symptoms were measured using the *Parental Burnout Assessment* (PBA). The PBA is a 23-item questionnaire (Roskam et al., 2018), in which parents rate each symptom on a 7-point frequency scale: from *never* (0) to *every day* (6). The scale is quadri-factorial, measuring namely: *exhaustion* (e.g., “I’m so tired out by my role as a parent that sleeping doesn’t seem like enough”) (time 1: $\alpha = .95$, $\omega = .96$; time 2: $\alpha = .96$, $\omega = .96$; time 3: $\alpha = .96$, $\omega = .96$), *emotional distancing* (e.g., “Outside the usual routines (lifts in the car, bedtime, meals) I’m no longer able to make an effort for my child(ren)”) (time 1: $\alpha = .76$, $\omega = .78$; time 2: $\alpha = .78$, $\omega = .79$; time 3: $\alpha = .81$, $\omega = .82$), *feeling fed up* (e.g., “I can’t stand my role as a father/mother anymore”) (time 1: $\alpha = .90$, $\omega = .91$; time 2: $\alpha = .91$, $\omega = .91$; time 3: $\alpha = .93$, $\omega = .93$), and *contrast in the previous parental self* (e.g., “I don’t think I’m the good father/mother that I used to be to my child(ren)”) (time 1: $\alpha = .92$, $\omega = .93$; time 2: $\alpha = .93$, $\omega = .93$; time 3: $\alpha = .92$, $\omega = .93$). Each score is calculated by summing the answers to the items. Higher scores reflect a higher level of the measured factor. Due to (expected) deviation in normality, McDonald’s ω (McDonald, 1999, p. 89) should be interpreted when reviewing the scale’s internal consistency, as it is more robust (Yang & Green, 2011). However, considering that Cronbach’s α (Cronbach, 1951) is still the most used in research, we decided to provide both indices for every scale in the study.

Violence towards offspring was assessed using a shortened version of the *Parental Violence Scale* (full scale first used in Mikolajczak et al., 2018; short-form subsequently used in Mikolajczak et al., 2019, 2020). The shortened version is a 3-item self-report questionnaire, to which participants respond to each item on a frequency scale: from *never* (0) to *several times a day* (7). The scale measures *verbal* (“I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.)”), *physical* (“When I am angry, I sometimes throw things at my child”), and *psychological* violence (“I sometimes threaten to abandon my child if s/he is not good”). Higher scores reflect a higher presence of violent behaviors. Note that the original scale from which the three items are drawn from shows good internal reliability ($\alpha = .82$; see Mikolajczak et al., 2018).

Statistical analyses

Based on sample size estimations, following the $N:q$ rule (Jackson, 2003; Kline, 2016), the final sample size was large enough to carry out the path analyses. Variables were centered to reduce potential multi-collinearity. Statistical tests' assumptions were checked prior to carrying on with the analyses. Correlations were performed using Jamovi's "Regression" package (The jamovi project, 2021), and cross-lagged models were estimated using the open software R (RStudio Team, 2020), with "lavaan"'s package (Rosseel, 2012).

First, correlation analyses were computed. Then, we performed Mardia's test prior to estimating each cross-lagged model, which allowed to determine whether there was a violation in multivariate normality (Korkmaz et al., n.d., 2014). After that, cross-lagged models were estimated (one model per study aim), using FIML estimation method. Considering that missingness between time 1 and time 2 is not at random, the only way to estimate the models using FIML (which requires MAR data; see Enders, 2008), is by adding the variables causing MNAR as auxiliary variables (Enders, 2008). We therefore controlled for the reasons of missingness, namely: gender, age of the parent, working status, and income. Fit indices of each model were reviewed prior to interpreting paths. Considering that the χ^2 and the Root Mean Square Error of Approximation (RMSEA) are particularly sensitive to sample size (Kenny et al., 2015; Kline, 2016), we opted for less sensitive fit estimates. Thus, we considered adequate fit when at least two of the less sensitive indices (i.e., Comparative Fit Index - CFI, Standardized Root Mean Square Residual - SRMR, Tucker Lewis Index - TLI) met the following criteria : the CFI above .90, the SRMR below .08 (Kline, 2016), and the TLI above .90 (Tucker & Lewis, 1973). χ^2 and RMSEA were reported as they are still one of the most reported indices in path analysis (χ^2 should ideally be non-significant and RMSEA should be below .08). Finally, we estimated two cross-lagged models. Model 1 estimated the prospective relationships between PB symptoms. Model 2 estimated the prospective relationships between PB symptoms in the prediction of violence towards the offspring.

6.2.4 Pre-registration and open data

Aims, hypotheses and analyses have been pre-registered on Open Science Framework prior to analyzing the data. Pre-registration and data are

available at
https://osf.io/z39wy/?view_only=c6be8b517e4b45a5903206c15977cb44.

6.2.5 Ethical approval

The current study was approved by the ethical committee and follows the principles of the Declaration of Helsinki.

6.3 Results

Correlations between variables at each time point can be viewed in **Table 1**. Spearman's ρ was preferred over Pearson's r , considering the non-normal (but expected) data distribution observed in Q-Q plots. Exhaustion, emotional distancing, feeling fed up, and contrast, all significantly and positively correlated with violence towards the offspring. Correlations were consistent across the three time points.

Table 1
Descriptive Statistics and Spearman's ρ Correlations for Study Variables

Bivariate correlations	<i>n</i>	Spearman's ρ
Exhaustion Time 1 and Violence Time 1	1466	.39***
Exhaustion Time 2 and Violence Time 2	794	.42***
Exhaustion Time 3 and Violence Time 3	754	.39***
Emotional Distancing Time 1 and Violence Time 1	1466	.40***
Emotional Distancing Time 2 and Violence Time 2	794	.39***
Emotional Distancing Time 3 and Violence Time 3	754	.39***
Fed Up Time 1 and Violence Time 1	1466	.46***
Fed Up Time 2 and Violence Time 2	794	.43***
Fed Up Time 3 and Violence Time 3	754	.42***
Contrast Time 1 and Violence Time 1	1466	.43***
Contrast Time 2 and Violence Time 2	794	.46***
Contrast Time 3 and Violence Time 3	754	.39***

Note. Exhaustion at time 1 ($M = 16.00$, $SD = 13.65$), time 2 ($M = 14.40$, $SD = 13.10$), and time 3 ($M = 14.10$, $SD = 13.23$). Emotional distancing at time 1 ($M = 2.41$, $SD = 3.34$), time 2 ($M = 1.74$, $SD = 2.71$), and time 3 ($M = 1.76$, $SD = 2.82$). Fed up at time 1 ($M = 4.16$, $SD = 6.02$), time 2 ($M = 2.88$, $SD = 4.73$), and time 3 ($M = 2.97$, $SD = 5.00$). Contrast at time 1 ($M = 6.89$, $SD = 8.02$), time 2 ($M = 5.95$, $SD = 7.26$), and time 3 ($M = 6.02$, $SD = 7.48$). Violence at time 1 ($M = 1.48$, $SD = 1.98$), time 2 ($M = 0.96$, $SD = 1.26$), and time 3 ($M = 0.89$, $SD = 1.42$). * $p < .05$, ** $p < .01$, *** $p < .001$.

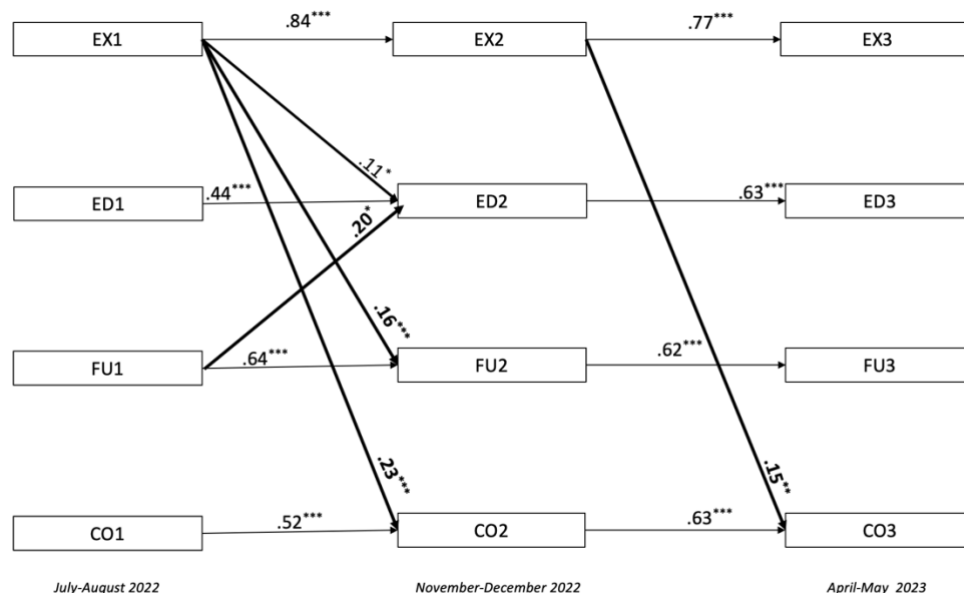
Multivariate normality was assessed using Mardia's coefficient and showed to be (expectedly) violated (Model 1: for skewness: $\chi^2 = 7287$, $p < .001$; for kurtosis: $z = 137.11$, $p < .001$; Model 2: for skewness: $\chi^2 = 10999$, $p < .001$; for kurtosis: $z = 167.18$, $p < .001$). Considering that the assumption was violated in both path models, we opted for a more robust method of estimation, using the Bollen-Stine bootstrapping method (Kim & Millsap, 2014; Kline, 2016; Thakkar, 2020).

Model 1 (controlling for gender, age of the parent, working status, and income) investigating the prospective links between PB symptoms (see **Figure 1**) showed acceptable fit ($\chi^2(16) = 289.79$, $p < .001$; CFI = .98; TLI = .84; RMSEA = 0.11, 95% CI = [0.14, 0.18], SRMR = .04). Auto-regressive

paths were all significant across time points, as well as some cross-lagged paths. Exhaustion at time 1 significantly predicted emotional distancing at time 2 ($\beta = 0.11, p = .03$), feeling fed up at time 2 ($\beta = 0.16, p < .001$) and contrast at time 2 ($\beta = 0.22, p < .001$). Moreover, feeling fed up at time 1 predicted emotional distancing at time 2 ($\beta = 0.20, p = .02$). Exhaustion at time 2 predicted contrast at time 3 ($\beta = 0.15, p = .004$). The remaining non-significant paths can be viewed in **Supplementary Table 1**. Covariances between PB symptoms, as expected, were all significant and had positive standardized estimates (see **Supplementary Table 2**).

Figure 1

Cross-Lag Model 1 for Prospective Links of Parental Burnout Symptoms



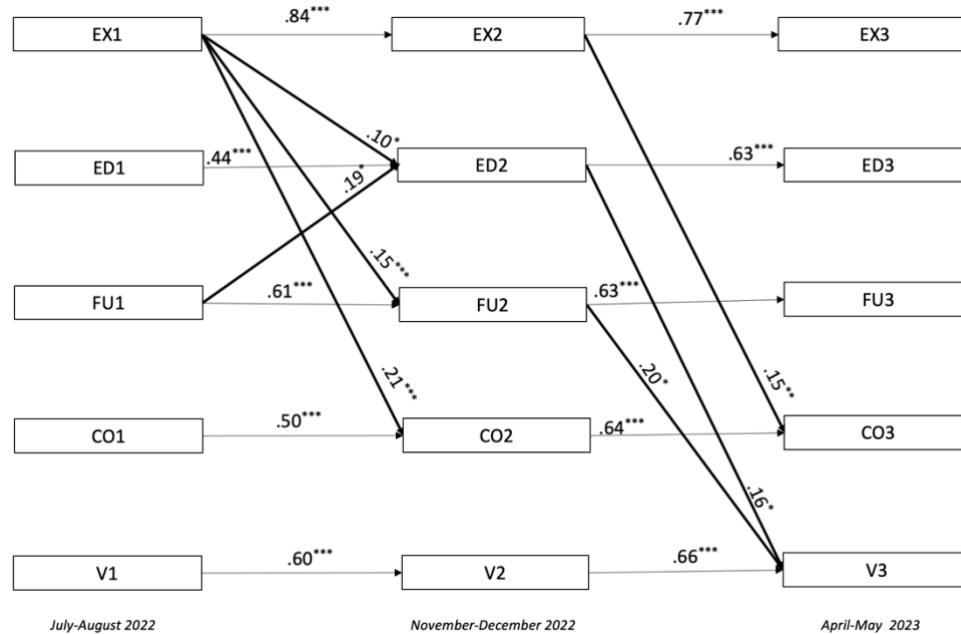
Note. EX = Exhaustion; ED = Emotional distancing; FU = Feeling fed up; CO = Contrast with the previous self; 1, 2, 3 = Time 1, Time 2, Time 3. Significant paths are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant paths and covariances can be viewed in **Supplementary Table 1** and **Supplementary Table 2** respectively. The model was estimated controlling for auxiliary variables, such as gender, age, working status, and income.

Model 2 (controlling for gender, age of the parent, working status, and income) estimating the process of PB symptoms that lead to violence (see **Figure 2**) showed acceptable fit: $\chi^2(25) = 332.71, p < .001$; CFI = .98; TLI =

.86; RMSEA = 0.09, 95% CI = [0.08, 0.10], SRMR = .03. Auto-regressive paths were all significant, and many cross-lagged paths were significant as well. Exhaustion at time 1 significantly predicted emotional distancing at time 2 ($\beta = 0.10, p = .04$), feeling fed up at time 2 ($\beta = 0.15, p < .001$), and contrast at time 2 ($\beta = 0.21, p < .001$). Feeling fed up at time 1 predicted emotional distancing at time 2 ($\beta = 0.19, p = .02$). Emotional distancing ($\beta = 0.16, p = .02$) and feeling fed up at time 2 ($\beta = 0.20, p = .02$) predicted violence at time 3. Exhaustion at time 2 predicted contrast at time 3 ($\beta = 0.15, p = .004$). The remaining paths were non-significant and can be viewed in **Supplementary Table 3**. Covariances between PB symptoms, and between PB symptoms and violence were all significant and had positive standardized estimates (see **Supplementary Table 4**).

Figure 2

Cross-Lag Model 2 Investigating the Process in Parental Burnout Symptoms that lead to Violence



Note. EX = Exhaustion; ED = Emotional distancing; FU = Feeling fed up; CO = Contrast with the previous self; V = Violence towards the offspring; 1, 2, 3 = Time 1, Time 2, Time 3. Significant paths are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant path estimates and covariances can be viewed in **Supplementary Table 3** and **Supplementary Table 4** respectively. The model was estimated controlling for auxiliary variables, such as gender, age, working status, and income.

6.4 Discussion

The current study aimed to answer two important questions in the process of PB and its consequences. Each one will be discussed in this section. The first aim was to understand whether PB's processual nature replicates when using the PBA as a measure. The results of the current study both replicate past research and give new insight into the PB process. It replicates past results by showing that exhaustion seems to be the entry point in PB (Kalkan et al., 2022; Le Vigouroux et al., 2022; Roskam & Mikolajczak, 2021), and that indeed exhaustion at time 1 predicts emotional distancing at time 2 (Roskam & Mikolajczak, 2021). Not only does the effect *significance* replicate, but the effect *size* also replicates (in Roskam &

Mikolajczak's, 2021; study 1: $\beta = 0.10, p = .003$; in their study 2: $\beta = 0.13, p = .015$; in the current study: $\beta = 0.10, p = .06$), emphasizing the robustness of the results across measures. Although these results suggest that the aforementioned links are conceptually replicated, attention should be given to the current results that indicate that exhaustion seems to be the entry point to the spiral of PB, being prospectively associated with an increase in *all* PB symptoms, and not just emotional distancing. It is also interesting to note that exhaustion seems to be particularly influential with contrast with the previous parental self, as shown by the highest standardized estimate. This, however, is not surprising: an exhausted parent might be more likely to notice that they are not as they once were, compared to emotionally distance from their offspring. More broadly, these results further emphasize that PB, like any other type of burnout, is a developmental process (Brunsting et al., 2022; Houkes et al., 2011; Roskam & Mikolajczak, 2021; Taris et al., 2005), and that the process of PB insidiously moves the problem from the parent (i.e., exhaustion) to the relationships surrounding the parent (i.e., emotional distancing).

The second aim was to understand how PB as a process is prospectively related to violence. The hypothesized mediating effect that exhaustion would be related to emotional distancing, which in turn would be linked to violence, is not the only effect that we observed. The relation between exhaustion and violence seems to also be mediated by a prospective increase in feeling fed up. Both findings suggest that maltreating behaviors in burnt out parents may happen in a processual manner, as PB symptoms further develop and set in. It is also interesting to note the small size of prospective paths from PB to violence. They should not be regarded as qualifying past results and even less as good news. PB symptoms share a lot of variance between them (since they have high intercorrelations) and it is therefore not surprising that the cross-lagged paths have small effect sizes (both in models with and without violence), because they represent the effects that are not comprised by the shared variance. Since it is the first time that the effect of each symptom in the presence of other symptoms is estimated, this should be kept in mind when interpreting the results. However, this does not undermine the important predictive nature of PB in child maltreatment, against other predictors (Schitteck et al., 2023b). Taken together, these results suggest that (i) there is a process in PB symptoms that is related violence, (ii)

both emotional distancing and feeling fed up are prospective risk factors in violence towards children, and (iii) the symptom of feeling fed up seems to have the strongest predictive weight.

Beyond the foregoing contributions, the current findings hold important implications for both research and clinical practice. In regards to research, *first*, considering that focusing research on the symptoms of PB (and not just its global score) could allow to have more nuanced and clinically relevant results, cut-off scores for each symptom should be created (as it has been done for the global score of PB, see Brianda et al., 2023), allowing then to determine whether parents significantly exhibit each symptom or not. *Second*, knowing that PB starts with exhaustion, which is then associated to a cascade of symptoms, should prompt research to make sure that the current PB treatment specifically reduces exhaustion (Brianda, Roskam, Gross, et al., 2020). So far, this treatment was only tested using the composite score of PB, and not the sub-symptoms, which precludes from safely assuming that it significantly impacts the symptoms. If this should not prove fruitful, the reduction of exhaustion should be tested through relaxation techniques, which have shown to greatly reduce exhaustion in job burnout ($d = .51$; for a meta-analysis, see Maricuțoiu et al., 2016). *Third*, researchers should also start to consider feeling fed up as central in both the development of PB and as a risk factor in violence. Relatedly, the present findings nuance those of Hansotte et al. (2021) that suggested that violence would only kick-in when parents distance themselves from their children and rather advise clinicians to remain alert to potential maltreating behaviors when parents mention *feeling fed up* as well. *Fourth*, PB literature majorly focuses on observed-variable cross-lagged models, as does the present manuscript. This adds measurement error that could impact results. Future research should try to collect enough data to allow latent-variable models to be tested. *Fifth*, the fact that some paths present between Time 1 and Time 2 do not replicate between Time 2 and Time 3 could indicate that: (i) the major drop-out between Time 2 and Time 3 has precluded from detecting effects that were present between the two first measurement points; (ii) the non-normal distribution of both PB and violence could have had an effect on the estimation of parameters and standard errors, and thus on p -values, even though FIML is one of the most robust methods against non-normality; (iii) the mis-matched variability between PB symptoms and violence (the latter showing less variability compared to the

former) could have reduced test-statistics, thus resulting in higher p -values. Taking these points into account, future research in PB should be alert to the effects of drop-outs, non-normality, and variability when designing studies and interpreting results. In regard to *clinical* work, knowing that exhaustion is the entry point to PB's slippery slope, clinicians should be alert to (i) parents mentioning exhaustion as the sign to treat for PB immediately, and (ii) to be alert to child maltreatment when the parent mentions feeling emotionally distant from their offspring, or even feeling fed up.

More broadly, the current results impact fields other than psychology. First, for *neuroscience*, our findings underly the importance of understanding the brain changes that could explain the link between PB symptoms and violence (e.g., Heatherton & Wagner, 2011; Siever, 2008). Second, for *developmental psychology*, it would be fruitful to test the potential mediating effect of PB symptoms, between known maltreatment risk factors and violence (for systematic reviews and meta-analyses, see Milner et al., 2022; Stith et al., 2009; White et al., 2015). Third, for social work, researchers should try to find the most useful ways to help families that experience child violence, specifically in the case of PB symptoms.

Limitations of the current study should also be considered when interpreting results. *First*, the sample is WEIRD (White, Educated, Industrialized, Rich, Democratic) and European, which precludes to generalize results to other samples and other cultures. In fact, it is probable that PB can manifest and develop differently in less fortunate families, and in other cultures. For the latter, some preliminary studies have shown that not all symptoms in the PBA converge in some parts of the world (e.g., emotional distancing showing low consistency in Persian, Basque and African samples, see Mousavi et al., 2020; Sarrionandia & Aliri, 2021; Sodi et al., 2020). Being careful in generalizing results is also suggested by the high standard errors observed in the cross-lagged paths. This means that the observed links in the sample might not represent the population, thus precluding generalization of results. To make sure that the results are robust, there's a need to replicate the current findings in different samples. *Second*, results should not be generalized across genders as the sample is composed of twice as many mothers than fathers. Considering that parenthood is very gender-typed, and that PB seems to have different consequences in fathers and mothers (Roskam & Mikolajczak, 2020), the current cross-lagged models should also

be replicated in more gender-equal samples. Additionally, knowing that PB in fathers seems to increase more neglect-type behaviors, whereas in mothers it seems to increase more violence (Roskam & Mikolajczak, 2020), it would be fruitful to understand whether gender moderates the prospective relations between PB symptoms and violence and neglect, thus providing more nuance. *Third*, violence towards children is a difficult construct to measure considering its legal implications, as well as its self-report nature adding potential informant bias in the current study. Thus, it is possible that parents under-reported potential violent behaviors, potentially adding bias in interpreting results. Longer questionnaires or other measures of violence (not self-report) should be considered for future research. *Fourth*, violence was measured using three items that each assess different types of violence. This approach makes it difficult to test the reliability of the overall violence measure, adding potential bias in the results. Future research should aim to replicate these findings using more robust measures of violence that allow for proper reliability testing. *Fifth*, the path models were estimated using observed variables rather than latent ones, which means that measurement error is not accounted for. Future studies should replicate the current findings using latent models.

In conclusion, the take-home message of the current study is two-fold: (i) PB is a developmental process that starts with exhaustion, no matter the measurement used; (ii) there is a process that links PB symptoms to violence: exhaustion being the starting point that catalyzes emotional distancing and feeling fed up, both predicting more prospective violence.

6.5 Supplementary Materials

Supplementary Table 1

Path Estimates of Cross-Lag Model for Model 1

Effect	Standardized Estimates	SE	<i>z</i>	<i>p</i>
Cross-lagged paths				
EX1 → ED2	0.11	.01	2.23	.03*
EX1 → FU2	0.16	.02	3.88	< .001***
EX1 → CO2	0.22	.03	4.85	< .001***
EX2 → ED3	0.06	.01	1.00	.32
EX2 → FU3	0.09	.02	1.55	.12
EX2 → CO3	0.15	.03	2.86	.004**
ED1 → EX2	-0.06	.17	-1.40	.16
ED1 → FU2	0.09	.10	1.40	.16
ED1 → CO2	-0.06	.12	-1.01	.31
ED2 → EX3	0.05	.20	1.00	.32
ED2 → FU3	0.02	.12	0.23	.82
ED2 → CO3	0.08	.14	1.39	.16
FU1 → EX2	0.02	.13	0.32	.75
FU1 → ED2	0.20	.04	2.42	.02*
FU1 → CO2	0.10	.08	1.53	.13
FU2 → EX3	0.03	.13	0.51	.61
FU2 → ED3	0.08	.04	1.06	.29
FU2 → CO3	0.003	.09	0.05	.96
CO1 → EX2	-0.03	.09	-0.48	.63
CO1 → ED2	0.04	.02	0.53	.59
CO1 → FU2	-0.07	.04	-1.25	.21
CO2 → EX3	0.01	.09	0.17	.87
CO2 → ED3	0.02	.03	0.23	.82
CO2 → FU3	0.09	.05	1.31	.19

Note. EX = Exhaustion; ED = Emotional distancing; FU = Fed up; CO = Contrast; 1, 2, 3 = Time 1, Time 2, Time 3. Model estimated controlling for auxiliary variables, such as gender, age, working status, and income. * $p < .05$, ** $p < .01$, *** $p < .001$.

Supplementary Table 2*Covariances of Cross-Lag Model for Prospective Links for Model 1*

Effect	Standardized Estimates	SE	<i>z</i>	<i>p</i>
Covariances				
EX1 with				
ED1	0.66	1.91	15.65	< .001***
FU1	0.71	3.77	16.83	< .001***
CO1	0.81	4.51	19.58	< .001***
ED1 with				
FU1	0.76	1.19	12.70	< .001***
CO1	0.73	1.41	13.90	< .001***
FU1 with CO1	0.80	2.67	14.46	< .001***
EX2 with				
ED2	0.52	0.88	9.47	< .001***
FU2	0.62	1.51	10.60	< .001***
CO2	0.70	2.23	12.05	< .001***
ED2 with				
FU2	0.61	.59	6.94	< .001***
CO2	0.62	.70	8.87	< .001***
FU2 with CO2	0.61	1.07	9.17	< .001***
EX3 with				
ED3	0.53	1.00	7.52	< .001***
FU3	0.58	1.81	7.76	< .001***
CO3	0.66	2.35	8.94	< .001***
ED3 with				
FU3	0.54	0.61	5.70	< .001***
CO3	0.53	0.71	6.45	< .001***
FU3 with CO3	0.68	1.54	6.43	< .001***

Note. EX = Exhaustion; ED = Emotional distancing; FU = Fed up; CO = Contrast; 1, 2, 3 = Time 1, Time 2, Time 3. Model estimated controlling for auxiliary variables, such as gender, age, working status, and income. * $p < .05$, ** $p < .01$, *** $p < .001$.

Supplementary Table 3
Path Estimates of Cross-Lag Model for Model 2

Effect	Standardized Estimates	SE	<i>z</i>	<i>p</i>
Cross-lagged paths				
EX1 → ED2	0.10	.01	2.11	.04*
EX1 → FU2	0.15	.02	3.70	< .001***
EX1 → CO2	0.21	.03	4.69	< .001***
EX1 → V2	0.05	.001	0.94	.35
EX2 → ED3	0.05	.01	0.97	.33
EX2 → FU3	0.09	.02	1.59	.11
EX2 → CO3	0.15	.03	2.90	.004**
EX2 → V3	-0.11	.001	-1.76	.08
ED1 → EX2	-0.06	.17	-1.35	.18
ED1 → FU2	0.09	.10	1.56	.12
ED1 → CO2	-0.05	.12	-0.91	.36
ED1 → V2	0.07	.03	1.30	.19
ED2 → EX3	0.04	.21	0.82	.41
ED2 → FU3	0.01	.11	0.13	.90
ED2 → CO3	0.07	.14	1.23	.22
ED2 → V3	0.16	.04	2.37	.02*
FU1 → EX2	0.01	.13	0.18	.85
FU1 → ED2	0.19	.04	2.32	.02*
FU1 → CO2	0.09	.09	1.36	.17
FU1 → V2	-0.001	.02	-.01	.98
FU2 → EX3	0.02	.13	0.34	.73
FU2 → ED3	0.07	.04	0.97	.33
FU2 → CO3	-0.01	.08	-0.10	.92
FU2 → V3	0.20	.02	2.39	.02*
CO1 → EX2	-0.04	.09	-0.71	.48
CO1 → ED2	0.01	.02	0.16	.87
CO1 → FU2	-0.10	.04	-1.72	.09
CO1 → V2	0.07	.01	1.16	.24
CO2 → EX3	0.004	.09	0.09	.93
CO2 → ED3	0.02	.03	0.28	.82

CO2 → FU3	0.10	.04	1.48	.14
CO2 → V3	-0.001	.01	-0.01	.98
V1 → EX2	0.05	.30	1.19	.24
V1 → ED2	0.10	.11	1.47	.14
VI → FU2	0.11	.18	1.70	.09
V1 → CO2	0.08	.19	1.72	.09
V2 → EX3	0.03	.34	0.85	.40
V2 → ED3	0.03	.10	0.56	.58
V2 → FU3	-0.02	.18	-0.35	.72
V2 → CO3	0.01	.23	0.14	.89

Note. EX = Exhaustion; ED = Emotional distancing; FU = Fed up; CO = Contrast; V = Violence towards the offspring; 1, 2, 3 = Time 1, Time 2, Time 3. Model estimated controlling for auxiliary variables, such as gender, age, working status, and income. * $p < .05$, ** $p < .01$, *** $p < .001$.

Supplementary Table 4
Covariances of Cross-Lag Model for Model 2

Effect	Standardized Estimates	SE	<i>z</i>	<i>p</i>
Covariances				
EX1 with				
ED1	0.66	1.91	15.65	< .001***
FU1	0.77	3.77	16.83	< .001***
CO1	0.81	4.51	19.58	< .001***
V1	0.42	1.01	11.23	< .001***
ED1 with				
FU1	0.76	1.19	12.70	< .001***
CO1	0.73	1.41	13.90	< .001***
V1	0.42	.29	9.32	< .001***
FU1 with				
CO1	0.80	2.67	14.46	< .001***
V1	0.49	0.56	10.39	< .001***
CO1 with V1	0.47	0.73	10.35	< .001***
EX2 with				
ED2	0.52	0.90	9.31	< .001***
FU2	0.62	1.55	10.42	< .001***
CO2	0.70	2.25	11.86	< .001***
V2	0.29	0.39	5.77	< .001***
ED2 with				
FU2	0.62	0.59	7.02	< .001***
CO2	0.62	0.71	8.78	< .001***
V2	0.29	0.12	4.67	< .001***
FU2 with				
CO2	0.61	1.11	8.92	< .001***
V2	0.31	0.20	5.12	< .001***
CO2 with V2	0.31	0.27	5.54	< .001***
EX3 with				
ED3	0.52	0.98	7.54	< .001***
FU3	0.58	0.98	7.54	< .001***

CO3	0.65	2.34	8.92	< .001***
V3	0.16	2.34	8.92	< .001***
ED3 with				
FU3	0.53	0.60	5.67	< .001***
CO3	0.53	0.70	6.44	< .001***
V3	0.18	0.11	3.21	< .001***
FU3 with				
CO3	0.68	1.53	6.45	< .001***
V3	0.15	0.18	2.57	< .001***
CO3 with V3	0.13	0.22	2.47	< .001***

Note. EX = Exhaustion; ED = Emotional distancing; FU = Fed up; CO = Contrast; V = Violence towards the offspring; 1, 2, 3 = Time 1, Time 2, Time 3. Model estimated controlling for auxiliary variables, such as gender, age, working status, and income. * $p < .05$, ** $p < .01$, *** $p < .001$.

Chapter 7: Parental burnout increases psychological violence more than physical violence

Purpose: Parenthood, although mostly fulfilling, is not always easy. In some cases, parents can experience burnout in their parenting role. Parental burnout has been shown to have numerous detrimental consequences on the parent and the family system. Among these, parental burnout increases violent behaviors towards children. The current manuscript sought to bring nuance, by investigating which violent behavior is increased by parental burnout, and the extent of such increase. **Methods:** Two samples were pooled from previous studies, based on how they measured parental burnout (either the Parental Burnout Assessment - PBA - or the Parental Burnout Inventory - PBI). In each sample, two groups were created: burnout or control. Burnout and control groups were case-control matched for strong predictors of child maltreatment. **Results:** In both samples (PBA and PBI), parents in burnout exhibited more violent behaviors compared to controls. Specifically, violent behaviors with large effect sizes were: giving angry stares/ignore the child, denigrating the child, saying things they later regret, and losing their temper. The latter showed the strongest effect in parents in burnout compared to controls. **Conclusions:** Parental burnout does significantly increase the risk of violent behaviors towards children, but it seems to play a more pivotal role in psychological verbal and non-verbal violences, rather than physical. Parental burnout seems to particularly affect the loss of temper in parents, highlighting the urgent need to investigate the impact of parental burnout on emotional states and executive functioning.

Keywords: Child maltreatment; child abuse; emotional abuse; parental burnout; physical abuse; verbal violence.

Reference

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7.1 Introduction

Parenthood is not always easy, as it often demands adaptation to new changes and challenges (e.g., physiological, psychological and relational, see Kuersten-Hogan & McHale, 2021). Sometimes, parents don't have enough resources to outweigh the challenges they face. This imbalance, if it persists over time, can lead parents to burnout in their parental role (parental burnout; Mikolajczak et al., 2019; Mikolajczak & Roskam, 2018). Parental burnout is a stress-related syndrome, which can manifest in four symptoms, namely exhaustion in the parental role, a growing emotional distance from the offspring, a sense of feeling fed up with parenthood, and the contrast between the parent one currently is and the parent one used to be (Roskam et al., 2018).

A growing amount of evidence suggests that parental burnout should seriously be considered both in research and in clinical practice, given its prevalence, almost one out of 10 parents in the United States of America (for a study on 42-countries, see Roskam et al., 2021), and also its detrimental consequences on the family system, disrupting and damaging relationships around the unwell parent (e.g., Mikolajczak et al., 2018). Among these, one is of particular societal interest, for its potential transgenerational cascading effects: parental violence, which can be defined as being a type of child maltreatment directed by a parent to their underage child (World Health Organization, 2022a, 2022b). The effect that parental burnout increases violence towards children can be regarded as replicable and robust, as it has been observed with different measurement *instruments* (e.g., for the Parental Burnout Inventory, see e.g., Mikolajczak et al., 2019; for the Parental Burnout Assessment, see e.g., Szczygieł et al., 2020), in different *countries* (e.g., for Belgian and English-speaking samples, see e.g., Roskam & Mikolajczak, 2020; for Hispanic samples, see Manrique-Millones et al., 2022; for Finnish sample, see Aunola et al., 2021; for Polish sample, see Szczygieł et al., 2020), with different *designs* (e.g., for cross-sectional, see Mikolajczak et al., 2018; for longitudinal, see Mikolajczak et al., 2019; for causal, see Brianda et al., 2020), and different *approaches* (e.g., for person-centered, see Hansotte et al., 2020; for variable-centered, see Mikolajczak et al., 2018).

Although a vast amount of studies has shown that parental burnout increases violence towards children, it is still unclear which type of violence is more severely affected (i.e., physical or psychological violence, for

definitions, see Norman et al., 2012). Thus far, only a composite score of violence has been used. Disentangling the effect of parental burnout on different violent behaviors is however crucial, as different types of violence can have different long-term effects on individuals who have experienced them.

7.1.1 Aims and hypotheses

Based on the foregoing, the aim of the current manuscript was to understand (i) which violent behaviors are specifically increased by parental burnout, and (ii) to what extent they are increased (i.e., in terms of effect size). Considering the novelty of the research questions, no specific a priori hypotheses can be generated for each violence type. However, given the relatively balanced distribution of different types of violence items used to assess violence (as part of a composite score) in the context of parental burnout, and the large correlation between parental burnout and the violence composite score ($r = .49$, for a meta-analysis, see Mikolajczak et al., 2023), it is possible that the composite score of violence hides potential null or very high correlations between specific violent behaviors and parental burnout. Thus, understanding the extent of the effect of parental burnout on violent behaviors is crucial to bring more nuance. A group-comparison approach was chosen to determine which violent behaviors parental burnout predicts compared to parents who do not exhibit parental burnout. While we expected that parental burnout (compared to controls) would predict more violent behaviors towards children, both in number and in effect size, we had no specific hypotheses regarding the specific behaviors that would be more particularly increased.

7.2 Method

7.2.1 Participants

Data were pooled from previous studies to constitute two samples: one sample in which parental burnout was measured using the Parental Burnout Assessment (PBA; for more information see **Measures** section), and one sample in which it was measured using the Parental Burnout Inventory (PBI; for more information see **Measures** section). Data came from previous conducted studies where both parental burnout and violence were measured.

We used samples in which different measures of parental burnout were used in order to check for stability of results across measurements. The 15 items measuring violence were always the same, only the measurement of parental burnout varied.

The “PBA sample” consisted of 2536 participants, and the “PBI sample” was constituted of 3815 participants. The clinical cut-off score on the PBA is 86 (Brianda et al., 2023) and the clinical cut-off score on the PBI is 74 (Ibid.), which were used to create the “burnout” groups. In the PBA sample, the “burnout” group was therefore composed of parents scoring above 86. The “control” group was composed of parents scoring below 52. In the PBI sample, the “burnout” group was composed of parents scoring above 74. The “control” group consisted of parents scoring below 53.

After case-control matching parents in burnout and control groups based on socio-demographic predictors of child maltreatment (more information in the **Statistical Analyses**’ section), the PBA sample consisted of 426 parents (213 parents in each group – i.e., burnout or control), and in the PBI sample a total of 308 case-control matches were found (154 per group – i.e., burnout or control). The majority of the PBA sample consisted of mothers (86.4%), who on average were between 19 and 24 years old (92.5%), with on average 2 children ($M = 2.13$, $SD = .98$). They earned between 2500-4000 Euros (39%) or between 1000-2500 Euros (26.8%). In the PBI sample, the majority of participants were also mothers (71.4%), aged between 30 and 35 years (16.9%), 35 and 39 years (19.5%), and 45 and 49 years (19.8%), with on average 2 children ($M = 2.25$, $SD = 1.05$). They earned mostly between 2500-4000 Euros (40.9%) and 1000-2500 Euros (31.2%) monthly.

7.2.2 Measures

Parental Burnout was measured using two questionnaires. The *Parental Burnout Assessment* (PBA; Roskam et al., 2018) is a 23-item self-report questionnaire, that measures four factors: exhaustion (e.g., “I’m so tired out by my role as a parent that sleeping doesn’t seem like enough”), emotional distancing from one’s children (e.g., “Outside the usual routines (lifts in the car, bedtime, meals) I’m no longer able to make an effort for my child(ren)”), contrast with the parent that they used to be (e.g., “I don’t think I’m the good father/mother that I used to be to my child(ren)”), and feeling fed up/saturated with their parental role (e.g., “I can’t stand my role as a

father/mother anymore”). Participants respond on a 7-point frequency scale, ranging from *never* (0) to *every day* (6). The total score is computed by summing all the items: a higher score reflects a higher level of parental burnout (in the current sample, $\alpha = .98$, $\omega = .98$). The *Parental Burnout Inventory* (PBI; Roskam et al., 2017) is a 22-item self-report questionnaire, that measures three factors: exhaustion (e.g., “I feel emotionally drained by my parental role”), emotional distancing (e.g., “I sometimes feel as though I am taking care of my children on autopilot”), and loss of parental accomplishment (e.g., “I accomplish many worthwhile things as a parent”, reversed). Participants respond on the same 7-point frequency scale as the PBA, and a higher score reflects a higher degree of parental burnout. In the current sample, the PBI also showed good internal consistency ($\alpha = .92$, $\omega = .91$).

Violence towards the offspring was measured using the Parental Violence Scale (Mikolajczak, Brianda, et al., 2018). The scale is a 15-item self-report questionnaire that measures an array of violent behaviors that fall under the psychological (e.g., “I sometimes threaten to abandon my child if s/he is not good”) and physical violence umbrella (e.g., “When I am angry, I sometimes throw things at my child”). Participants answer to each item on a 8-point frequency scale, ranging from *never* (0) to *several times a day* (7). Considering that the aim of the manuscript is to disentangle the effect of parental burnout on violent behaviors, no composite score was computed; the 15 items were all used as dependent variables.

7.2.3 Statistical analyses

Prior to hypothesis testing, participants were categorized in either burnout or control groups as explained in the **Participants** section (for cut-offs, see Brianda et al., 2023). Parents *at risk* of parental burnout (scores between 52 and 86 for the PBA, and between 53 and 74 for the PBI; see Brianda et al., 2023) were excluded from the main analyses, as the aim of the manuscript was to contrast between parents in parental burnout and parents not in burnout (note that *at risk* parents have been used in complementary analyses, see the **Results** section). Burnout and control groups were then case-control matched based on socio-demographic predictors of child maltreatment, namely: age of the parent, number of children, household income (Bunting et al., 2022), and gender of the parent (Cui et al., 2016).

Education level was not controlled for, as not all studies measured it. This allowed to make sure that potential group differences (burnout versus control) in violent behaviors were not due to the aforementioned socio-demographic predictors of violence. Assumptions were tested prior to performing statistical tests, such as multivariate normality and linearity between parental burnout and violent behaviors. MANOVA analyses were then conducted, in which the group (burnout or control) predicted the 15 items of violent behaviors towards children. MANOVA analyses were preferred over univariate ANOVA, as they allow to control for shared covariance between dependent variables (violence items are supposed to be inter-related), and they also allow to decrease type I error as it reduces the number of repeated mean-comparison analyses. If the MANOVA results turned out to be significant, it would suggest that even when controlling for shared variance between the dependent variables (violence items), parents in burnout and control differed on (specific) violent behaviors. To examine individual effect sizes for each violent behaviors, follow-up univariate tests were conducted.

7.3 Results

As expected, assumption tests revealed that violence items did not distribute normally across burnout groups. However, considering that groups were equal in size, and that linearity was present between violence items and burnout, Hotelling's and Pillai's statistics are robust enough to safely interpret results (Field, 2017). Supplementary analyses were carried out to ensure that the use of the 15 items of violence was the most parsimonious choice, rather than grouping items in sub-types of violence. Exploratory factor analyses consolidated the choice to use all items instead of grouping them in "types" of violence, as only one violence factor emerged in both PBA and PBI samples (see **Table S1** and **S2**).

Parental burnout and the 15 parental violence items correlated in both samples (see **Table 1**), indicating that an increase in parental burnout was associated with an increase in each violent behavior. Results of MANOVA analyses showed that in both samples (PBA and PBI), parents in burnout significantly differed from control parents in terms of violent behaviors, with large effect sizes (**for PBA**: Pillai's trace = .26, $F(15, 410) = 9.67$, $p < .001$, partial $\eta^2 = .26$; Hotelling's trace = .35, $F(15, 410) = 9.67$, $p < .001$, partial

$\eta^2 = .26$; **for PBI**: Pillai's trace = .23, $F(15, 292) = 5.78$, $p < .001$, partial $\eta^2 = .23$. Hotelling's trace = .30, $F(15, 292) = 5.78$, $p < .001$, partial $\eta^2 = .23$).

Table 1
Pearson's Bivariate Correlations between Study Variables

Violence Items	PBI	PBA
1 I sometimes threaten to abandon my child if s/he is not good.	.29***	.34***
2 I sometimes spank or slap my child.	.29***	.25***
3 When my child does something s/he is not allowed to do, I give her/him an angry look and then ignore her/him.	.35***	.41***
4 I sometimes denigrate my child.	.37***	.33***
5 I sometimes damage, destroy or throw objects which are precious to my child to punish her/him (toys, teddy bears, etc.).	.16**	.15***
6 I require my child to live up to my expectations (school success, sports performances, professional aspirations, etc.).	.22***	.08
7 To get her/him to listen to me, I tell my child that I will love her/him even more if s/he does as I say.	.25***	.07
8 Sometimes I shake my child.	.19***	.19***
9 I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.).	.38***	.44***
10 I sometimes lose my temper and fly off the handle when I'm with my child.	.51***	.42***
11 I sometimes hurt my child with a belt, a hairbrush, a stick or some other object.	.14*	.11*
12 I sometimes tell my child that I am going to leave and that s/he will not see me again if s/he continues to be difficult.	.27***	.30***
13 I sometimes mock my child.	.27***	.17***
14 When I am angry, I sometimes throw things at my child.	.18**	.16***
15 When my child is disobedient, I tell her/him that I don't love her/him anymore.	.20***	.06

Note. N PBI sample: 308. N PBA sample: 426. Pearson's r is considered small below .30, moderate between .30 and .50, and large above .50 (moderate and large are in bold). Correlations computed with PBI and PBA's continuous scores, and not categorical.

Subsequent univariate tests (see **Table 2**) revealed that in both samples, several results replicated (both in significance and large effect size). Four items had large effect-size and strong significance in both PBA and PBI samples: parents in burnout significantly and strongly gave more angry stares/ignored, denigrated their child more, said things they regretted more, and lost their temper more, compared to matched controls. The latter showed the strongest effect size in both samples. Considering that the “losing temper” item is rather vague, supplementary analyses were carried out to understand to which violence item it correlated most, thus allowing to refine our understanding of this item (i.e., physical or psychological loss of temper). Results showed that losing temper, in both samples, was the most correlated to the parent saying things they regret. Thus, parental burnout seems to have the strongest effect on losing the temper, which seems to be mostly a verbal loss of temper (strongest correlation between loss of temper – Item 10 – and regretting what they said to their child – Item 9; see **Tables S3** and **S4**).

By contrast, despite being statistically significantly related to parental burnout, nine items had a small effect in both PBA and PBI samples: spanking or slapping one’s child; damaging/destroying/throw objects precious to the child to punish her/him; require one’s child to live up to one’s expectations (school success, sports performances, professional aspirations); tell the child that one will love her/him even more if s/he does as one say; shaking one’s child; hurting one’s child with a belt, a hairbrush, a stick or some other object; mocking one’s child; throw things at one’s child; tell one’s child that one does not love her/him anymore.

Only two items had effects that were inconsistent across samples: threaten to abandon the child if s/he is not good had a large effect in the PBA sample and small effect in the PBI sample, and telling one’s child that one is going to leave and that s/he will not see one again if s/he continues to be difficult, which had a moderate effect in the PBA sample and a small effect in the PBI sample.

Table 2*MANOVA Analyses for Two Samples: One Measuring Parental Burnout with the PBA, One with the PBI*

Violent Behaviors	Sample	Burnout Group M(SD)	Control Group M(SD)	<i>F</i>	<i>p</i>	η_p^2
1 I sometimes threaten to abandon my child if s/he is not good.	PBA	1.98(1.61)	1.14(.48)	53.54	< .001***	.11
	PBI	1.41(1.22)	.99(.68)	13.56	< .001***	.04
2 I sometimes spank or slap my child.	PBA	1.89(1.36)	1.41(.72)	20.54	< .001***	.05
	PBI	1.70(1.37)	1.21(.90)	13.62	< .001***	.04
3 When my child does something s/he is not allowed to do, I give her/him an angry look and then ignore her/him.	PBA	3.33(2.01)	2.03(1.35)	61.88	< .001***	.13
	PBI	2.64(1.87)	1.65(1.38)	27.90	< .001***	.08
4 I sometimes denigrate my child.	PBA	2.01(1.54)	1.32(.76)	34.49	< .001***	.08
	PBI	1.71(1.40)	1.04(.61)	29.64	< .001***	.09

5 I sometimes damage, destroy or throw objects which are precious to my child to punish her/him (toys, teddy bears, etc.).	PBA	1.26(.95)	1.07(.34)	7.42	.007**	.02
	PBI	1.12(.83)	.99(.66)	2.57	.11	.01
6 I require my child to live up to my expectations (school success, sports performances, professional aspirations, etc.).	PBA	2.41(2.05)	2.12(1.70)	2.46	.12	.01
	PBI	2.02(1.72)	1.56(1.32)	6.95	.01*	.02
7 To get her/him to listen to me, I tell my child that I will love her/him even more if s/he does as I say.	PBA	1.51(1.49)	1.31(1.15)	2.44	.12	.01
	PBI	1.42(1.39)	1.05(.81)	8.15	.01*	.03
8 Sometimes I shake my child.	PBA	1.43(1.08)	1.31(1.15)	16.94	< .001***	.04
	PBI	1.26(.93)	1.03(.68)	5.95	.02*	.02
9 I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.).	PBA	3.06(1.80)	1.85(1.18)	67.98	< .001***	.14
	PBI	2.24(1.58)	1.38(.93)	33.78	< .001***	.10
10 I sometimes lose my temper and fly off the handle when I'm with my child.	PBA	3.81(1.86)	2.47(1.31)	74.45	< .001***	.15
	PBI	3.12(1.93)	1.63(1.13)	68.92	< .001***	.18

11 I sometimes hurt my child with a belt, a hairbrush, a stick or some other object.	PBA	1.08(.65)	1.00(.18)	2.94	.09	.01
	PBI	1.03(.74)	.94(.60)	1.62	.20	.01
12 I sometimes tell my child that I am going to leave and that s/he will not see me again if s/he continues to be difficult.	PBA	1.69(1.43)	1.10(.39)	34.30	< .001***	.08
	PBI	1.33(1.15)	.97(.57)	12.42	< .001***	.04
13 I sometimes mock my child.	PBA	1.62(1.14)	1.33(.93)	8.61	.004**	.02
	PBI	1.49(1.09)	1.08(.72)	15.08	< .001***	.05
14 When I am angry, I sometimes throw things at my child.	PBA	1.13(.64)	1.02(.25)	4.89	.03*	.01
	PBI	1.07(.75)	.93(.47)	3.99	.05	.01
15 When my child is disobedient, I tell her/him that I don't love her/him anymore.	PBA	1.05(.44)	1.00(.22)	2.39	.12	.01
	PBI	1.04(.68)	.91(.45)	3.96	.05	.01

Note. Partial eta squares are small around .01, moderate around .06, and large around .14 (**in bold**).

7.3.1 Complementary Analysis

The results of the above analyses support the view that in the current sample parental burnout leads to more psychological violence than physical violence. However, one may wonder if as parental burnout becomes more severe, there may be a shift from psychological to physical violence. Supplemental analyses were carried out to understand whether this assumption is grounded. Because there were not enough parents in severe burnout to create matched samples, new samples were created that allowed us to compare parents *at risk of* burnout with parents *in burnout* (more information in the *Notes* of **Table S5**). Results replicated in both samples (i.e., PBA and PBI) the following findings (only findings with medium effect sizes are reported): parents in burnout exhibited more non-verbal (i.e., angry look/ignore the child) and verbal violent behaviors (i.e., denigrating the child, saying things that they regret), as well as a higher loss of temper, compared to parents at risk of burnout. Thus, an increase in severity in the parent's burnout state was most strongly associated with an accentuation in non-verbal and verbal violent behaviors, as well as loss of temperamental control, but not necessarily with a considerable increase in physical violence.

7.4 Discussion

The current manuscript sought to provide more nuance to the finding that parental burnout is an important predictor and catalyzer of violence towards the offspring. Results indicate that parental burnout does indeed increase the risk of many violent behaviors compared to matched control parents, however its effects vary across violent behaviors, thus nuancing previous results.

Firstly, the current findings suggest that no matter the parental burnout measurement used, parents in burnout exhibit significantly and strongly more angry looks/ignoring the child, denigration of the child, saying things that are later regretted, and generally report losing more their temper, compared to matched control parents. However, more nuance should be applied when speaking about the link between parental burnout and violence towards children, as the current findings emphasize that parental burnout particularly increases the risk of a more covert-type of violence against children -

psychological violence - rather than physical. Thus, the current manuscript formally demonstrates for the first time that high levels of burnout do not imply a substantial increase in physical violence behaviors.

Intuitively, one might assume that this is somewhat less alarming news, as physical violence could cause more detrimental effects on children, due to its life-threatening nature. However, this notion has been debunked. In fact, it seems that psychological violence is not only the most prevalent (Stoltenborgh et al., 2015), but that it also has the most detrimental consequences. In fact, it has been associated with increases in the likelihood of developing more depressive disorders, anxiety disorders, schizophrenia, substance abuse, suicidal behaviors, risky sexual behaviors, heart disease, type 2 diabetes, migraines, tobacco use, more than physical violence or neglect (for a meta-analysis, see Norman et al., 2012). Thus, even if parental burnout increases the risk of psychological more than physical violence, professionals accompanying parents in burnout should remain attentive to the children, especially if psychological violence is less visible.

Another interesting result of the current study is that the highest effect of parental burnout observed in both samples was an increase in loss of temper. Supplementary analyses revealed that this item was most strongly correlated with saying things to the child that they later regret. Thus, losing temper could conceptually be considered as a potential verbal temper loss. That parents in burnout come to loose temper is not surprising, as previous research has shown that burnout decreases both inhibitory control (Van Der Linden et al., 2005) and emotion regulation (Brandão et al., 2024). And both the lack of inhibition and of emotion regulation have been shown to be implicated in violence (for systematic reviews, see Humenik et al., 2020; Navas-Casado et al., 2023). What is particularly interesting, though, is that the loss of temper leads to more verbal than physical violence in parents in burnout. One possible explanation are the very high parenting standards of these parents (e.g., Furutani et al., 2020; Lin et al., 2022; Sorkkila & Aunola, 2019) and the fact that parents in burnout feel both distressed and very guilty when they are not the parent they aimed to be (actual-ideal discrepancy) and when they are not the parent that they think society wants them to be (actual-socially prescribed discrepancy) (Roskam, Philippot, et al., 2021). Moreover, violence has recently been shown to reinforce perfectionistic concerns in these parents (Schitteck et al., 2023a). Finally, the rise of laws protecting

children's rights (United Nations, 1989b) in the past decades could have led to a change in mentality in parents, thus also potentially explaining why physical violence is less prevalent. It is plausible that these ingredients prevent them from resorting to physical violence.

7.4.1 Limitations and Future Directions

Although the current manuscript draws on large samples and robust methods, limitations should also be acknowledged. *First*, although the studies were anonymous, it is possible that parents under-reported physical violence, due to its highly sensitive nature. This is also visible in the low means and standard deviations of the violence items measured in the current manuscript. *Second*, both samples are overwhelmingly constituted by more mothers than fathers: around three fourths are mothers. Although we controlled for gender, from the start we did not have an equal number of mothers and fathers. Thus, we can still safely say that the results were not biased by gender as we controlled for it, but we cannot pretend that we had a representative sample for fathers from the start. It would be worthwhile to replicate the current findings in a sample that is more representative of fathers.

In addition to addressing these limitations, the current results hold implications both for research and clinical work. In regards to research, future studies would greatly benefit from going deeper into the processes that link parental burnout to violence towards the offspring. There is an urgent need to investigate the potential impact of parental burnout on emotional states and executive functioning, as they might constitute the missing link between parental burnout and violence. Identifying these variables would allow to understand (i) the process that leads to violence towards children, and (ii) where clinicians can implement a multitude of treatments (i.e., treating for parental burnout and its potential mediators related to child maltreatment). Finally, it is unclear whether these results would replicate in other cultures, as the definition of maltreating behaviors can vary across cultures (e.g., Korbin, 2002; Raman & Hodes, 2012), hence the need to replicate in samples that differ culturally. For clinical work, the current results do not only corroborate the need to pay attention to children when there is a suspicion of parental burnout, but to also pay particular attention to types of violence that could go more unnoticed, due to the struggle to identify and measure them (e.g., Dube et al., 2023).

7.4.2 Concluding Comment

In conclusion, the current study shows that parental burnout does significantly increase the risk of violent behaviors towards children, but that it seems to play a more pivotal role in psychological violence, rather than physical. Parental burnout seems to particularly affect the loss of temper in parents, highlighting the urgent need to investigate the potential impact of parental burnout on emotional states and executive functioning.

7.5 Supplementary Materials

Table S1

Exploratory Factor Analysis of Violence Items in PBA Sample

	Factor 1 Loadings	Uniqueness
Item 1	0.62	0.62
Item 2	0.62	0.62
Item 3	0.57	0.67
Item 4	0.63	0.60
Item 5	0.54	0.71
Item 6	0.32	0.90
Item 7	0.32	0.90
Item 8	0.56	0.68
Item 9	0.63	0.61
Item 10	0.52	0.73
Item 11	0.52	0.73
Item 12	0.66	0.56
Item 13	0.42	0.82
Item 14	0.51	0.74
Item 15	0.32	0.90

Note. Principal axis factoring extraction method was used in combination of Oblimin rotation. Percentage of variance explained: 28.13.

Table S2
Exploratory Factor Analysis of Violence Items in PBI Sample

	Factor 1 Loadings	Uniqueness
Item 1	0.73	0.46
Item 2	0.69	0.52
Item 3	0.54	0.71
Item 4	0.74	0.46
Item 5	0.72	0.48
Item 6	0.55	0.70
Item 7	0.60	0.63
Item 8	0.78	0.39
Item 9	0.72	0.48
Item 10	0.65	0.57
Item 11	0.83	0.31
Item 12	0.81	0.34
Item 13	0.73	0.46
Item 14	0.80	0.35
Item 15	0.85	0.29

Note. Principal axis factoring extraction method was used in combination of Oblimin rotation. Percentage of variance explained: 52.30.

Table S3*Pearson's Bivariate Correlations between Violence Items in PBA Sample*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Item 1														
Item 2	.47***													
Item 3	.35***	.31***												
Item 4	.35***	.41***	.38***											
Item 5	.33***	.36***	.24***	.41***										
Item 6	.22***	.09	.25***	.23***	.18***									
Item 7	.23***	.20***	.26***	.09	.15**	.20***								
Item 8	.29***	.57***	.30***	.28***	.32***	.14**	.31***							
Item 9	.40***	.35***	.43***	.48***	.27***	.16***	.17***	.33***						
Item 10	.34***	.33***	.31***	.36***	.23***	.18***	.06	.24***	.55***					
Item 11	.25***	.26***	.26***	.33***	.46***	.21***	.14**	.27***	.20***	.22***				
Item 12	.53***	.40***	.35***	.34***	.22***	.14**	.23***	.37***	.40***	.36***	.36***			
Item 13	.22***	.21***	.29***	.37***	.17***	.22***	.14**	.23***	.31***	.15**	.22***	.24***		
Item 14	.19***	.27***	.30***	.35***	.38***	.11*	.08	.30***	.22***	.18***	.47***	.44***	.18***	
Item 15	.25***	.06	.18***	.11*	.19***	.13**	.22***	.11*	.16***	.10*	.19***	.38***	.19***	.16**

Table S4
Pearson's Bivariate Correlations between Violence Items in PBI Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Item 1														
Item 2	.56***													
Item 3	.42***	.41***												
Item 4	.51***	.48***	.49***											
Item 5	.54***	.45***	.36***	.49***										
Item 6	.36***	.34***	.43***	.52***	.44***									
Item 7	.44***	.43***	.35***	.39***	.48***	.35***								
Item 8	.51***	.55***	.32***	.55***	.57***	.38***	.49***							
Item 9	.56***	.55***	.53***	.54***	.41***	.52***	.38***	.55***						
Item 10	.44***	.52***	.56***	.59***	.35***	.43***	.35***	.49***	.70***					
Item 11	.60***	.56***	.31***	.51***	.73***	.36***	.56***	.79***	.47***	.40***				
Item 12	.73***	.62***	.31***	.60***	.54***	.36***	.48***	.63***	.58***	.49***	.69***			
Item 13	.48***	.43***	.40***	.65***	.52***	.44***	.37***	.56***	.57***	.56***	.60***	.56***		
Item 14	.61***	.59***	.37***	.55***	.61***	.35***	.53***	.65***	.53***	.44***	.69***	.69***	.58***	
Item 15	.60***	.47***	.37***	.59***	.73***	.40***	.52***	.72***	.49***	.43***	.87***	.69***	.66***	.75***

Table S5

MANOVA Analyses for Two Samples: One Measuring Parental Burnout with the PBA, One with the PBI.

Violent Behaviors	Sample	Burnout Group M(SD)	At Risk Group M(SD)	<i>F</i>	<i>p</i>	η^2
1 I sometimes threaten to abandon my child if s/he is not good.	PBA	1.97(1.60)	1.41(1.04)	16.76	< .001***	.04
	PBI	1.22(.92)	1.05(.66)	24.67	< .001***	.01
2 I sometimes spank or slap my child.	PBA	1.84(1.29)	1.76(1.26)	.41	.52	.001
	PBI	1.74(1.30)	1.46(1.01)	29.27	< .001***	.01
3 When my child does something s/he is not allowed to do, I give her/him an angry look and then ignore her/him.	PBA	3.41(1.94)	2.54(1.73)	21.69	< .001***	.05
	PBI	2.41(1.76)	1.77(1.28)	84.13	< .001***	.04
4 I sometimes denigrate my child.	PBA	1.99(1.50)	1.47(.97)	16.58	< .001***	.04
	PBI	1.57(1.25)	1.16(.67)	85.43	< .001***	.04
5 I sometimes damage, destroy or throw objects which are precious to my child to punish her/him (toys, teddy bears, etc.).	PBA	1.23(.92)	1.15(.67)	1.16	.28	.003

	PBI	1.07(.63)	1.00(.49)	6.70	.01*	.003
6 I require my child to live up to my expectations (school success, sports performances, professional aspirations, etc.).	PBA	2.28(1.95)	1.94(1.69)	3.40	.07	.01
	PBI	2.08(1.79)	1.64(1.39)	37.61	< .001***	.02
7 To get her/him to listen to me, I tell my child that I will love her/him even more if s/he does as I say.	PBA	1.53(1.49)	1.31(1.22)	2.59	.11	.01
	PBI	1.23(.87)	1.05(.76)	25.58	< .001***	.01
8 Sometimes I shake my child.	PBA	1.44(1.09)	1.20(.70)	6.54	.01*	.02
	PBI	1.23(.87)	1.04(.53)	35.57	< .001***	.02
9 I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.).	PBA	3.11(1.80)	2.36(1.60)	18.74	< .001***	.05
	PBI	2.17(1.55)	1.65(1.06)	75.19	< .001***	.04
10 I sometimes lose my temper and fly off the handle when I'm with my child.	PBA	3.83(1.84)	3.16(1.54)	15.16	< .001***	.04
	PBI	2.97(1.80)	2.02(1.23)	192.46	< .001***	.08
11 I sometimes hurt my child with a belt, a hairbrush, a stick or some other object.	PBA	1.08(.66)	.97(.27)	4.89	.03*	.01

	PBI	.98(.57)	.93(.36)	5.72	.02*	.003
12 I sometimes tell my child that I am going to leave and that s/he will not see me again if s/he continues to be difficult.	PBA	1.69(1.43)	1.22(.69)	16.94	< .001***	.04
	PBI	1.23(.91)	1.01(.50)	43.89	< .001***	.02
13 I sometimes mock my child.	PBA	1.66(1.15)	1.36(.84)	8.59	.004**	.02
	PBI	1.41(.97)	1.20(.71)	31.13	< .001***	.02
14 When I am angry, I sometimes throw things at my child.	PBA	1.14(.66)	1.01(.35)	6.33	.01*	.02
	PBI	1.06(.67)	.96(.40)	16.61	< .001***	.01
15 When my child is disobedient, I tell her/him that I don't love her/him anymore.	PBA	1.04(.43)	.96(.25)	4.82	.03*	.01
	PBI	.97(.50)	.94(.41)	5.33	.02*	.003

Note. Samples were extracted from the same databases as the main analyses of the manuscript. Participants were categorized in either “in burnout” or “at risk of burnout”, in accordance with cut-off scores for the PBA and the PBI. “Burnout” and “at risk of burnout” were case-control matched on age of the parent, number of children, household income, and gender of the parent. For the PBA sample 386 participants were extracted (193 in each group), whereas this number was of 2000 for the PBI sample (1000 participants per group). Partial eta squares are small around .01, moderate around .06, and large around .14.

Chapter 8: General Discussion

The aim of the current thesis was to better understand the link between parental burnout and violence toward children by addressing four key questions:

- To what extent does parental burnout predict child maltreatment relative to other known risk factors?
- Are there risk and protective factors that moderate this association?
- Why does parental burnout lead to violence?
- Which violent behaviors are most influenced by parental burnout?

The discussion is structured into several sections that dive deeper into each of these questions. Each section begins with a key finding from the thesis, followed by a discussion of its theoretical and clinical implications, as well as suggestions for future research. After all findings have been addressed, the broader limitations of the thesis are presented. The discussion concludes by highlighting the core message of the thesis.

8.1 To what extent does parental burnout predict child maltreatment relative to other known risk factors?

8.1.1 Parental burnout is a strong and distinct risk factor in violence towards children

Finding 1

Chapter 2 examined the relative weight of parental burnout compared to other strong predictors of violence towards children. Parental burnout was compared to job burnout, depression, generalized anxiety disorder, borderline personality, sadism, psychopathy, Machiavellianism, narcissism, and child abuse potential, in predicting violence towards the offspring. The results showed that, when all predictors were entered together in a model, parental burnout was the second strongest predictor of violence towards the offspring (after borderline personality disorder). This finding suggests that **parental burnout is a *strong* and *distinct* risk factor for violence towards children, even more than several other key mental health disorders.**

Theoretical implications for finding 1

The present finding contributes to existing knowledge by reinforcing the distinct role of parental burnout in predicting violence toward children. Previous research has already demonstrated the unique impact of parental

burnout compared to other psychological conditions such as depression and job burnout (Mikolajczak et al., 2020). The current results extend this line of evidence by showing that parental burnout continues to make a unique contribution to the prediction of violence, even when considered alongside a broader range of psychological risk factors.

Moreover, while much of the existing literature on violence towards children has emphasized trait-like predictors (for a meta-analysis, see Stith et al., 2009) or transdiagnostic processes, such as emotional reactivity and regulation (for a meta-analysis, see Lavi et al., 2021), as core predictors of violence, the present results underscore the value of incorporating context-specific factors, such as parental burnout, into theoretical models and empirical investigations of violence towards children. Thus, more broadly, these findings highlight the significant role, and the pressing need to include state-like predictors in understanding violence toward children.

Clinical implications for finding 1

The fact that parental burnout keeps a strong predictive link to violence towards children, even when controlling for several child maltreatment predictors, points to several clinical implications.

First, the robust association between burnout and violence supports the integration of parental burnout *screening* into routine assessments within medical, psychological, and family welfare contexts. While the World Health Organization has issued guidelines emphasizing the importance of addressing parental mental health to prevent child maltreatment (World Health Organization, 2023), and while parental mental health (Rinehart et al., 2005), particularly depression (Dubowitz et al., 2011), is frequently screened in clinical and child welfare settings, parental burnout remains largely overlooked. Our findings suggest that this omission could result in missed opportunities for substantially decreasing the risk of violence towards children. Risk assessment tools employed by child protective services, for instance, could benefit from including parental burnout-related items. This could easily be done with a shorter version of a parental burnout measure that has been created, allowing to detect parental burnout in only five items (Aunola et al., 2021). Because burnout captures a unique blend of symptoms not shared with other commonly screened pathologies, it may provide critical

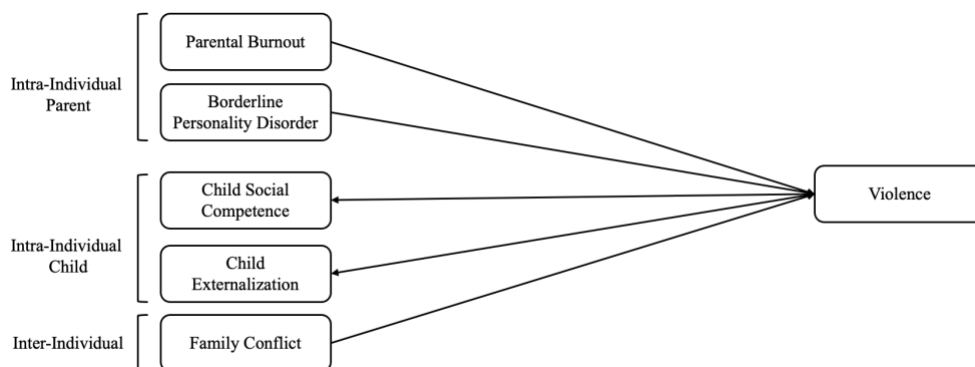
insight into a parent's capacity to cope with caregiving demands before more severe outcomes emerge.

Second, the results emphasize the recognition of parental burnout as a clinically relevant condition, based on the findings that it robustly predicts violence above and beyond other predictors. In fact, recognizing mental illness is an important step to reduce stigma and encourage seeking help and support (Picco et al., 2018). At first glance, it may seem contradictory to emphasize parental burnout as a significant risk factor for violence toward children while simultaneously advocating for the destigmatization of this condition. However, these two statements are not mutually exclusive. The key lies in emphasizing the treatable and reversible nature of parental burnout (e.g., Brianda et al., 2020). By presenting it as a modifiable state that can be effectively addressed through appropriate support and intervention, it becomes possible to acknowledge its potential consequences without reinforcing stigma. This perspective promotes a compassionate, preventive approach, one that recognizes the seriousness of the risk while fostering understanding and offering pathways toward recovery, rather than blame. Researchers and clinicians can help in this recognition, by actively framing parental burnout for what it is: a valid, non-stigmatizing, and treatable psychological condition, with real consequences for the individual and the family.

Third, addressing parental burnout as a *specific* contributor to violence towards children offers a promising avenue for interrupting the intergenerational transmission of violence. Children who grow up in households affected by parental burnout may be more likely to experience violence, which in turn increases their own risk of exhibiting violent behaviors in adulthood (Widom et al., 2015). Considering that parental burnout has shown to have a distinctive and strong effect on violence towards children, even when controlling for other strong predictors of child maltreatment, intervening at the level of parental burnout may thus serve as a critical lever for helping breaking cycles of violence. Thus, treating parental burnout is not only in the interest of the unwell parent, but also in the interest of the child (for treatment options on parents with parental burnout, see Brianda et al., 2020; Bayot et al., 2024; for treatments on parents from the general population, see Urbanowicz et al., 2024a; Urbanowicz et al., 2024b).

Future directions of finding 1

The current findings and past body of literature have only tested parental burnout's link to violence compared to *intra*-individual factors within the unwell parent solely. A meta-analysis investigating the most influential predictors of child maltreatment does indeed suggest that intra-individual factors within the parent comprise most risk factors for violence, but it should be noted that there are also factors outside of the parent that increase the risk of violence, such as *intra*-individual factors within the child (e.g., child's social competences and externalizing behaviors; for a meta-analysis, see Stith et al., 2009), as well as *inter*-individual factors between the parent and their surroundings (e.g., conflict within the family system, for a meta-analysis, see Stith et al., 2009). Thus, considering that our results add more proof in the distinctive effect of parental burnout in the context of violence towards children compared to other *intra*-individual factors within the parent, parental burnout should also be integrated alongside child characteristics and inter-personal factors. Doing so would inform whether we should clinically only work on reducing parental burnout and potential borderline personality disorder within the parent (as suggested by the current findings), or if also focusing on modifiable characteristics of the child or on the family system would reduce even more the risk of violence. The figure hereafter summarizes future directions.



Note. For variables relating to children we have added double-ended arrows, because although empirical evidence shows that children's externalizing behaviors may increase the likelihood of parental violence does not mean that the child is responsible for this violence. A child is never responsible for a parent's violence, and the child's characteristics or temperament can never justify the use of violence, even if they are statistically associated with an increased risk.

Building on these insights into the unique role of parental burnout on violence, the next step involves examining the conditions under which this relationship may be strengthened or weakened. Understanding not only that parental burnout predicts violence, but also when and for whom this risk is most pronounced, is crucial for refining theoretical models and informing intervention strategies. To that end, the next section delves deeper into the moderating roles of emotional intelligence and insecure attachment styles in the relationship between parental burnout and violence toward children.

8.2 Are there risk and protective factors that moderate this association?

8.2.1 *Characteristics within the parent moderate the burnout-violence link*

Findings 2

The findings presented in chapters 3 and 4 of this thesis demonstrate that **the strength of the relationship between parental burnout and violence can be influenced by third variables**, specifically, insecure attachment styles and emotional intelligence.

Chapter 3 examined whether insecure attachment styles, specifically anxious, dismissing, and fearful attachment styles, amplify the link between parental burnout and violence. Findings indicated that fearful attachment style significantly strengthened this relationship: the more pronounced the parent's fearful attachment style, the stronger the association between parental burnout and violence.

Chapter 4 explored whether trait emotional intelligence moderates the link between parental burnout and violence. The results revealed a significant buffering effect: the higher a parent's emotional intelligence, the weaker the association between parental burnout and violence. This suggests that emotional intelligence serves as a protective factor. However, it is important to note that while trait emotional intelligence attenuated the link, it did not eliminate it entirely. In other words, even parents with very high levels of emotional intelligence were still at increased risk of engaging in violence if they were experiencing parental burnout. Thus, emotional intelligence can reduce, but not fully cancel, the risk posed by parental burnout.

Theoretical implications for findings 2

These findings have important theoretical implications for models of parental burnout and violence. They suggest that the relationship between parental burnout and violence is not uniform across individuals but varies depending on underlying intra-individual characteristics (i.e., fearful attachment style and emotional intelligence). Recognizing fearful attachment style as a risk factor and emotional intelligence as a protective factor advances theoretical models by emphasizing the role of intra-individual variability in how burnout translates into violent behavior. The amplifying effect of fearful attachment implies that certain attachment-based vulnerabilities may intensify the conditions under which insecure attachment style manifests. Conversely, the fact that high emotional intelligence does not fully interrupt the burnout-violence link suggests that burnout may override even strong psychological resources, pointing to its profound impact. Both will be discussed hereafter.

It is possible that fearful attachment style strengthens the link between parental burnout and violence, because burnout amplifies the underlying conditions that enable this risk factors to exert its influence. Notably, this attachment style is linked to greater experiences of shame and lower self-esteem (Passanisi et al., 2015), as well as increased sensitivity to stress (Kidd et al., 2013), and burnout has been shown to exacerbate these very factors (Barr, 2022; Erkorkmaz et al., 2018; Pruessner et al., 1999), thereby creating a psychological environment in which the impact of fearful attachment style can fully express. Thus, fearful attachment style may amplify the link between parental burnout and violence, because burnout exacerbates the conditions under which fearful attachment can fully manifest.

For emotional intelligence, even when identifying it as a moderator, parental burnout remains a robust and statistically significant predictor of violence. Thus, while emotional intelligence may *adjust* the degree of risk, it does not *disrupt* the association. One reason as to why emotional intelligence does not fully protect against violence in the case of burnout, could be that burnout depletes the very resources that this protective factor relies on to function effectively. Literature suggests that emotional intelligence relies on a multitude of factors, including cognitive (e.g., executive functions, see Alipour et al., 2011; Sarvarian et al., 2016; decision-making processes, see Alkozei et al., 2016), emotional (e.g., self-awareness, see Killian, 2012), and

physiological resources (i.e., heart rate variability, see Prajapati et al., 2020; cardiac vagal control, see Vanuk et al., 2019). Interestingly, research has shown that every single one of these is susceptible to be reduced (or exhausted) by burnout (Gao et al., 2023; Gavelin et al., 2022; Hernandez et al., 2015; Lennartsson et al., 2016). Thus, even a parent with high emotional intelligence may struggle to apply emotional intelligence strategies when its underlying resources are exhausted by burnout.

Together, these results underscore the need for integrative models of violence that account for both contextual (e.g., burnout) and dispositional (e.g., trait emotional intelligence, fearful attachment style) factors interacting together.

Clinical implications for findings 2

These findings have several important clinical implications for the prevention and reduction of violence.

First, the finding that fearful attachment style amplifies the risk of violence gives reason to screen for it, as well as its underlying factors exacerbating its effect (e.g., lower self-esteem and increased sensitivity to stress). After the screening stage, targeting both parental burnout and fearful attachment style in intervention efforts could seem warranted. Results *would suggest* that therapeutic approaches should incorporate attachment-based interventions, as we did in the discussion section of Chapter 3, with the aim to allow the parent to foster a more secure attachment style. However, that article was written in the first year of the PhD, and since then, more nuance should be provided to the results. In fact, we only have proof that fearful attachment style exacerbates the link between parental burnout and violence, meaning that if we decrease fearful attachment style, we should observe a decrease in the parental burnout-violence link. That being said, this does not necessarily mean that its opposite (i.e., increasing a secure attachment style) would act as a protective factor in that link. In fact, we had initially measured secure attachment style in the same study, but since we did not find any previous research supporting its moderating effect, we could not include it in the article. However, when running exploratory analyses for the current discussion section, secure attachment style does *not* act as a protective factor in the link between parental burnout and violence ($\beta = .04, p = .18$). In other words, increasing secure attachment style does not decrease the parental

burnout-violence link, however decreasing fearful attachment style does. Thus, our findings suggest that secure attachment style may not be sufficient to counteract the effects of parental burnout on violent behavior. Conversely, reducing fearful attachment does help diminish the connection between burnout and violence. This indicates that targeting maladaptive patterns present in fearful attachment may be more effective than fostering security. Interventions focused on addressing maladaptive factors in fearful attachment could therefore play a more crucial role in prevention strategies. Not many interventions on attachment have specifically measured fearful attachment style, however one study found that fearfully-attached individuals benefit from attachment-focused as well as relationship skill-focused interventions (Kilmann et al., 2006). Particularly, fearfully-attached individuals benefit from components of the interventions that target their self-esteem, by increasing it (Kilmann et al., 2006). Thus, targeting self-esteem in fearfully attached individuals could be a promising avenue to clinically decrease the link between parental burnout and violence.

Second, clinicians should also screen for emotional intelligence, because it can help reduce the risk of violence. They should also be aware that a parent with high emotional intelligence may still be at risk of being violent, if experiencing significant burnout, because emotional intelligence alone is not a sufficient protective factor. Therefore, screening should not only be done for burnout, but also for emotional intelligence. This would allow to make the most of emotional intelligence interventions (for an overview of emotional intelligence interventions, see Table 1 in Kotsou et al. (2019)'s systematic review), in addition to treating for burnout. The fact that even highly emotionally competent parents may become violent when overwhelmed by burnout, really emphasizes the importance of early detection and intervention, not just for parents who are visibly struggling but also for those who appear emotionally competent. A multi-dimensional clinical approach is essential, that considers both stress levels and underlying psychological vulnerabilities.

Future directions for findings 2

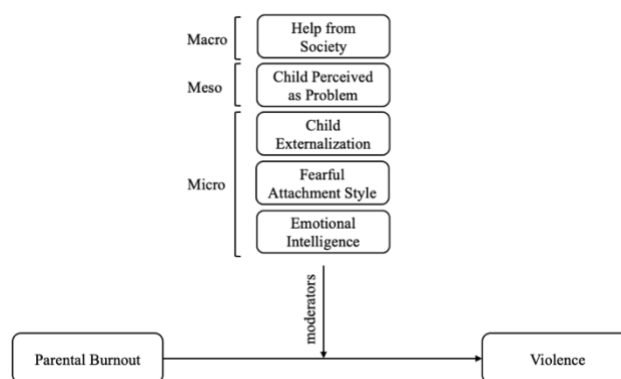
Even though the current findings allow to identify some of the conditions under which the link between parental burnout and violence

changes, several future directions should be explored to inform more about the burnout-violence link.

First, we do not have an indication on the moderators that matter the most in the link between parental burnout and violence. While we could attempt to infer that emotional intelligence is the strongest moderator ($\beta_{\text{Emotional Intelligence}} = -.15$; $\beta_{\text{Fearful Attachment}} = .11$), there remains a lack of clarity regarding which moderators influence the most this link, *when accounting for the other moderators*. We measured insecure attachment styles and emotional intelligence in two different samples, which precludes us from formally comparing the relative weight of each moderator. Testing one moderator at a time provides only a limited understanding of what truly influences the link between parental burnout and violence. As Montoya (2019) points out, analyzing moderators in separate models risks confounding interaction effects, potentially inflating the perceived importance of any single factor by ignoring how others may interact or overlap. Thus, it is important to compare moderators allowing to clinically inform which moderator has the most weight in modifying the link between parental burnout and violence.

Second, there is a necessity to identify moderators across different levels - micro, meso, and macro - clarifying where different actors in society can exert influence. The current thesis only tested intra-individual factors within the parent (i.e., emotional intelligence and attachment styles), but including different levels such as within the child or the partner, the relationships surrounding the parent, or broader contexts surrounding the parent, also matter. This is because of two reasons. First, during the supervision of a Master's thesis where we investigated the moderating role of couple's relationship factors (i.e., intimacy, passion, commitment, marital and sexual satisfaction, as well as partner support) in the link between parental burnout and violence, we observed that none of the relational variables acted as protective factors in the link between parental burnout and violence (see De Witte et al., 2024), suggesting that *positive* aspects in the relationship with the co-parent do not play a significant role in reducing violence in the case of burnout. Second, another master's thesis that has recently investigated the moderating role of the child's temperament in the link between parental burnout and violence, found that the negative emotionality (i.e., fear, sadness, and irritability) of children below 5 years of age increase the link between parental burnout and violence, thus acting as a

risk factor (Paimparet, 2025). These results, taken together with the results presented in the thesis, suggest that potentially intra-individual factors (i.e., within the parent or within the child) play a more pivotal role in the link between parental burnout and violence, rather than inter-individual factors in the relationships surrounding the parent. But there remains an urgent need to identify what can be worked on, within the parent, within the child (micro-level), in the relationships surrounding the parent (meso-level; e.g., focusing on *negative* aspects of the parental relationship), as well as the cultural and societal context surrounding the parent (macro-level). Identifying non-significant factors is also valuable, as it helps clarify which areas should be prioritized and which may be deprioritized in future research or intervention efforts. Based on prior research on child maltreatment, we hypothesize that in parents who are hyper-reactive to stress (micro-level; for a meta-analysis, see Stith et al., 2009), that have children with externalizing behaviors (micro-level; for a meta-analysis, see Stith et al., 2009), and who perceive the child as a problem (meso-level; for a meta-analysis, see Stith et al., 2009), the link between parental burnout and violence could be exacerbated. On the contrary, parents who perceive that they receive help for their parental role from society (e.g., paid parental leave; macro-level; see Bullinger et al., 2025; Tanis et al., 2024), the link between parental burnout and violence might be buffered. A model controlling for *all* the aforementioned moderators should be estimated, to understand which moderator has the strongest effect, and at which level we ought to act (i.e., micro, macro, or meso). The figure hereafter summarizes future directions.



Note. Child externalization refers to externalizing behavior problems, which involve children's outward actions that negatively affect their environment, including disruptive, hyperactive, and aggressive behaviors (for a review, see Liu, 2004).

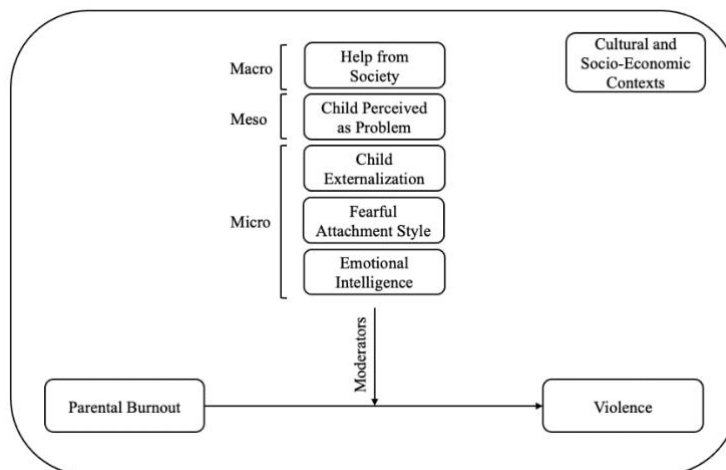
Third, identifying which moderators most strongly influence the relationship between parental burnout and violence is important, but this understanding must be grounded in the broader context in which these dynamics unfold. Prior research has consistently shown that parental burnout is linked to violence across various cultural settings (e.g., for English-speaking and Belgian samples, see Roskam & Mikolajczak, 2020; for Spain, Perú, Chile, Uruguay, Ecuador, Cuba, Costa Rica, and Argentina, see Manrique-Millones et al., 2022; for Finnish sample, see Aunola et al., 2021; for Polish sample, see Szczygieł et al., 2020). These findings highlight the cross-cultural relevance of parental burnout as a predictor of violence. Yet it remains important to consider cultural and contextual factors when studying and intervening on the moderators we have identified, as they may shape how these manifest and interact. Consider this scenario: as a researcher, we have observed that emotional intelligence is a protective factor cross-sectionally, and now we would like to test an emotional intelligence intervention, to see whether experimentally the link between parental burnout and violence would be decreased as we increase emotional intelligence. We choose to prioritize and start intervening on one aspect of emotional intelligence, such as emotion regulation (Salovey & Mayer, 1990), as it represents a key transdiagnostic process across various forms of psychopathology (Aldao & Nolen-Hoeksema, 2010). Should we assume that interventions to improve emotion regulation are culturally universal? Research has shown that culture shapes the way that we regulate our emotions. Two broad distinctions have been made in terms of cultures, where individualism emphasizes the pursuit of personal goals over those of the group, whereas collectivism tends to prioritize group goals above individual interests (Shavitt et al., 2006). If we look at research on how culture shapes emotion regulation strategies, findings suggest that “individuals benefit most from engaging in emotion regulation strategies that are congruent with their cultural background” (Liddell & Williams, 2019). For example, after a stressful experience, individuals from collectivistic cultures often rely more on *interpersonal* emotion regulation (Liddell & Williams, 2019), namely regulating one’s emotions through others by seeking support, sharing feelings, or asking others to help calm them (Hofmann et al., 2016), as these strategies are more commonly practiced and culturally reinforced (Liddell & Williams, 2019). Interestingly, while

interpersonal regulation is more common in collectivistic contexts, many Eastern countries, which tend to be collectivistic, also show higher use of emotional suppression and avoidance of emotions (for a meta-analysis, see Song et al., 2024), strategies that could be viewed as incompatible with seeking emotional support mentioned just before. This apparent contradiction can be explained in two ways. First, suppression still supports collectivistic values by helping maintain social harmony (Chiang, 2012). Thus, interpersonal strategies may be used selectively, in ways that do not disrupt social harmony. Second, recent research suggests that broad cultural categories like “individualistic” and “collectivistic” can be overly simplistic, which could explain the contrasting results. In fact, two collectivistic cultures might seem similar due to their prioritization of the group, but they still might differ based on their attitudinal orientations (Triandis & Gelfand, 1998). In fact, we can distinguish between vertical and horizontal orientations (Triandis & Gelfand, 1998). A horizontal orientation emphasizes equality, while a vertical orientation emphasizes hierarchy (Triandis & Gelfand, 1998). Therefore, a culture may be collectivistic but still differ significantly based on whether it values equality or hierarchy. These combinations (i.e., vertical individualism, horizontal individualism, vertical collectivism, horizontal collectivism), can shape how people regulate their emotions. For instance, a recent study allows us to understand the previously presented contradicting results. Individuals who value *hierarchical* collectivism are more likely to rely on suppression, while individuals that value *egalitarian* collectivism tend to use other emotion regulation strategies, such as cognitive reappraisal, and not suppression (Klein et al., 2024). This more detailed view shows how both cultural context and individual attitudes shape emotion regulation strategies. For researchers and practitioners seeking to promote emotion regulation, or the moderators we identified in general, to reduce the link between parental burnout and violence, these nuances highlight the importance of developing interventions that are culturally sensitive. Thus, in the scenario about emotion regulation, considering that people benefit most from using emotion regulation strategies that match their culture, and that culture and attitudinal orientations may change the emotion regulation strategy most commonly used, creating interventions without considering the patient’s cultural background or values may not only be ineffective, but potentially harmful.

Consideration of the cultural background is thus required to maximize benefits for patients.

While this paragraph has primarily focused on culture, other contextual factors, such as socio-economic status, can also play a critical role. Socio-economic status has been shown to shape health literacy (Svendson et al., 2020), which in turn influences both attitudes towards psychotherapy (Schröder et al., 2025) and the likelihood of seeking mental health care (Bonabi et al., 2016). This suggests that psychological interventions should also consider the socio-economic reality of the patient. For instance, certain interventions might be more effective with patients who have less socio-economical stresses, who are well versed in mental health, and who are likely to voluntarily seek therapy. Interventions might not be as effective in the opposite scenario, with patients struggling socio-economically, who are not aware of mental illness, and who would not resort to therapy if needed.

These considerations emphasize the importance of understanding moderating effects within the context of the patients. Tailoring interventions to the cultural and contextual realities of each parent could improve the effectiveness of interventions. A one-size-fits-all approach may overlook critical factors that influence the effectiveness of treatment. Designing and evaluating interventions through a culturally and contextually sensitive framework will ensure that findings are applicable and impactful across diverse populations. The figure hereafter summarizes future directions.



In sum, future studies should determine which moderators have the strongest effects and broaden the search for moderators across multiple levels (micro, meso, and macro). Importantly, this exploration should always consider the patient's cultural and socio-economic context, especially when designing interventions.

Building on these insights, the next section turns to the question of how parental burnout may impair a parent's ability to regulate their behavior, thereby increasing the likelihood of violence. While emotional intelligence and attachment style clarify for whom the burnout-violence link is stronger or weaker, they do not explain *why* this link occurs. To address this, two chapters of this thesis examine the mechanisms underlying this relationship. The first investigates whether difficulties in executive functions, specifically inhibition, flexibility, and updating of working memory, mediate the link between parental burnout and violent behavior. The second explores the internal processes within parental burnout itself, identifying how specific symptoms unfold over time and contribute to the emergence of violence.

8.3 Which mechanisms explain why parental burnout leads to violence?

8.3.1 *Parental burnout predicts more self-reported executive functions problems, but these do not robustly relate to violence*

Finding 3

In chapter 5, we aimed to understand whether problems in executive functions, namely inhibition, flexibility, and updating of working memory, mediate the link between parental burnout and violence. We found that parental burnout was consistently associated with increased self-reported executive function problems across all domains (i.e., flexibility, inhibition, and updating of working memory), both cross-sectionally and longitudinally. However, problems in self-reported executive function did not reliably mediate the relationship between parental burnout and violence (i.e., self-reported inhibition problems mediated this link cross-sectionally, but not longitudinally). Additionally, objectively measured executive functions were not significantly related to either parental burnout or violence. However, while executive function difficulties did not consistently predict increased

violent behavior, **parental burnout did consistently predict more self-reported executive functions problems.**

Theoretical implications of finding 3

Although executive functions did not fully mediate the relationship between parental burnout and violence, our findings provide compelling evidence that parental burnout is reliably associated with increased self-reported problems in executive functioning. Both cross-sectional and longitudinal analyses revealed that higher levels of parental burnout predict greater impairments in inhibition, cognitive flexibility, and updating of working memory. These results are consistent with neurobiological models of burnout, which suggest that chronic stress in the occupational domain leads to dysfunctional HPA axis activation, increasing cortisol secretion, which in turn leads to prefrontal cortex dysregulation (Blix et al., 2013; Kudielka et al., 2006; Marin et al., 2011). Such dysregulation may represent a physiological mechanism through which parental burnout (and not just professional burnout) depletes cognitive abilities. In fact, we now have independent proof that parental burnout leads to an increase in cortisol secretion (Brianda, Roskam, & Mikolajczak, 2020), and that parental burnout leads to an increase in cognitive problems (i.e., the results of the current thesis), thus potentially indicating that a similar pathway is also present in parental burnout.

Theoretically, these findings are significant in that they establish, for the first time, a link between parental burnout and cognitive dysfunctioning. Prior research has emphasized the behavioral consequences of parental burnout, such as increased risk of violence and neglect, as well as relational difficulties, such as conflict with a co-parent (e.g., Mikolajczak et al., 2019). The current findings extend this literature by demonstrating that the impact of parental burnout also encompasses fundamental cognitive processes. This suggests that the cognitive costs of burnout, widely studied in occupational contexts (e.g., for systematic reviews, see Gavelin et al., 2022; Renaud & Lacroix, 2023), are not confined to the professional sphere but may also impair parents' everyday functioning. More broadly, these results indicate that parental burnout may compromise core self-regulatory abilities, considering that executive functions are understood as foundational for self-regulation (Hofmann et al., 2012). Among self-regulatory abilities,

difficulties in these executive functions can compromise emotion regulation and reduce tolerance to distress (Andrés et al., 2021; Koay & and Meter, 2023). In turn, these deficits may make the parenting role feel more overwhelming, potentially increasing vulnerability to further burnout and reactive, maladaptive responses.

Taken together, these findings offer important theoretical insight into how parental burnout operates not only as a behavioral or relational level as showed in previous research, but also as a cognitive vulnerability that may impair parents' ability to regulate their behavior and emotions in the face of everyday parenting demands.

Clinical implication 3

Impairments in executive functioning should be seriously considered and screened for in the context of parental burnout, as they are associated with various mental health conditions, such as eating disorders, addiction, and suicidality (for longitudinal evidence, see Bredemeier & Miller, 2015; Dufour et al., 2023; Jarmolowicz et al., 2013; Kräplin et al., 2022; Morales-Muñoz et al., 2021), and social maladaptation, further complicating family dynamics and support systems (Bonino & Cattelino, 1999; McQuade et al., 2013; Schulte et al., 2022; Segal et al., 2015; von Hippel & Dunlop, 2005; Yuan et al., 2022). When such cognitive impairments are downstream effects of burnout, interventions that target executive functioning in isolation, without addressing the burnout itself, may be misdirected or insufficient. A purely cognitive remediation approach may neglect the broader emotional, interpersonal, and contextual contributors to a parent's struggles. Therefore, in clinical settings, when working with burned-out parents who present cognitive complaints, it is crucial to address the potential root cause: parental burnout. Treating burnout itself is likely to lead to parallel improvements in cognitive functioning.

Moreover, as observed in my own clinical practice, many parents experiencing burnout find executive function problems particularly distressing. These challenges often give rise to fears of permanent cognitive decline, leading parents to question whether they will ever regain their former mental clarity and control. Clinicians should explicitly address these concerns by incorporating psychoeducation on the cognitive outcomes of parental burnout. Many parents interpret their cognitive lapses, such as forgetfulness,

mental fog, or impulsivity, as signs of lasting damage. However, evidence suggests that these impairments are not necessarily permanent. Rather, they are reversible consequences of chronic stress and burnout. Studies have shown that when burnout is treated, through interventions such as physical exercise or stress-reduction programs (Beck et al., 2013; Gavelin et al., 2015), cognitive functioning can improve. It is therefore essential for clinicians to validate cognitive complaints within the burnout framework and reframe them as temporary and treatable. This approach can reduce shame, normalize the experience, and enhance motivation to engage in treatment. By understanding that their cognitive difficulties are a common and reversible feature of burnout, rather than a reflection of personal failure or irreversible decline, parents may feel empowered to seek help and apply coping strategies. Ultimately, integrating this perspective into clinical practice can support more effective and holistic care for parents experiencing burnout.

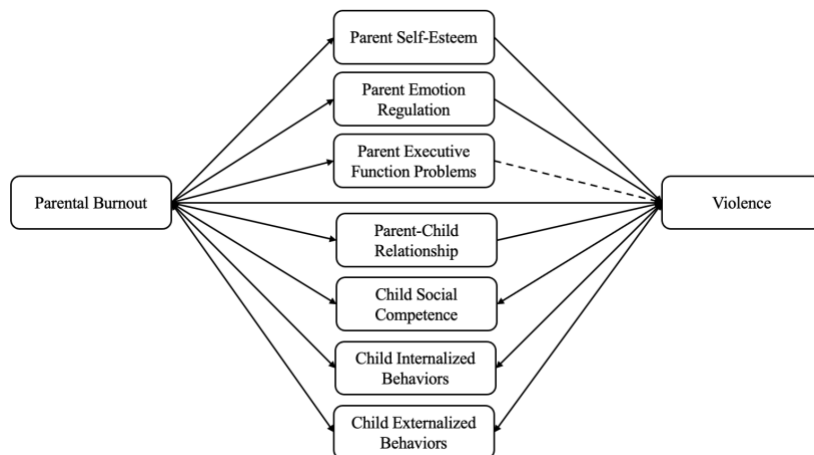
Future directions for finding 3

The absence of strong mediation effects of executive functions in the link between parental burnout and violence, particularly in longitudinal analyses, highlights the need for continued investigation into the precise role executive functions play in this relationship. As noted in Chapter 5, the mediating role of executive functioning should be re-evaluated using larger, more representative samples, as well as more diverse and ecologically valid measures of executive functioning. Additionally, future research should consider the role of contextual moderators that may influence when and how impairments in executive functioning translate into aggressive parenting behaviors. It is possible that under certain conditions executive dysfunction becomes a more salient risk factor for violence. Taking this into account, executive functions need to keep being studied in the context of parental burnout, and also in the link between parental burnout and violence.

While the current thesis does not provide evidence for alternative mediating pathways, this does not imply that such pathways do not exist. Rather, it underscores the need to expand the scope. Drawing on established predictors of child maltreatment (for a meta-analysis, see Stith et al., 2009; Lavi et al., 2021) and known correlates of burnout, we propose several promising candidates for future mediation models: the quality of the parent-child relationship (Jia-Yuan et al., 2025), diminished parental self-esteem

(Aunola et al., 2020), diminished parental emotion regulation (for a longitudinal study, see Teuber et al., 2025), the child's social competence (Anthony et al., 2005; Cho et al., 2024; Wang et al., 2023), and the child's internalized and externalized behavioral problems (Anthony et al., 2005; Woine et al., 2024). Said differently, parental burnout may erode the relationship between parent and child, reduce parents' confidence in their caregiving abilities and self-esteem, reduce their ability to regulate their emotions, impair child's social competence, as well as increasing the child's internalized and externalized behavioral problems, each of which could increase the likelihood of violent interactions.

These factors may not only operate independently, but also in parallel. It is therefore essential that future studies assess these mediators concurrently within integrated models to determine which mechanisms carry the strongest explanatory power. Such an approach would help clarify the pathways through which parental burnout can lead to violence and inform the development of more targeted interventions to prevent violence by addressing the most influential underlying processes. The figure hereafter summarizes future directions. The link between executive function problems and violence is represented by a dotted line, as the results of the current thesis did not provide robust proof.



Note. For variables relating to children we have added double-ended arrows, because although empirical evidence shows that children's externalizing behaviors may increase the likelihood of parental violence does not mean that the child is responsible for this violence. A child is never responsible for a parent's violence, and the child's characteristics or temperament can never justify the use of violence, even if they are statistically associated with an increased risk

Moreover, as suggested in the discussion section of Chapter 5, it is possible that some mediators and processes only emerge under specific conditions, that is, in the presence of certain moderators. Thus, in the case of executive functions, contextual factors may determine whether deficits lead to violent behavior. The inconsistent link between executive functioning and violence suggests that this relationship may not be universal, but shaped by surrounding circumstances. Child characteristics, such as temperament or perceived vulnerability, may influence how these deficits manifest, potentially prompting greater regulatory effort or increasing parental frustration. Cultural norms and societal attitudes toward aggression may further moderate the expression of executive function impairments. In environments with strong anti-violence norms, for example, individuals may exert more effort to control aggressive impulses. Altogether, this highlights a complex, context-dependent pathway between executive functioning and violence.

In conclusion, while this section does not support a consistent mediating role for executive functioning in the link between parental burnout and violence, it does not exclude the possibility that other mechanisms are at play. The results point to the importance of considering alternative mediators and the conditions under which they operate. Moreover, executive functioning may still be relevant in specific contexts shaped by individual or cultural moderators. The next section builds on this complexity by examining alternative mechanisms underlying the link between parental burnout and violence. The following section shifts focus to the *timing* of violence within the burnout trajectory, showing that violent behaviors tend to emerge in the later stages of parental burnout.

8.3.2 Burnout can gradually lead violence

Finding 4

Chapter 6 aimed to understand at what parental burnout stage (i.e., symptoms) parents become violent. Results showed that parental burnout is a developmental process that seems to start with exhaustion, which catalyzes the development of all other parental burnout symptoms. Moreover, there seems to be a process relating parental burnout symptoms to violence towards the offspring: exhaustion is prospectively linked to an increase in emotional distancing and feeling fed up, which are then linked to a prospective increase

in violence. This suggests that parents experiencing burnout do not resort to violence at the initial onset, but rather violent behaviors tend to emerge at a more advanced stage in the progression of parental burnout. Thus, parents in burnout do not immediately become violent.

Theoretical implications for finding 4

By analyzing symptom-level scores, we observed that parental burnout unfolds in stages that ultimately can lead to violence. These findings refine the commonly reported association between parental burnout and violence, by emphasizing the temporal and process-like dimension of this relationship. Rather than suggesting that violence emerges immediately when burnout begins, the results indicate that violent behaviors are more likely to occur as parental burnout progresses and specific symptoms, such as emotional distancing and feeling fed up, develop over time. This nuance moves beyond a static view of burnout and supports the idea that violence is a downstream outcome of a deteriorating state. Said differently parents in burnout do not suddenly become violent, but rather there is an insidious process that in time increases the likelihood of violence. This temporal process offers theoretical support for stage-based models of psychological illness (i.e., McGorry et al., 2006), in which specific symptoms progressively intensify over time, as well as being consistent with developmental models of professional burnout (longitudinally, see Taris et al., 2005) and prior research on parental burnout using alternative measures (longitudinally, see Mikolajczak et al., 2019), thus also supporting the view that parental burnout is best understood as an unfolding process rather than a fixed state. This thesis contributes to prior knowledge by showing that parental burnout develops over time, and highlights the process by which it can culminate in violence.

Clinical implications for finding 4

Understanding that parental burnout follows a progressive trajectory, that begins with exhaustion and eventually leads to emotional distancing or feelings of being fed up, which finally can lead to violence, allows clinicians to identify and intervene at earlier, less severe stages of burnout. Clinically, we should try to reduce exhaustion as soon as it sets in, because it can then lead to the development of other symptoms.

In the parental burnout literature, no intervention to date has been formally tested for its effectiveness on specific symptoms, such as exhaustion. Rather, interventions have only been evaluated based on their impact on the overall parental burnout score. Consequently, we cannot currently recommend symptom-specific treatments grounded solely in this literature. However, two important points can guide clinical thinking.

First, research has consistently shown that parental burnout arises from a chronic imbalance between parenting-related stressors and available resources (Mikolajczak & Roskam, 2018). Clinically, this suggests that efforts to restore a healthier balance, either by reducing stressors or enhancing resources, can lead to a reduction in parental burnout. Moreover, given that the parental burnout total score is heavily weighted toward exhaustion items (39% of the items measuring exhaustion, compared to emotional distancing reflecting 13% of the total parental burnout score, feeling fed up 22%, and contrast 26%), interventions that successfully reduce overall parental burnout are also likely to alleviate exhaustion specifically, even if not directly targeted at it. Two interventions, both delivered in group settings, have demonstrated particular promise in rebalancing the stressor-resource balance (Brianda, Roskam, Gross, et al., 2020). One follows a directive format, while the other is non-directive. The non-directive intervention, in particular, appears to produce the most substantial improvements in the balance between risks and resources. It offers participants a sense of unconditional acceptance and belonging, as its approach is grounded in active, empathetic, caring, and authentic listening (Brianda, Roskam, Gross, et al., 2020). While no study has yet formally tested whether this approach specifically reduces exhaustion symptoms, the positive shift in the stressor-resource balance it generates may be expected to yield downstream improvements in exhaustion as well.

Second, we can look beyond the parenting domain to the well-established job burnout literature, because both parental and job burnout literatures share one symptom: exhaustion. The exhaustion interventions in the job burnout literature have shown that cognitive behavioral therapy (CBT) has shown strong effectiveness in reducing exhaustion in professional populations. CBT interventions typically target underlying mechanisms such as sleep disturbances, lack of recovery, dysfunctional thoughts and worry, reduced behavioral activation, low perceived competence, and inflexibility; all of which are known contributors to exhaustion (for a scoping review, see

van de Leur et al., 2024). Translating these CBT protocols to parenting populations could offer a valuable strategy for specifically reducing exhaustion, thereby decreasing the risk of developing more severe symptoms of parental burnout and associated violent behaviors.

In sum, by recognizing exhaustion as the entry point into the parental burnout trajectory, clinicians can act preventively rather than reactively. Although symptom-specific treatments are still lacking in the parental burnout literature, promising avenues from both parental and occupational burnout research point toward practical strategies, such as risk–resource rebalancing interventions and adapted CBT, that could help reduce exhaustion early on. Prioritizing early intervention may ultimately prevent the escalation of burnout and its most harmful outcomes, including violence.

Future directions for finding 4

Before presenting future directions, it should be acknowledged that studying symptoms of parental burnout in research is not easy. For instance, the beta coefficients linking individual symptoms to violence presented in chapter 6 were small, likely due to the high shared variance among symptoms within the same statistical model. When computing correlations between parental burnout symptoms (from data used in Chapter 6), they show to be remarkably high, ranging from .64 to .81 (see table hereafter), making it difficult to disentangle the unique effects of each symptom.

	Time 1	Time 2	Time 3
Exhaustion and Emotional Distancing	.66***	.64***	.65***
Exhaustion and Fed Up	.77***	.72***	.73***
Exhaustion and Contrast	.81***	.81***	.81***
Emotional Distancing and Fed Up	.76***	.77***	.70***
Emotional Distancing and Contrast	.73***	.74***	.69***
Fed Up and Contrast	.80***	.74***	.79***

This suggests that while focusing on individual symptoms is theoretically appealing, it poses methodological challenges. That being said, research on parental burnout has been able to work with symptom level analyses (e.g., Blanchard et al., 2021; Kalkan et al., 2022). Thus, although

working with symptoms can constitute a challenge statistically, when possible, research should attempt working with them.

One important new question emerging from this work concerns the *speed* of the progression from parental burnout symptoms to violence. While this thesis has shown that parental burnout develops in a processual manner, beginning with emotional exhaustion, followed by emotional distancing and feelings of being fed up, and potentially culminating in violent behavior, it remains unclear how long each of these stages typically last, and how quickly burnout escalates into harmful behavior. In fact, the time laps between symptoms was chosen a priori (i.e., four months between each measurement wave), before data collection, but this time frame is not necessarily how long it would take for burnout symptoms to unfold. Understanding this temporal trajectory would offer critical insights for both theory and practice, especially in guiding the timing of clinical interventions. To address this question, future research could turn to experience sampling methods (ESM; for an initial investigation of this method, see Csikszentmihalyi & Larson, 1987), which would involve collecting data on symptoms and violent behaviors at much shorter, repeated intervals (e.g., daily or weekly), and would allow to account for variability in self-report measures. Using this method allows for a more precise mapping of how parental burnout unfolds over time within individuals, and how quickly early symptoms may evolve into more concerning outcomes. ESM is particularly well suited to capture dynamic psychological processes, and its feasibility in parental burnout research has already been demonstrated (Blanchard, Revol, et al., 2023). By adopting this methodological approach, researchers could begin to answer questions such as: How rapidly does emotional distancing and feeling fed up follow emotional exhaustion? What is the typical time lag between emotional distancing and feeling fed up, and the emergence of violent behaviors? These insights could provide clinicians with guidance on when to intervene and how urgently. This way, investigating the temporal dynamics of burnout would not only be a theoretical advancement, it would also hold significant promise for improving preventive efforts and tailoring interventions to critical periods of risk.

Given that parental burnout unfolds progressively, it becomes important to identify when a parent is significantly more exhausted, emotionally distant, or fed up than their healthy counterparts. While cut-off

scores for overall parental burnout have been established (Brianda et al., 2023), similar efforts should be extended to each individual symptom. Doing so would not only help determine a parent's specific stage in the burnout process but also enable earlier and more symptom-specific intervention. This granularity could inform more precise clinical assessments and ultimately improve the ability to prevent further deterioration before it culminates in negative outcomes, such as violence. Understanding where a parent falls on the continuum of burnout can thus be a powerful tool for timely, targeted prevention.

After cut-off points for each symptom have been created, previous treatment research could re-analyze their data to see whether their specific treatment contributes to decreasing every parental burnout symptom or only specific ones. To date, treatments for parental burnout have been evaluated based on changes in the total score (see hereafter). However, the total score is heavily weighted toward exhaustion (as stated before, 39% of the total scale measures exhaustion). Thus, it is probable that these same treatments will show to decrease exhaustion, as it constitutes almost half of the parental burnout score, score that has been shown to be decreased by specific treatments. It would be worth knowing whether these same interventions also decrease the other symptoms. Many treatment options exist now to treat parental burnout, such as directive (i.e., aiming at reducing risk factors and increasing resources in a group setting), non-directive (i.e., parents being able to share their struggles in parenthood in a group setting) treatments (Brianda, Roskam, Gross, et al., 2020), mindfulness and self-compassion based interventions (Bayot et al., 2024), informal mindfulness practices (Urbanowicz et al., 2024a), cognitive behavioral stress management (Urbanowicz et al., 2023), and positive psychology interventions (i.e., CARE - Coherence, Attention, Relationship, Engagement; Urbanowicz et al., 2024b). Considering that symptoms such as feeling fed up and emotional distancing are more directly linked to increased risk of violence, developing symptom-specific treatments and assessing their efficacy becomes an essential next step in both research and clinical practice. Re-analyzing past data would allow to understand whether these existing treatments effectively address each core symptom of parental burnout, or whether new interventions are needed for particular stages and symptoms of burnout.

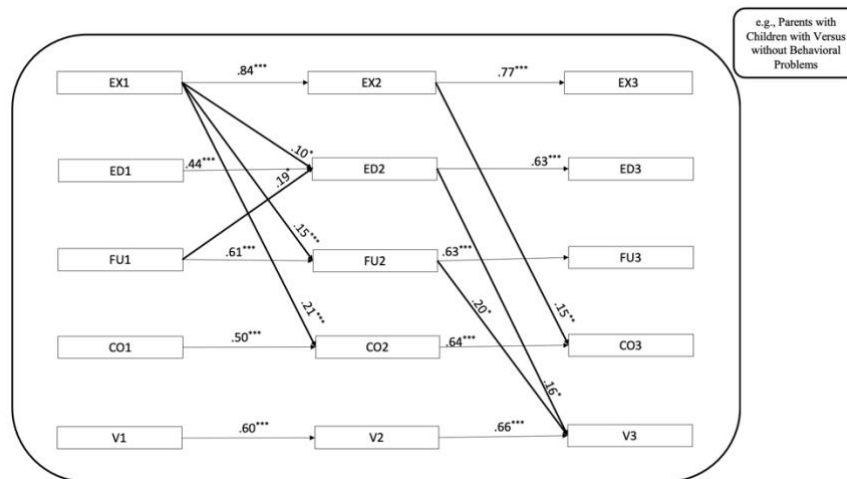
Up to this point, we have discussed the developmental process that unfolds within parental burnout leading to violence, as though the parent is the sole contributor, with effects flowing unidirectionally from parent to child (i.e., parental burnout symptoms leading to more violence towards children). This framing implicitly positions the parent as the sole driver of these dynamics. However, such a view may overlook important reciprocal and contextual influences. For instance, early studies have shown that parental burnout predicts both behavior problems in children (for longitudinal not testing bi-directional effects, see Chen et al., 2022; for cross-sectional, see Kerr et al., 2021) as well as conflict in the parental couple (Mikolajczak, Brianda, et al., 2018). However, recent evidence has started hypothesizing the opposite effects, such as that child behaviors may also act as antecedents to burnout (through positive parenting practices, for cross-sectional, see Woine et al., 2024). Considering that both sets of findings have mostly been tested cross-sectionally (or longitudinally, but not testing both directions), it is unclear whether behavioral problems in children and spousal conflicts could also precipitate the development of parental burnout symptoms. For instance, we know that as parental burnout unfolds, in later stages it pushes the parent to emotionally distance from their children, thus pushing the parental burnout issues also in inter-individual relationships. Could it not be possible that as the parent develops parental burnout symptoms, they may also start distancing from their spouse, such as with an increase in conflict? Moreover, could it also be that as parental burnout progresses, they start perceiving their child's behavior as being more problematic, as they're not able to deal with them as they normally would? Since internalizing and externalizing behaviors in children have so far only been assessed from the parent's perspective in the context of parental burnout, it is possible that, as burnout progresses, parents begin to perceive their child's behavior as increasingly problematic. We propose using exploratory cross-lagged panel models to examine bi-directional and reciprocal relationships between parental burnout, contextual stressors (e.g., child behaviors, couple conflict), and violence. This approach would help uncover whether external contextual factors not only are predicted by burnout, but also influence the symptom development in burnout. For example, as exhaustion sets in, a parent may begin to distance themselves not only from their child but also from their spouse, potentially increasing conflict. This escalating strain could lead the parent to feel

especially fed up with their parenting role, which in turn may cause them to perceive their child's behavior as increasingly problematic, ultimately raising the risk of violence. While this progression is plausible, it remains speculative due to a lack of studies examining the individual symptoms of parental burnout. Broader research on burnout highlights the importance of adopting a systemic perspective. Recent literature on burnout emphasizes that focusing exclusively on the individual, without addressing potential dysfunctions in their environment or context, often results in relapse or recurrence of burnout (Beacham et al., 2024; Goroll, 2020; Montgomery et al., 2015). Similarly, some authors have argued that "burnout is the obvious outcome of systems that foster unrealistic expectations and low tolerance for error" (Montgomery et al., 2015, p.38). In the case of parental burnout, research has demonstrated that its etiology is shaped not only by individual vulnerabilities but also by interpersonal and family-level factors. Among the most influential are dimensions of family functioning, including exposure to conflict, co-parental agreement, marital satisfaction, and family disorganization (Mikolajczak, Raes, et al., 2018; Nguyen et al., 2025). Thus, the systemic lens seems to be relevant in the context of parental burnout. Moreover, this systemic lens is equally relevant to understanding violence toward children. While the present thesis has focused primarily on parental factors influencing violent behaviors, it is crucial to recognize violence as a multi-systemic phenomenon (Kozłowska & Hanney, 2003). For instance, there seems to be an overlapping and systemic risk with violence within a family (Runyan, 2007). In homes where intimate partner violence occurs (i.e., within the parent-parent subsystem), the conflict depletes parents' emotional resources (Finkel et al., 2009), which in turn increases the risk of child maltreatment within the parent-child subsystem (Runyan, 2007). The systemic perspective within child maltreatment is valuable for two reasons. First, conceptualizing violence within a systems framework broadens our understanding of the problem and, by extension, the range of potential solutions (Kozłowska & Hanney, 2003). Second, according to systems theory, changes at one level (e.g., individual, family, community, or institutional) can generate ripple effects at other levels, thereby amplifying the overall impact of interventions (Kozłowska & Hanney, 2003). Taken together, these insights suggest that advancing research on parental burnout and child maltreatment would benefit greatly from a systemic approach, allowing for more comprehensive

prevention and intervention strategies that address not only individuals but also the broader contexts in which they live.

In addition to exploring mediational relations between parental burnout and contextual factors, future research should also consider how these variables may function either as integral components of the developmental chain (i.e., mediators) or as conditions that alter the strength and paths between symptoms and violence (i.e., moderators). As theorized by multiple pillars in the mediation and moderation analyses (Baron & Kenny, 1986; Hayes, 2022), variables can constitute both a mediating and a moderating role. This is because they ask two fundamentally different questions. Mediations ask *how* A goes to B, thus testing a process or stages between the two, whereas moderations ask *for whom* or *under which condition* A leads to B (or A does not lead to B). For instance, it is possible that exhaustion might increase couple conflict, which in turn could intensify emotional distancing from the child, eventually provoking more behavioral problems in the child, and then resulting in more violence. This represents a mediation chain that would not account for contextual differences between individuals, and thus would identify a process that happens *on average*. However, we could imagine that these same variables might also serve as moderators, shaping whether certain burnout symptoms lead to others. For instance, the link between exhaustion and emotional distancing towards children that we observed in this thesis may be stronger among parents experiencing a child with high externalizing behavior problems, but could be weaker (or even disappear) among those with children without behavioral problems. Said differently, a parent might tip from exhaustion to emotional distance especially when their child has behavioral problems. On the contrary, parents with children that do not exhibit behavioral problems might stop at the exhaustion stage, thus burnout never developing further. Similar to the mediation/process analyses mentioned in the previous paragraph, these assumptions for moderation analyses are only exploratory, due to the lack of symptom-based research conducted in parental burnout. Ideally, researchers would be able to test such moderation effects within specific paths of the burnout process, but given the exploratory nature of these research question, the precise location for these moderators remains unknown. One methodological solution would be to use multi-group structural equation modeling, re-estimating solely the symptoms-to-violence model (i.e.,

replicating the model in Chapter 6) across distinct subgroups (e.g., parents with children with versus without behavioral problems). This approach would help determine whether the structure and strength of burnout symptom pathways differ meaningfully across contexts, thereby deepening our understanding of how specific environmental conditions may either accelerate or buffer the transition from burnout symptoms to violence. The figure hereafter summarizes the next steps in future directions, with the example estimating the process between parental burnout symptoms and violence towards children, comparing parents with versus without children with behavioral problems.



Related to these mediation and moderation explorations, it is also important for research in parental burnout to move beyond one-time assessments and adopt longitudinal, process-oriented methodologies that can capture these changes. This shift is critical because cross-sectional approaches, while methodologically convenient, often mask the nuanced ways in which burnout symptoms develop and interact. The early stages of this doctoral thesis were grounded in a more static and snapshot view of parental burnout, relying on cross-sectional designs. While such methods are useful for gauging overall effects, they do not adequately reflect the lived experience of parents as their stress and resources *evolve*. In fact, during the PhD, we wrote a supplementary article (not included in the PhD chapters as it did not fit the research questions; see Appendix 2), in which we hypothesized that perfectionism in parents would increase their risk of

parental burnout, which in turn would lead to an increase in violence. What is compelling, is that we showed that if we had tested the hypothesis cross-sectionally, we would have come to the conclusion that perfectionism increases parental burnout, which in turn increases violence. However, when we tested it longitudinally, we actually observed that violence subsequently increases perfectionism. This example illustrates how cross-sectional designs can yield misleading conclusions and underscores the necessity of more causally-informative methodologies. Going forward, it is essential that research into parental burnout and its consequences embraces designs that capture the unfolding nature of psychological processes. Only by tracing how risk factors and symptoms interact across time can we develop truly effective interventions.

While the previous section focuses on understanding why and how parental burnout can lead to violence, through cognitive mechanisms and the progression of burnout symptoms, the next section shifts attention to *which* forms of violence are most affected by parental burnout. Specifically, it examines the behavioral expressions of violence linked to parental burnout, identifying which types of violent behaviors are most likely to increase as a result of burnout.

8.4 Which violent behaviors are most influenced by parental burnout?

8.4.1 Parental burnout has a behavioral footprint: psychological violence

Finding 5

Chapter 7 aimed to investigate which violent behavior is increased by parental burnout, and the extent of such increase. The finding indicates that parental burnout is associated with a marked increase in violent behaviors compared to parents not experiencing burnout. Specifically, more psychological violence, such as giving angry stares or ignoring the child, denigrating the child, saying things later regretted, and losing one's temper were significantly more prevalent among parents in burnout, with temper loss showing the strongest effect. Thus, parental burnout has a behavioral footprint that is mostly through psychological violence towards children.

Theoretical implications for finding 5

The results add specificity to existing models linking parental burnout to child maltreatment by identifying psychological violence as the predominant behavioral expression of burnout. Rather than suggesting that burnout equally increases all forms of violence, the finding refines the theoretical understanding by showing that psychological violence is the primary outlet in burned-out parents.

These findings contribute to positioning parental burnout within the broader landscape of parental psychopathologies by clarifying both its shared and unique associations with psychological violence towards children. This behavioral footprint can be compared with other mental health conditions that also shape parenting behaviors in distinct ways. For instance, previous research has shown that parental depression is linked specifically to an increase in psychological violence over time, but not to heightened levels of physical violence or neglect (Conron et al., 2009). In contrast, physical violence has been more closely associated with parental borderline personality disorder (Laulik et al., 2016) and antisocial personality disorder (Walsh et al., 2002). Furthermore, more severe psychiatric conditions such as schizophrenia and mania have been linked to elevated risks across multiple forms of child maltreatment, including physical, sexual, and psychological maltreatment (Walsh et al., 2002). These distinctions are theoretically important, because they suggest that different psychopathologies are not only risk factors for maltreatment in general, but also channel this risk through specific forms of violence. Placing parental burnout within this typology allows for more nuanced predictive models and intervention strategies that are tailored to the particular manifestations of violence.

However, an important challenge with increasing specificity is the potential difficulty in making broader, generalizable claims. However, emerging evidence suggests that such specificity is justified. A recent meta-analysis by Flor et al. (2025) demonstrates that different types of violence are associated with distinct long-term health consequences in children, reinforcing the importance of differentiating these pathways. For instance, experiencing physical violence is significantly linked to outcomes such as major depressive disorder, alcohol and drug use disorders, eating disorders, and ischemic heart disease, with risk increases up to 16% for depression. On the other hand, psychological violence is associated with elevated risks for

drug use disorders, gynecological conditions, and migraines, with risks rising up to 8% for drug use disorders. These differentiated outcomes underscore that not all forms of violence carry the same developmental burden, and that identifying the specific type of violence associated with particular parental psychopathologies, such as psychological violence in parental burnout, is critical for targeting prevention and intervention for different types of child maltreatment. While such specificity may come at the cost of reduced generalizability, it is precisely this nuanced understanding that enables more targeted and ultimately more effective strategies to address distinct forms of child maltreatment.

Clinical implication for findings 5

The identification and screening of psychological violence is important, and this can be done both with the parent and the child individually. Hibbard et al. (2012) tell us that psychological violence can be difficult to detect, but working with parent and child can help detect it. On the parent's side, Hibbard et al. (2012) suggest that practitioners should be particularly careful about the parent's mental health to detect psychological violence. They mention to screen for depression and substance abuse, but with the findings of the thesis we also know that we should screen for parental burnout as a potential risk factor of psychological violence. This has become easier recently, as a shorter version of the parental burnout assessment scale has been created, allowing to screen for burnout using only 5 items instead of the initial 23 (Aunola et al., 2021). The findings emphasize the need for practitioners to routinely assess psychological violence, when there is a suspicion of parental burnout, as well as assessing parental burnout, when there is a suspicion of psychological violence.

On the child's side, psychological violence can be considered through assessing a child's emotional or behavioral issues. It is important to assess the child's growth and development as potential indicators of psychological violence, as psychological violence can lead to developmental impairments, such as emotional (e.g., anxiety, depression, negative concept of self, somatization, hostility; Arslan, 2016; Spinazzola et al., 2014) and behavioral (alcohol and tobacco use, risk of school dropout, antisocial behavior; Arslan, 2016; Spinazzola et al., 2014). The authors suggest that practitioners can interview the child alone, when developmentally appropriate, as caregivers

may be the source of the maltreatment, but they suggest that practitioners should try to gather information from multiple informants, including childcare providers (Hibbard et al., 2012).

However, even though these authors provide suggestions on how to best detect psychological violence, it should be acknowledged that psychological violence is particularly hard to detect, due to its less visible nature, but also because of its definitional challenges. It is in fact less clear the perimeter delimiting what psychological violence is or is not. In fact, some systematic reviews consider that verbal outbursts constitute a form of psychological violence (see Table 1, Norman et al., 2012), whereas for others it is a totally separate form of violence (see section 1.2, Dube et al., 2023). Even the World Health Organization, being one of the most influential organisms in setting global standards for child protection, gives a clear definition in stating that violence is a form of maltreatment (World Health Organization, 2022a), and that violence can take different forms (i.e., physical, psychological and sexual; World Health Organization, 2022b), but yet does not provide a definition of what psychological violence actually is. Given these definitional ambiguities, psychological violence remains especially difficult for clinicians to identify, assess, and substantiate, making it a form of maltreatment that often goes undetected and unaddressed despite its serious long-term consequences for the child.

Future directions 5

Despite these definitional challenges, research on violence towards children continues to advance, giving the rise of measures that distinguish between different types of violence, including physical and psychological forms (e.g., Parent-Child Conflict Tactics Scales being one of the most prominent, Straus et al., 1998). However, it remains crucial to pay close attention to how psychological violence is conceptualized within these tools, particularly whether verbal outbursts are included as part of this category or treated separately. Such variability can significantly impact how findings are interpreted and how studies are designed, highlighting the importance of transparency in defining and measuring psychological violence. In the future directions we propose, we do not take a definitive stance on how psychological violence should be measured, as this decision ultimately depends on the research objectives. Nevertheless, researchers must remain

mindful that different instruments exist to capture different facets of psychological violence, and the choices they make in this regard carry important theoretical and practical implications.

The current findings allowed us to identify the specific consequences of parental burnout on psychological violence, thus moving a step forward in clarifying the link between parental burnout and violent behaviors toward children. However, more research is still needed to be able to situate parental burnout in the broader domain of child maltreatment. In fact, even though the current thesis focused on violence towards children, it should be noted that research has also consistently shown that parental burnout leads to an increase in neglectful behaviors (for an experimental study, see Brianda et al., 2020). At first glance, these two patterns can seem difficult to reconcile: the rise in psychological violence reflects an addition of harmful behaviors (i.e., commission, Giardino et al., 2019, p.3), whereas neglect reflects an absence or withdrawal of behavior (i.e., omission, Giardino et al., 2019, p.3). This apparent paradox raises an important question for future research: are there distinct profiles of parents in burnout, some who are more prone to violence, others more at risk of neglect? Or does burnout put parents at risk of both forms of child maltreatment? Interestingly, a recent study investigated the predictors of violence and neglect separately and found that their risk factors differed (Liel et al., 2020). The strongest predictor of violence seemed to be parental stress, while the strongest predictors of neglect seemed to be more distal contextual and historical factors, such as couple distress, adverse childhood experiences of the parent, young maternal age, cramped housing, and migration history (Liel et al., 2020). It would be interesting to understand whether certain parents in burnout would be more at risk of being violent, whilst others would be more prone to being neglectful. Latent profile analyses (LPA) would allow to uncover whether different profiles of parents are at greater risk of either form of child maltreatment. Understanding whether such different risk pathways also hold within parents experiencing burnout could provide valuable insights for theory and help design more targeted interventions to protect children from the diverse consequences of parental burnout.

Taken together, the findings of this thesis provide a multifaceted understanding of how parental burnout relates to violence. First, parental burnout stands out as one of the strongest predictors of violence toward

children, than several other psychological conditions, marking it as a unique and significant risk factor. Second, the strength of this association varies depending on individual characteristics, it is amplified by fearful attachment style and buffered by emotional intelligence. Third, while executive function difficulties are linked to burnout, they do not consistently mediate the burnout-violence relationship, suggesting a more limited role in explaining the connection. Within parental burnout, the pathway from burnout to violence appears to follow a temporal process, with early symptoms such as exhaustion giving rise to emotional distancing and feelings of being fed up, which may eventually lead to violent behaviors. Finally, parental burnout is associated with an increase in violence, particularly psychological violence, highlighting its specific behavioral footprint. While these findings contribute important insights, they must be considered in light of several limitations. The next section outlines key methodological and conceptual constraints that frame the interpretation of these results and inform future directions.

8.5 Limitations

Even though the current thesis brings new findings in both the parental burnout and child maltreatment literature, its limitations must be acknowledged. In the following section, we will go through overarching limitations that have either not been mentioned in the discussion sections of the individual chapters, or have not been delved as deep into. In total, seven limitations are acknowledged.

First, an important limitation of this thesis lies in its reliance on self-report data, a common challenge in psychological research, but particularly consequential here given the sensitive nature of one of the constructs under investigation: violence toward children. Self-reporting on this variable may be problematic because of two reasons: social desirability and under-reporting. A minor bias could be due to social desirability, which could have changed the results, especially for the reporting of violent behaviors, which are both socially condemned and illegal. However, this bias does not seem to have had as much incidence as we imagined. In fact, social desirability was statistically controlled in some studies within this thesis (Chapter 2 and Appendix 2) where the results remained stable when controlling for social desirability. For underreporting, this is probably the most noteworthy bias

linked to self-report, and particularly for violence. Considering that violence is reprimanded, it is very likely that parents under-reported any violent behavior towards their children, and this can significantly distort findings. Even when using continuous variables, underreporting of sensitive behaviors like parental violence can significantly bias results, because it restricts the range of data, which can weaken observed associations by masking the true variability in the population. This often leads to skewed distributions that violate statistical assumptions and reduce the sensitivity of analyses, making it harder to detect real effects. To counter under-reporting, a multi-method approach would be useful to avoid these biases. For child maltreatment, past research has measured maltreatment by including semi-structured interviews, questionnaires, and observations (e.g., Sprang et al., 2005). Taken together, these potential biases emphasize the importance of interpreting the findings with care and reinforce the need for future studies to incorporate multi-method approaches that can more accurately capture the complexity of violence towards children.

Second, the use of only mono-informant data probably biased results as well. One key concern when the same participant responds to all the measures, is the risk of shared method variance, which can artificially inflate associations between variables (Kock et al., 2021) simply because they are reported by the same individual, rather than reflecting a true relationship. Additionally, such data are inherently shaped by the informant's personal biases, perceptions, and motivations. In fact, "there are many reasons individuals might offer biased estimates of self-assessed behavior, ranging from a misunderstanding of what a proper measurement is to social-desirability bias, where the respondent wants to 'look good' in the survey, even if the survey is anonymous" (Rosenman et al., 2011, p.2). For example, a parent might downplay or underreport violent behaviors due to social desirability or lack of self-awareness, while also failing to recognize the emotional impact of their actions on the child. This approach also leads to an incomplete and potentially distorted picture of the dynamics under study, as it excludes the perspectives of other key individuals, particularly the children themselves, who may experience and interpret events differently. Thus, mono-informant designs limit the validity and richness of this research, especially in sensitive areas like violence.

Third, related to the mono-informant limitation, there is a specific limitation in not having the child's perspective. This is problematic because what constitutes violence is not solely an objective behavior but also a subjective experience, especially for the child. For example, a shouted reprimand may be viewed by a parent as a nonviolent disciplinary tactic but may be experienced by the child as intimidating or traumatic. Recent research highlights a discrepancy between parents' and children's perceptions of child maltreatment. In particular, one study found that parents and children often disagreed on the severity of certain emotionally maltreating behaviors (Lev-Wiesel et al., 2020). However, including children in research can bring several ethical and methodological challenges (for a scoping review, see Dubois et al., 2022). First, researchers must balance acknowledging children as active participants while recognizing their vulnerability due to power imbalances. These imbalances exist both in relation to researchers, who hold authority during data collection, and parents, who provide consent on the child's behalf. It is essential to respect children's agency without compromising their need for protection (Dubois et al., 2022). Second, children should be understood not just as individuals, but as integral members of family systems. Their behaviors and experiences are shaped by ongoing interactions within the family, and research should reflect this context rather than treat children in isolation (Dubois et al., 2022). Third, researchers must ensure children's safety while also maintaining confidentiality. Interviews may elicit disclosures of neglect or abuse, making it necessary to have clear protocols for responding when a child may be at risk. One solution to these challenges is fostering a collaborative, triadic partnership between researchers, children, and their families (Dubois et al., 2022). Such partnerships can help uphold ethical standards, enhance trust, and support meaningful child participation. Including children's perspectives is also important as it provides ecological validity, ensuring that the most harmful and meaningful experiences are being captured. It also helps refine intervention priorities by targeting behaviors that are experienced as violent. However, it should be mentioned that it is one thing to work with children as participants if they can be met in person, but it is another if it is in the context of online research (such as all chapters in this thesis, except Chapter 5). Conducting online studies with children presents several significant challenges (for a scoping review, see Hokke et al., 2018). Obtaining parental

consent is often complex due to the lack of face-to-face interaction, making it difficult to establish clear communication among researchers, children, and parents (Hokke et al., 2018). Children are also considered a vulnerable population, requiring particular care around informed consent, an issue that is further complicated in digital settings (Hokke et al., 2018). Ensuring participant privacy, anonymity, and confidentiality can be difficult, especially on platforms that blur the lines between public and private spaces, where participants may unintentionally reveal their involvement in a study (e.g., in social media platforms; Hokke et al., 2018). Additionally, online formats limit researchers' ability to assess whether participants fully understand what they're consenting to, thus questioning the *informed* consent given by participants (Hokke et al., 2018). Finally, disparities in internet access and digital literacy may exclude some families, leading to biased samples and reduced representativeness of findings (Hokke et al., 2018). This lack of multi-informant data makes it impossible to determine how parental behaviors are perceived by children, who are the direct recipients of potentially harmful behaviors. As previous research on child maltreatment has shown, there is often a significant gap between parent and child reports of child maltreatment (Chan, 2012), and without child perspectives, key insights into the real-world consequences of parental burnout are missed. But these limitations should be considered when conducting studies wanting to include children.

Fourth, factors such as general mood, fatigue, and sleep quality can significantly bias self-reported responses on Likert scales by altering the parent's subjective perception of their emotional state and behavior. These temporary influences may not reflect true states, yet they can meaningfully distort the data. We failed to control for factors such as time of day, general fatigue, and sleep quality, that can significantly influence both how parents report their state and how they behave toward their children. For example, a parent completing the questionnaire at night, after a long and exhausting day, may report higher levels of burnout or be more likely to recall moments of irritability or harshness (e.g., mood fluctuating based on time of the day when the questionnaire is completed, as well as moment in the week, see Egloff et al., 1995), not necessarily because they are experiencing parental burnout or being maltreating, but because of situational fatigue. Similarly, poor sleep quality can lead to over-reporting of exhaustion and violence (e.g., poor sleep

quality being a predictor of violence; see Kamphuis et al., 2012; Kamphuis & Lancel, 2015). By not controlling for these factors (i.e., time of day, general tiredness, and sleep quality), it is difficult to determine whether the observed associations between parental burnout and violence are truly driven by burnout itself, or whether they are confounded by more immediate, situational states of fatigue or sleep-related impairments. The lack of control of these variables could lead to overestimating the strength or specificity of the link between burnout and violence.

Fifth, another limitation of this thesis lies in its research designs. While both cross-sectional and longitudinal designs were employed, the absence of experimental or quasi-experimental methods limits the ability to draw firm causal conclusions. For example, although the findings suggest that emotional intelligence buffers the relationship between parental burnout and violence, this is based on cross-sectional data. We cannot conclude that an intervention aimed at enhancing emotional intelligence would causally reduce this link, without testing it experimentally. The same limitation applies to fearful attachment style. Similarly, although parental burnout was associated with increased cognitive complaints (even longitudinally), we cannot determine whether experimentally reducing burnout would lead to improvements in executive functioning. While these findings offer a strong foundation for future intervention-based research, it is important to interpret the current results cautiously and avoid overextending causal claims.

Sixth, a key limitation of the current thesis lies in the potential misinterpretation of violence through a culturally specific lens. As outlined in the introduction, the definition of violence is not universal, but varies across historical periods, cultures, and professional frameworks. In this thesis, the limitation is particularly tied to the cultural perspective, as we adopt a definition of violence that aligns with contemporary Western understandings and builds on conceptualizations used by prior researchers in similar contexts. As a researcher operating within a Western cultural framework, it is important to acknowledge that behaviors classified as violent in this thesis may not be viewed similarly in other cultural settings. However, it may be neither feasible nor appropriate to seek broad generalization of these findings across cultures (i.e., replicating the current findings in other cultures), as doing so risks falling into cultural essentialism. Elliott & Urquiza (2006) caution against cultural essentialism, which is assuming homogeneity within ethnic

or geographic groups, highlighting the dangers of treating culture as static and uniform. Rather than attempting to replicate culturally specific findings (rooted in our Western theoretical frameworks, supported by our Western literature, and interpreted through our Western norms applied by Western researchers) in other cultural contexts, it may be more productive to explore culturally-specific transmitted parenting values. By doing so, we can gain a more nuanced understanding of how parental burnout might influence behaviors that are considered detrimental to children, within a particular cultural setting.

Seventh, at the beginning of the thesis, we highlighted the multifaceted challenges of parenthood, including physical strains, relational tensions, societal pressures, institutional barriers, and psychological demands. However, throughout the thesis, our focus has remained primarily on the parent and their behaviors towards their child, without formally considering this broader context. This represents a significant limitation, as many challenges of parenthood extend beyond the individual parent and are embedded in social, societal, and institutional contexts. Consequently, the thesis does not empirically examine how these broader factors influence parental experiences in the context of parental burnout. This focus may overemphasize individual responsibility for parenting outcomes, potentially underestimating structural or systemic contributors. Recommendations based solely on parental characteristics may therefore be incomplete, as effective interventions might also need to address social support networks, workplace policies, or societal norms. That being said, although this thesis does not capture all possible levels of analysis, it does examine violence and parental burnout across psychological (e.g., emotional intelligence), social (e.g., attachment style), and biological (e.g., executive functions) dimensions, although primarily at the parental level. This multidimensional perspective aligns with the biopsychosocial model of mental health (Engel, 1977) and stands in contrast with solely biomedical models of mental illness (for a review, see Deacon, 2013).

Despite these limitations, which highlight important methodological and conceptual challenges, the findings of this thesis offer meaningful contributions to the understanding of parental burnout and its link to violence toward children. By positioning parental burnout in the broader psychopathology landscape, identifying both risk and protective factors,

uncovering temporal dynamics in symptom progression, and clarifying which forms of violence are most impacted, this research lays a foundation for more targeted prevention and intervention strategies. In the following section, we conclude by summarizing the key insights of this thesis.

8.6 Conclusion

In conclusion, this thesis deepens our understanding of the relationship between parental burnout and violence by identifying parental burnout as a significant risk factor for child maltreatment, even more so than other psychological disorders. It also highlights that parents experiencing burnout are more likely to report cognitive difficulties, in addition to the mental health, relational, and behavioral complaints that have been identified in past research. Importantly, and luckily, the link between burnout and violence is not inevitable: not all parents in burnout become violent. The strength of this association can be moderated, buffered by emotional intelligence or amplified by fearful attachment style. Moreover, a parent in burnout does not immediately become violent. Rather, the pathway from burnout to violence appears to follow a process, where early symptoms like emotional exhaustion are then succeeded by distancing from the child and being fed up with parenthood, which only then could result in violent behaviors. This provides a more nuanced, process view of how parental burnout can lead to harm. Finally, parents in burnout are more violent compared to healthy parents, but this is particularly the case in the form of more subtle and less visible acts, namely psychological violence toward children.

These findings allow us to draw several general conclusions on parental burnout and its link to violence.

First, **it is crucial to recognize that not all parents experiencing burnout become violent.** Instead, it highlights the need for a more individualized understanding of parental struggles that could tip them over the edge, resulting in harm. Acknowledging this nuance can help shape public messaging and social attitudes in ways that reduce stigma while still emphasizing the importance of addressing the risks associated with parental burnout.

Second, **interventions must be multidimensional.** Because the relationship between burnout and violence is moderated by factors such as

emotional intelligence and attachment style, effective interventions must go beyond merely alleviating stressors. Interventions should also focus on enhancing emotional intelligence, reducing attachment insecurity, and understanding deeper psychological patterns that influence parenting behavior, such as cognitive factors. This complexity underscores the limitations of one-size-fits-all approaches and points instead to the value of tailored, comprehensive interventions.

Third, **there are many roads to violence**. Violence is not solely the product of one factor like parental burnout, but rather the outcome of multiple contributing factors, both independent and interactive. While this thesis has shown that variables such as emotional intelligence, attachment style, and certain mental health conditions can individually predict violence, it has also highlighted that these factors can amplify each other's effects. Moreover, the path to violence is not always straight forward. In the case of parental burnout, different stages precede violence. Understanding violence as the result of an interplay between multiple vulnerabilities, rather than a single cause, is essential for developing more accurate models and more effective, targeted prevention strategies.

Fourth, **violence is often the outcome of a progressive deterioration**. The process linking parental burnout symptoms to violence suggest that child maltreatment often results from a buildup of unaddressed stress and distress experienced in parenthood. This has important implications for both research and practice: identifying and addressing early warning signs is essential. It also strengthens the case for a preventive focus rather than reactive interventions. By acting early, when emotional exhaustion first emerges, we can help prevent escalation and protect both parents and children from more serious consequences.

Finally, **parental burnout is a public health concern rather than merely a private, individual problem**. The potential of burnout to contribute to child maltreatment means it must be addressed at a systemic level in society. This includes implications for policy and society, as burnout is fueled by the accumulation of multiple stressors (not always just within the parent or the parenthood sphere), for which policies that promote work-life balance, provide accessible mental health resources, and support parents through adequate leave and affordable childcare could play a critical role in reducing

parental burnout, and, by extension, reducing its potential behavioral impact on children.

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Appendix

9. Appendix 1 – References for Figure 1. The balance between risks and resources in parental burnout.

9.1 Risk factors

Many studies have identified risk factors in the development of parental burnout, which will be presented in three categories: micro (individual level), meso (interpersonal level), and macro (societal and cultural).

9.1.1 Micro level

Personality and psychological factors, play a substantial role as risk factors of parental burnout. In fact, *personality traits*, such as high neuroticism (i.e., frequently experiencing anxiety, sadness, irritability, or emotional instability, Barrick & Mount, 1991) is associated with increased parental burnout (Furutani et al., 2020; Le Vigouroux et al., 2017; Le Vigouroux & Scola, 2018; Piotrowski et al., 2023; Szczygieł et al., 2020). Moreover, increased alexithymia (Lin et al., 2023) and increased perfectionism are associated with more parental burnout (Hubert & Aujoulat, 2018; Kawamoto et al., 2018; Lin & Szczygieł, 2022b; Meeussen & Van Laar, 2018; Stănculescu et al., 2020; Szczygieł et al., 2020). Note however that the detrimental effect of perfectionism on parental burnout disappears when the parent exhibits high emotional competencies, (Lin, Szczygieł, et al., 2021) or by increasing self-compassion (Yasar et al., 2024). Moreover, the specific concern over being a perfect parent, could lead to an increase in emotion dysregulation, which in turn increases the risk of parental burnout (Brenning et al., 2024).

For **emotional factors**, emotional lability, negative emotional reactions (Piotrowski et al., 2023), expressive suppression (a sub-factor of emotion regulation; for a meta-analysis, see Brandão et al., 2024), or high interpersonal competencies (Bayot et al., 2021), and unhealthy coping strategies (Skjerdingsstad et al., 2022) are all associated with increased parental burnout.

In the domain of **cognition**, increased rumination (Vertsberger et al., 2022), high need for control (Lindström et al., 2011), negative appraisals (i.e., negative cognitive evaluation of an experience; for cross-sectional, see Woine et al., 2022; for causal, see Woine et al., 2023), increased dysfunctional

thoughts, especially believing that relationships don't last, emotional needs can't be met, believing to be inferior, being incompetent to face the daily responsibilities, focus on the negative aspects in life, intolerance to imperfection (Le Vigouroux et al., 2023), and not being able to shift from a task to another (Piotrowski et al., 2023), as well as high self-discrepancies between the actual self and the ideal self and between the actual self and the socially prescribed discrepancies (Roskam, Philippot, et al., 2021) are all associated with increased parental burnout.

Mental and physical health also contribute to increasing the risk of parental burnout. In regards to *mental health*, anxiety (Guedria et al., 2023), depression (Aunola et al., 2020; Szczygieł et al., 2020), parenting and parenthood stress (Kawamoto et al., 2018; Lebert-Charron et al., 2018; Pereira et al., 2024; Séjourné et al., 2018; Van Bakel et al., 2018), and being controlling (Lindström et al., 2011) are associated with an increase in parental burnout. Work-related illness is also related to parental burnout. In fact, professional exhaustion, job burnout (Furutani et al., 2020), and work family-conflict (Park et al., 2022; Van Bakel et al., 2018) are associated with increased parental burnout. The link between work-family conflict and parental burnout can be decreased by spousal support in fathers (Wang et al., 2024). However, any discrepancy between work and family life, such as work-family-conflict and family-work-conflict contribute in increasing parental burnout (Fu et al., 2025). Childhood trauma increases the risk of parental burnout, by increasing emotion regulation issues and pre-mentalization, and decreasing interest and curiosity in the child's mental states (Ensanimehr et al., 2024). In regards to *physical health*, having somatic issues (Sánchez-Rodríguez et al., 2019), sleep disturbances (Aunola et al., 2020), and insomnia (Skjerdingsstad et al., 2022), increase the risk of parental burnout.

Parenting and parenthood factors, unsurprisingly, contribute to parental burnout. Generally, not being satisfied (Skjerdingsstad et al., 2022) or over-investing in the parental role (Hubert & Aujoulat, 2018), regretting having children (Piotrowski, 2021), experiencing many parenting demands (Sorkkila & Aunola, 2022a), are associated with an increase in parental burnout. Specifically, having a poorly defined identity as a parent is a strong risk factor (Piotrowski et al., 2023; Schrooyen et al., 2024), that may lower as the child ages, but never truly disappears (Piotrowski et al., 2023).

Moreover, being over-protective (Zimmermann et al., 2022), feeling overly responsible for the child's future (Hubert & Aujoulat, 2018), or applying the authoritarian parenting style (i.e., strict, demanding, controlling, and usually low warmth; Mikkonen et al., 2022) increases the risk of parental burnout.

Demographic and socio-economic factors also play a role, even though limited, in the etiology of parental burnout. Being a woman is associated with more burnout (Aguilar et al., 2021; Manrique-Millones et al., 2022; Pérez-Díaz et al., 2020). However, although mothers have a higher average of parental burnout, fathers are more vulnerable to it, because even if their balance has more resources than risks, they could burn out, whereas mothers seem to burnout when their balance has more risk factors than resources (Roskam & Mikolajczak, 2020). Interestingly, the fact that mothers exhibit higher parental burnout is not due to their potential higher involvement in parenting (de Santis et al., 2024). However, mothers seem to be more susceptible to emotion dysregulation and perceiving more stressful situations in their parenthood (de Santis et al., 2024). Moreover, being a young parent (Vigouroux & Scola, 2018), being a single parent (Arikan et al., 2020; Gannagé et al., 2020), having lower education (Gannagé et al., 2020) are associated with more burnout. Work-related demographic factors also play a role in parental burnout, such as a worse financial situation (van Bakel et al., 2022), facing financial hardship, working part-time or unemployment (Arikan et al., 2020; Brianda, Roskam, & Mikolajczak, 2020; Sánchez-Rodríguez et al., 2019; Skjerdingsstad et al., 2022), financial concerns, and lack of leisure time (Lindström et al., 2011). However, even though socio-demographic variables may increase parental burnout, it should be noted that (i) not all socio-demographic factors increase parental burnout, such as being in a same sex families (Gato et al., 2022), (ii) nor do socio-demographic factors contribute a lot to parental burnout.

Child-related factors that contribute to parental burnout can be distinguished between the perceptions about the child the characteristics of the child. For the former, if the parent has beliefs that adolescence is a difficult time and over-protection (Zimmermann et al., 2022) or if they perceive the child to be difficult (Çimen & Seçer, 2024; Séjourné et al., 2018) seem to increase the risk of parental burnout. But, if the parent exhibits high psychological flexibility (comprised in the article of: acceptance, defusion, contact with the present moment, self as context, values, and committed

action), then the link between perception that the child is difficult and parental burnout is decreased (Çimen & Seçer, 2024). *Characteristics* of the child, such as low age of the child (Chen et al., 2022; Le Vigouroux et al., 2022; Sánchez-Rodríguez et al., 2019; Sorkkila & Aunola, 2022b; Vigouroux & Scola, 2018), number of children (3 or above, see Brianda et al., 2020), or a large gap between children (Vigouroux & Scola, 2018), increase the risk of parental burnout. Moreover, children's behaviors (Zhang & Zhao, 2024) and negative emotionality in children (such as anxiety, stress, worry) seems to be a risk factor in parental burnout (Kadosh-Laor et al., 2023). However, the link between emotionality and parental burnout is moderated by trait empathy, specifically becoming distressed (Kadosh-Laor et al., 2023). Finally, a major factor in parental burnout is the presence of illness or special needs in children. An association between parental burnout and children with special needs has been identified (Gérain & Zech, 2018; Mrošková et al., 2020; Sorkkila & Aunola, 2022b). Specifically, parents having a child with special needs significantly experience more parental burnout compared to parents with no special needs children (Findling et al., 2024), or compared to adoptive or single parents do not exhibit higher parental burnout levels (for a case-control matched study, see Roskam & Mikolajczak, 2023). Moreover, combining several vulnerabilities in terms of special needs seems to increase parental burnout (Roskam & Mikolajczak, 2023). Having children with autism also seems to be associated with an increase in parental burnout (Çimen et al., 2023). Child behavioral problems in children with autism can lead to parental burnout, specifically through an increase in issues with emotion regulation in parents (Shnitzer-Meirovich et al., 2024). Thus, in the case of children with particularities or who are unwell, parental burnout seems to be particularly exacerbated. However, when parents are helped to better deal with specific needs of the children (e.g., training program to help caregivers), it also has corollary effects by decreasing parental burnout (e.g., for a study with parents of children who have Prader-Willy Syndrome, see Bedard et al., 2025). Finally, not all specificities of the child have an association with parental burnout. For example, parents who have intellectually gifted children are not at more risk of developing parental burnout (Saliez et al., 2022).

9.1.2 Meso level

The relational environment surrounding the parent has also been shown to be positively related to parental burnout. For instance, the **relationship with the co-parent** contributes to parental burnout, in that higher coparenting disagreement (Favez et al., 2023) and higher non-supportive coparenting indices, namely child being exposed to inter-parental conflict both for mothers and fathers, a lower endorsement of the partner's parenting for mothers (Favez & Bader, 2024). Then, **family dynamics more generally** also relate to parental burnout, namely family disorganization being a risk factor for parental burnout (Furutani et al., 2020). Finally, **social support** also relates to parental burnout. In fact, higher isolation is linked with more parental burnout (Sánchez-Rodríguez et al., 2019).

9.1.3 Macro level

Environmental factors also influence parental burnout. For instance, the place of living seems to influence parental burnout, namely by living in disadvantaged neighborhoods (Swit & Breen, 2023). More broadly, **culture** really seems to be linked with parental burnout. In fact, its prevalence seems to be higher in individualistic countries (Roskam, Aguiar, et al., 2021), namely because parents in individualistic countries tend to share individual-level values that might be detrimental, such as achievement and power (Lin & Szczygieł, 2022a). Moreover, a mismatch between Western egalitarian values and perceived inequality in parenting roles also seem to increase the risk of parental burnout (Roskam et al., 2022). Three mediators between individualism and parental burnout have been identified (Roskam et al., 2024). First, a greater discrepancy between what the parent perceives that society wants them to be and their actual parental self, is a mechanism by which individualism increases parental burnout. Second, low parental task sharing is the second mediating mechanism. Third, high agency and self-directed socialization goals (i.e., goals and values transmitted by parents) explain the link between individualism and parental burnout (Roskam et al., 2024).

Finally, a very specific environmental event that marked the world a few years ago also seems to have played a role in parental burnout: the **Covid-19 pandemic**. Parental burnout increased with the pandemic (Wiemer &

Clarkson, 2023), namely because of an increase of Covid-19 psychological impact (Kerr, Fanning, Huynh, Es Botto, et al., 2021), covid-specific stress (Ha et al., 2024), and number of days in quarantine (Araya-Rojas et al., 2024). Governmental factors, such as restrictions in the parental role (due to the Covid-19 pandemic) also seem to increase parental burnout (for a study on 26 countries, see van Bakel et al., 2022). In fact, in countries where the parental role was more restricted, parental burnout was higher (van Bakel et al., 2022).

9.2 Protective factors

9.2.1 Micro level

Personality traits seem to also have a protective relation with parental burnout, such as extraversion (i.e., being talkative, sociable, active, Barrick & Mount, 1991; Sekułowicz et al., 2022), conscientiousness (i.e., being dependable, namely being careful, thorough, responsible, planful, Barrick & Mount, 1991), agreeableness (i.e., such as likeability, friendliness, cooperative, Barrick & Mount, 1991), openness to new experiences (i.e., being open to newness Barrick & Mount, 1991) are negatively associated with parental burnout (Furutani et al., 2020; Le Vigouroux et al., 2017; Le Vigouroux & Scola, 2018; Piotrowski et al., 2023; Szczygieł et al., 2020). Moreover parent self-efficacy (Kroshus et al., 2023), optimism and humor also decrease parental burnout (Enav et al., 2024).

Emotional factors can strongly protect from parental burnout. Among these, resilience (Balogun & Oyekola, 2024; Sorkkila & Aunola, 2022b; Stănculescu et al., 2020), self-esteem (Aunola et al., 2020; Lindström et al., 2011), and emotional intelligence strongly decrease the risk of parental burnout (Szczygieł et al., 2020). Specifically, high **intrapersonal** emotional competencies (Lin, Roskam, et al., 2021) and emotional stability (Sekułowicz et al., 2022). More broadly, satisfaction both in life (Matias et al., 2020; Stănculescu et al., 2020; Szczygieł et al., 2020) and in autonomy are negatively associated with parental burnout (Schrooyen et al., 2024).

Cognitive strategies have been found to reduce parental burnout. Positive reappraisals play a critical role in mitigating burnout (for a meta-analysis, see Brandão et al., 2024; Vertsberger et al., 2022; Woine et al., 2022), even in the absence of social support (Lin, Goldenberg, et al., 2022).

Identification with the parental role is also negatively related to parental burnout (Piotrowski et al., 2023)

Work-related factors can also provide protection against parental burnout, namely being employed, working full time, having a balance between professional and personal life (Séjourné et al., 2018).

9.2.2 Meso level

Relational factors seem also to be helpful, such as being a mother living without a coparent seem to be inversely associated to burnout (Lebert-Charron et al., 2018), having endorsement from the coparent (Favez et al., 2023), coparenting quality (Cruciani et al., 2024), marital satisfaction (Szczygiel et al., 2020). Outside the parental couple, family equilibrium, family communication (Sekulowicz et al., 2022), and social support (Findling et al., 2024; Szczygiel et al., 2020) are negatively associated to parental burnout. However, the link between co-parenting support and burnout can be decreased by grandparents' coparenting conflict (Lu et al., 2024).

9.2.3 Macro level

No macro level factor has yet been identified as a protective factor against parental burnout.

10. Appendix 2 – Additional paper written during the PhD

10.1 Does Parenting Perfectionism Ironically Increase Violent Behaviors from Parent towards Children?

Background: Past research has shown that perfectionistic strivings (PS) and perfectionistic concerns (PC) in the parenting domain are associated with an increase in parental burnout (PB), and that PB causally increases violence towards one's offspring. One may therefore wonder whether parenting perfectionism may ironically increase violence towards one's offspring. **Objective:** To the best of our knowledge, no study has ever investigated whether perfectionism (PS and PC) predicts violence towards one's offspring, or whether PB could explain this link. In the current pre-registered cross-lagged study, we hypothesized that an increase in PS and PC would lead to an increase in violence via an increase in PB. **Method:** 228 participants responded to a longitudinal online survey, with three measurement occasions spaced 2 months apart. **Results:** Contrary to expectations, cross-lagged path models revealed that violence towards the offspring prospectively predicted an increase in PS and PC. Mediation models showed that PB was not a significant mediator. Results of all models did not change when controlling for social desirability. **Conclusion:** The present study shows that violence towards the offspring increases the risk of PS and PC in parents. Results are discussed in light of the feeling of guilt experienced by parents. **Implications:** Current worries that parenting perfectionism may paradoxically increase violence appear to be unwarranted at this stage. Moreover, correlation is not causation; thus, emphasizing caution before coming to clinically and societally relevant conclusions in cross-sectional studies. Thus, the PB and child maltreatment literature should slowly shift to using more longitudinal and causal designs.

Keywords: abuse; longitudinal; maltreatment; parental burnout; perfectionistic strivings; perfectionistic concerns; perfectionism; violence

Reference

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10.1.1 Introduction

Theoretical Framework

Over the past decades, parents have been increasingly encouraged to follow guidelines, tips and tricks on how to be a good parent, and even *the perfect* parent (e.g., Lapin, 2020; Pantley, 2009; Roberts, 2022). Parents today have to deal with unrealistic and unattainable ideals of parenthood and parenting (e.g., Nomaguchi & Milkie, 2020). They experience an increasing pressure to be perfect. This is because they are conditioned to think that they are the major if not the sole determinants of their child's well-being and future (e.g., Adams, 2020; Lind et al., 2016; Rizzo et al., 2013), and because society is more than ever setting the terms for what a good parent is and is not (e.g., Sperling, 2013). As if this is not enough, parents who seek information on how to be the perfect (or a good) parent, are now confronted with an enormous amount of sometimes contrasting information (e.g., parents should learn to let go of their children, see Obradović et al., 2021; versus parents should be involved, see Tan et al., 2020). Thus, the parenting domain has become the breeding ground for opinions and advice on how to be a *good* parent, and how to avoid being a *bad* parent, thus polarizing parenthood (DeVore & Ginsburg, 2005; Eve et al., 2014; M. Smith, 2010; Unnever et al., 2006).

The foregoing context has led to an ever-increasing number of parents to wish and to try to be as perfect as they can be. Is this a good thing? In other domains, the maladaptive nature of perfectionism has been increasingly documented, to the extent that perfectionism is now considered as a transdiagnostic process in the onset of numerous psychopathologies, such as depression, anxiety, eating disorders, obsessive compulsive disorder (for a meta-analysis, see Limburg et al., 2017). Although the study of deleterious outcomes of perfectionism has widely been investigated in organizational (for a meta-analysis, see Harari et al., 2018), academic (for meta-analyses, see Madigan, 2019; Osenk et al., 2020), and sport literature (for a meta-analysis, see Hill et al., 2018), studies have only recently started to venture in the parenthood domain (for a meta-analysis, see Evans et al., 2022). One important and particularly deleterious correlate of parenting perfectionism seems to be parental burnout (e.g., Kawamoto et al., 2018; Raudasoja et al., 2022; Sorkkila & Aunola, 2019), which is a chronic stress condition

manifesting in exhaustion in the parental role, perceiving a contrast with the parent they used to be, feeling fed up with parenthood, and feeling emotionally distant from the offspring (Roskam et al., 2018). This association has not only been limited to socially-prescribed perfectionism (Raudasoja et al., 2022; and Sorkkila & Aunola, 2019), but also with self-oriented perfectionism (e.g., Kawamoto et al., 2018; Sorkkila & Aunola, 2019). The latter is particularly interesting, because it is paradoxically seemingly the most detrimental for the individual and their surroundings (e.g., Aparicio-Flores et al., 2022; Chester et al., 2015; Stoeber et al., 2017), and yet it is the easiest to be treated (for a meta-analysis, see Lloyd et al., 2015). Self-oriented perfectionism is characterized by having high standards for the *self* that are not necessarily required by the environment or the situation (Shafran & Mansell, 2001). It has two components: perfectionistic *strivings* and perfectionistic *concerns* (Stoeber & Gaudreau, 2017; Stoeber & Otto, 2006). The former is the tendency to have high personal standards and to have a personal quest for perfection, while the latter is the fear of making mistakes and to be negatively perceived by others (Stoeber & Otto, 2006).

Thus, research has shown that both components of self-oriented perfectionism are linked with higher parental burnout. The latter does not only affect the parent, but it also bleeds into the entire family system. Specifically, parental burnout detrimentally affects children (Chen et al., 2022; Griffith, 2022; Hansotte et al., 2020; Mikolajczak, Brianda, et al., 2018; Mikolajczak et al., 2019; Szczygieł et al., 2020), as research has uncovered that it increases violence towards the offspring. More particularly, parental burnout has a *large* ($r = .49$; Mikolajczak et al., 2023) *causal* (Brianda, Roskam, Gross, et al., 2020b), and *robust* effect on violence towards the offspring (e.g., for correlational, see Szczygieł et al., 2020; for cross-lagged, see Mikolajczak et al., 2019; and for experimental, see Brianda et al., 2020).

Study Aim and Hypotheses

Considering that parental perfectionism is associated with more parental burnout, and that parental burnout causally leads to more violence towards the offspring, is it possible that parents who are trying to be perfect may ironically be at higher risk of being violent towards their offspring? Drawing on a longitudinal cross-lagged design, the present study examines this apparent paradox by testing the hypothesis that trying to be a perfect

parent leads to more violence towards the offspring. If the hypothesis is confirmed, we further hypothesize that this effect is explained by parental burnout: constantly trying to be a perfect parent will exhaust the parent (increase parental burnout), which in turn will translate into an increase in violent outbursts towards the offspring. Note that although the results may seem obvious given the associations between parenting perfectionism and parental burnout on the one hand (r between .23 and .37; for a meta-analysis, see Mikolajczak et al., 2023) and between parental burnout and violence towards the offspring ($r = .49$; for a meta-analysis, see Mikolajczak et al., 2023), the results are not necessarily straightforward. Indeed, the link between parental perfectionism and parental burnout has only been demonstrated in correlation studies so far, they may not hold in longitudinal designs, such as the one adopted in the current study. Identifying whether parental perfectionism is a predictor of violence towards the offspring, and *why* that is the case (through parental burnout) is paramount in the social context that puts an increasing pressure on parents towards perfection.

Four hypotheses were posited:

- Hypothesis 1: Perfectionistic strivings prospectively predicts violence towards the offspring;
- Hypothesis 2: Perfectionistic concerns prospectively predict violence towards the offspring;
- Hypothesis 3: Perfectionistic strivings (at time 1) leads to more parental burnout (at time 2), which in turn leads to more violence towards the offspring (at time 3);
- Hypothesis 4: Perfectionistic concerns (at time 1) leads to more parental burnout (at time 2), which in turn leads to more violence towards the offspring (at time 3).

10.1.2 Materials and Methods

Procedure

The current study has received approval by the Ethics Committee, and it is part of a larger project on the relation between parental burnout and violence. A priori sample size estimations were performed using the *N:q rule* proposed by Jackson (2003) and supported by Kline (2016), according to which path models should have between 10 to 20 participants (N) for every

parameter that requires statistical estimates. Participants were recruited on Prolific (<https://www.prolific.ac>), which is a participant recruitment website based in Cambridge (United Kingdom). Prolific bridges the gap between researchers and reliable participants, and it is now widely used around the world by renowned universities. It offers fast and reliable data for research purposes. Researchers can enter their research proposal and select screening criteria for specific participants to participate (e.g., only participants who have children). Sampling type consisted of simple random sampling, in which parents on Prolific had all an equal chance to participate in the study. In order to avoid self-selection bias, participants were informed that the study was on parenthood in general. Considering that the current study is part of a larger study, and that the recruitment was restricted by economic constraints, the first measurement occasion recruited 1000 participants, whereas time 2 and 3 recruited 300. Data collection happened between June 2022 and January 2023, in which the three waves of questionnaires were spaced 2 months apart (June 2022, August 2022, October 2022).

Measures

Following the signature of informed consent, the following sociodemographic variables were collected: age, gender, number of children under the same roof, number of children they have in total, age of the youngest child still living at home, age of the oldest child, parent's educational level, working regimen, and net monthly household income.

Parental perfectionism was measured using the *Brief Parenting Perfectionism Scale* (adapted by Lin et al., 2021, based on prior perfectionism scales of Kawamoto et al., 2018; Snell et al., 2005). It is a 6-item questionnaire, to which participants answer on a 5-point scale: does not fit me at all (1), fits me perfectly (5). The measure encompasses two factors: perfectionistic strivings (time 1: $\alpha = .75$, $\omega = .76$; time 2: $\alpha = .77$, $\omega = .78$; time 3: $\alpha = .78$, $\omega = .79$), which reflects very high standards regarding oneself as parent (e.g., "I aim to be a perfect parent"), and perfectionistic concerns (time 1: $\alpha = .77$, $\omega = .80$; time 2: $\alpha = .74$, $\omega = .76$; time 3: $\alpha = .73$, $\omega = .76$), which reflects a tendency to be self-critical and to be concerned over mistakes in one's parenting role (e.g., "As a parent, it's awful to fail in front of others") (for more details, see Lin et al., 2021). Scores are computed by summing the answer to each item. Higher scores reflect higher perfectionistic tendencies.

Parental burnout was measured using the *Parental Burnout Assessment* (PBA; time 1: $\alpha = .96$, $\omega = .96$; time 2: $\alpha = .96$, $\omega = .96$; time 3: $\alpha = .96$, $\omega = .97$). The PBA is a 23-item questionnaire (Roskam, Aguiar, et al., 2021; Roskam et al., 2018), in which parents rate each item/symptom on a 7-point frequency scale: never (0), a few times a year, once a month or less, a few times a month, once a week, a few times a week, every day (6). The items form four factors related to the parental role: exhaustion (e.g., “I’m so tired out by my role as a parent that sleeping doesn’t seem like enough”), contrast (e.g., “I don’t think I’m the good father/mother that I used to be to my child(ren)”), feeling fed up (e.g., “I can’t stand my role as a father/mother anymore”), and emotional distancing (e.g., “Outside the usual routines (lifts in the car, bedtime, meals), I’m no longer able to make an effort for my child(ren)”). The parental burnout score is calculated by summing the answer to each item. Higher scores reflect a higher level of parental burnout.

Violence towards offspring was assessed using the *Parental Violence Scale* (Mikolajczak et al., 2018) (time 1: $\alpha = .70$, $\omega = .75$; time 2: $\alpha = .68$, $\omega = .75$; time 3: $\alpha = .67$, $\omega = .75$), which is a 15-item self-report questionnaire. Participants respond to each item on a frequency scale: never (1), less than once a month, about once a month, a few times a month, once a week, several times a week, every day, several times a day (8). The scale measures verbal (e.g., “I sometimes say things to my child that I then regret (threats, insults, use of silly nicknames etc.)”), physical (e.g., “When I am angry, I sometimes throw things at my child”), and psychological violence (e.g., “I sometimes threaten to abandon my child if s/he is not good”). The violence score is calculated by summing the answer to each item. Higher scores reflect a higher presence of violent behaviors.

Considering that violence towards the offspring is quite a delicate and taboo subject, **social desirability** was measured as a control variable (time 1: $\alpha = .72$, $\omega = .72$; time 2: $\alpha = .72$, $\omega = .73$; time 3: $\alpha = .73$, $\omega = .74$). Social desirability was measured using the *Marlowe-Crowne Social Desirability Scale - Short form* (based on Crowne & Marlowe, 1960; adapted by Reynolds, 1982), which consists of thirteen items to which participants have to indicate whether they agree or disagree by selecting either “true” (1) or “false” (0) (e.g., “It is sometimes hard for me to go on with my work if I am not encouraged”). The total score is computed by summing the answers to the

items. The scale is unifactorial and higher scores reflect higher tendency to change responses to match to what is socially accepted or desirable.

Since these questionnaires were part of a lengthier study, three **attention-check** items (e.g., “In the following question, select the number between three and five”) were randomly inserted in the survey to make sure that participants did not respond randomly or inattentively.

Exclusion criteria

Participants who did not meet the following criteria were excluded from all analyses: participants who were underage (under 18 years of age), participants who wrongly answered to at least one attention-check, participants who did not answer to all the variables under study, participants who did not respond to all three measurement occasions.

Participants

At the beginning of the recruitment process, 1000 people were invited to participate to the study. Due to economical constraints, only 300 of them were then randomly invited to answer to the second and third measurement occasion. At time 1, a total of 914 participants responded, but only 794 met the inclusion criteria. At time 2, 259 participated, and only 249 were eligible, 10 were excluded due to answering incorrectly to attention checks. At time 3, 241 participants responded to the study, but only 236 met the prior-mentioned criteria, exclusions were due to not answering correctly to attention checks. Only participants who answered the three measurement occasions were kept for analyses. Three participants were then excluded for not answering to all the variables, rendering the sample to 233 participants. After excluding five multivariate outliers, the final sample consisted of 228 participants across three measurement occasions. Analyses were run with and without multivariate outliers. The final sample had mostly women (65.8%), on average being 37.8 years old ($SD = 9.70$) mostly living with one (46.9%) or two (34.2%) children, with on average one (40.4%) or two (36.4%) children in total. The youngest child was aged mostly between two (12.7 %) and three (8.8%) years of age, and the oldest child was mostly two (6.1%), three (6.1%), five (6.1%), or ten (5.3%) years old. The majority of participants completed an undergraduate education (48.7%), worked full time (69.7%), earned

between 2000 and 2745 U.S. \$ monthly, and were in a biparental family (73.2%).

Statistical analyses

Assumptions for correlations and cross-lag path analyses were checked before carrying on with the analyses. Violations in normality were detected and dealt with appropriately (e.g., Kendall's τ for non-normal correlations, see Long & Cliff, 1997). Correlation analyses were carried out using Jamovi's "Regression" package (The jamovi project, 2021), and cross-lagged analyses were carried out using the open software R (RStudio Team, 2020), with lavaan's package (Rosseel, 2012). Mediation cross-lagged path analyses were previously pre-registered on Open Science Framework before data analysis (available at: https://osf.io/dx3m7/?view_only=66b51fab0c28418d949c5cf349e33c4c).

Correlations were then performed to understand the bivariate link between variables, independently of other variables.

Prior to interpreting cross-lagged models, fit indices were estimated and reviewed. Considering the particular sample-size sensitivity of the χ^2 and the Root Mean Square Error of Approximation (RMSEA) (Kenny et al., 2015; Kline, 2016), we considered that models showed adequate fit when at least two of the less sensitive indices (i.e., CFI, SRMR, TLI) met the aforementioned criteria : the Comparative Fit Index (CFI) was above .90, the Standardized Root Mean Square Residual (SRMR) was below .08 (Kline, 2016), and when the Tucker Lewis Index (TLI) was above .90 (Tucker & Lewis, 1973). χ^2 and RMSEA were reported as they are still one of the most reported indices in path analysis. χ^2 must ideally be non-significant and RMSEA below .08.

We then estimated four full cross-lagged models. The first and second model tested the longitudinal direct effect of perfectionistic strivings (model 1) and perfectionistic concerns (model 2) on violence towards one's offspring, in three-measurement occasions models. Then, two additional cross-lagged models were computed to test the longitudinal mediating effect of parental burnout in the link between perfectionistic strivings and violence (model 3), and in the link between perfectionistic concerns and violence (model 4). For all four models, first, Mardia's test was performed to assess the multivariate normal distribution of endogenous variables.

10.1.3 Results

Mardia's test was performed and indicated that this assumption of multivariate normality was violated in all four models (Korkmaz et al., n.d., 2014) (model 1: for skewness: $\chi^2(20) = 263, p < 0.001$; for kurtosis: $z = 15.2, p < 0.001$; model 2: for skewness: $\chi^2(20) = 291, p < 0.001$; for kurtosis: $z = 14.6, p < 0.001$; model 3: skewness: $\chi^2(56) = 497, p < 0.001$, kurtosis: $z = 17.7, p < 0.001$; and model 4: for skewness: $\chi^2(56) = 530, p < 0.001$, for kurtosis: $z = 18.4, p < 0.001$). Cross-lag path analyses were therefore estimated using more robust methods, such as the Bollen-Stine bootstrapping method (Kline, 2016; Thakkar, 2020).

Correlations between variables at each time point can be viewed in Table 1. Kendall's τ was preferred over Pearson's r , considering the non-normal (but expected) data distribution. Correlations were consistent across the three time points. Perfectionistic strivings and perfectionistic concerns were both positively correlated with violence towards one's offspring across time points. Parental burnout was positively correlated with violence. Only perfectionistic concerns were positively correlated with parental burnout. On the contrary, perfectionistic strivings did not correlate with parental burnout at any time point. These results held with and without multivariate outliers.

The first model investigating the longitudinal link between perfectionistic strivings and violence showed adequate fit ($\chi^2(2) = 50.47, p < 0.001$; CFI = 0.93; TLI = 0.50; RMSEA = 0.32, 95% CI = [0.25, 0.41], SRMR = 0.04). However, contrary to our hypotheses, perfectionistic strivings did not prospectively predict violence. In fact, it was violence at time 1 that predicted perfectionistic strivings at time 2 ($\beta = 0.19, p < 0.001$). The remaining paths were non-significant, such as perfectionistic strivings at time 1 predicting violence at time 2 ($\beta = -0.01, p = 0.91$), perfectionistic strivings at time 2 predicting violence at time 3 ($\beta = 0.06, p = 0.23$), and violence at time 2 predicting perfectionistic strivings at time 3 ($\beta = 1.42, p = 0.39$) (Figure 1). The results did not change after controlling for social desirability. Analyses were re-performed with multivariate outliers, and the results did not change except for the became marginally significant ($\beta = 1.23, p = 0.04$).

For the second model estimating the cross-lagged effect of perfectionistic concerns on violence towards the offspring, it showed

adequate fit: $\chi^2(4) = 80.5$, $p < .001$; CFI = .87; TLI = .53; RMSEA = 0.29, 95% CI = [0.24, 0.34], SRMR = .06. Contrary to our expectations, perfectionistic concerns did not prospectively predict violence. In fact, it was violence at time 1 that predicted perfectionistic concerns at time 2 ($\beta = 0.2$, $p < .001$). The remaining paths were not significant: perfectionistic concerns at time 1 predicting violence at time 2 ($\beta = 0.07$, $p = .21$), perfectionistic concerns at time 2 predicting violence at time 3 ($\beta = 0.001$, $p = .90$), and perfectionistic concerns at time 3 being predicted by violence at time 2 ($\beta = 0.07$, $p = .22$) (**Figure 2**). The results did not change after controlling for social desirability, nor with the presence of multivariate outliers.

Table 1

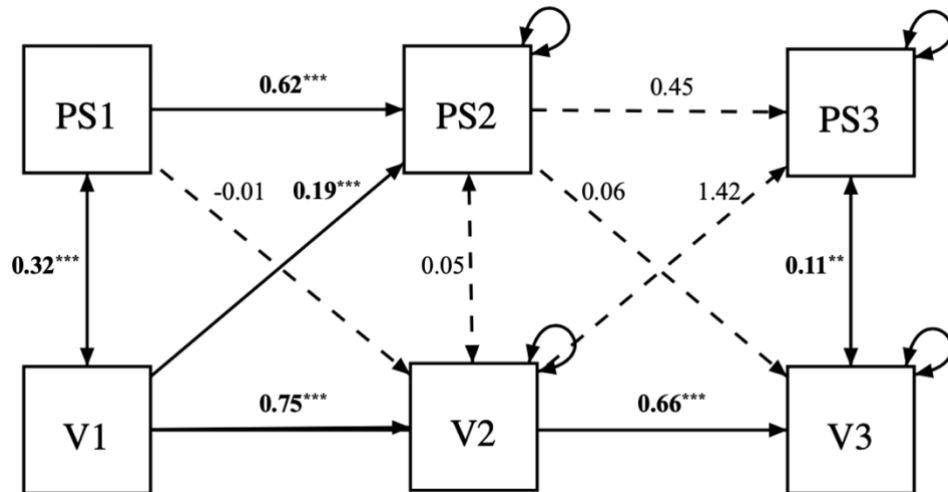
Descriptive Statistics and Kendall's τ Correlations for Study Variables

Bivariate correlations	<i>n</i>	Time 1	Time 2	Time 3
Perfectionistic Strivings and Violence	228	.24***	.24***	.25***
Perfectionistic Concerns and Violence	228	.19***	.23***	.15**
Parental Burnout and Violence	228	.27***	.29***	.27***
Perfectionistic Strivings and Parental Burnout	228	.01	.01	-.03
Perfectionistic Concerns and Parental Burnout	228	.16***	.13***	.15***

Note. Parental burnout at time 1 ($M = 30.7$, $SD = 27.1$), time 2 ($M = 26.1$, $SD = 24.8$), and time 3 ($M = 25.4$, $SD = 25.6$). Violence at time 1 ($M = 22.3$, $SD = 6.68$), time 2 ($M = 21.2$, $SD = 5.73$), and time 3 ($M = 20.5$, $SD = 5.29$). Perfectionistic strivings at time 1 ($M = 7.77$, $SD = 3.03$), time 2 ($M = 7.68$, $SD = 3.08$), and time 3 ($M = 7.68$, $SD = 3.08$). Perfectionistic concerns at time 1 ($M = 6.21$, $SD = 2.88$), time 2 ($M = 6.04$, $SD = 2.70$), and time 3 ($M = 5.98$, $SD = 2.65$). * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1

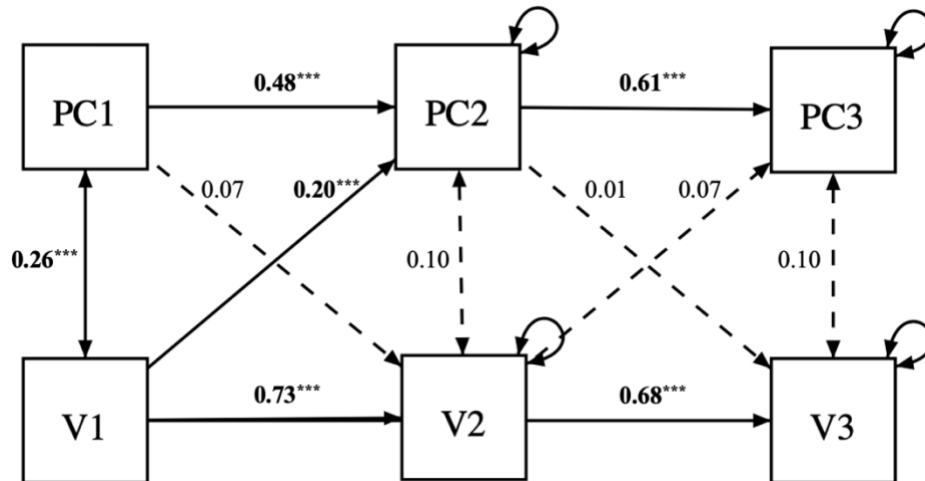
Cross-Lag Model Investigating the Direct Effect of Perfectionistic Strivings on Violence Towards the Offspring



Note. PS1 = Perfectionistic Strivings at Time 1. PS2 = Perfectionistic Strivings at Time 2. PS3 = Perfectionistic Strivings at Time 3. V1 = Violence at Time 1. V2 = Violence at Time 2. V3 = Violence at Time 3. Significant paths and covariances are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant paths and covariances are depicted with dotted lines, and their coefficients are not in bold and with no asterisks. Bootstrapping = 1000 samples.

Figure 2

Cross-Lag Model Investigating the Direct Effect of Perfectionistic Concerns on Violence Towards the Offspring



Note. PC1 = Perfectionistic Concerns at Time 1. PC2 = Perfectionistic Concerns at Time 2. PC3 = Perfectionistic Concerns at Time 3. V1 = Violence at Time 1. V2 = Violence at Time 2. V3 = Violence at Time 3. Significant paths and covariances are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant paths and covariances are depicted with dotted lines, and their coefficients are not in bold and with no asterisks. Bootstrapping = 1000 samples.

Considering that the mediation hypotheses relied on the corroboration of hypothesis 1 or 2, and that neither were supported, mediation analyses between perfectionism strivings and concerns, parental burnout, and violence appear not warranted. However, in a context where criteria to test mediations have become more liberal (Zhao et al., 2010), we performed them, nevertheless. As expected, none of these mediations were significant (see **Figures S1** and **S2** in Supplemental Materials).

10.1.4 Discussion

The present study shows that it is not parenting perfectionism that drives violence, but rather the other way around. Showing that the direction of causality is the opposite of that originally expected is a big step forward in the link between perfectionism and violence, as past studies solely used cross-sectional methods (e.g., Aparicio-Flores et al., 2022; Chester et al., 2015; Stoeber et al., 2017). Our results do not support the fear that parental

perfectionism would feed parental violence (through the mediation of parental burnout). Instead, our findings suggest that being violent against one's children is prospectively associated with a raise in both parents' standards and concerns about making mistakes as a parent. One may obviously wonder whether these reflect "true" effects or mere socially desirable responding. Interestingly, the standardized betas for the effect of violence on prospective perfectionisms did not change after controlling for social desirability, suggesting that the above-mentioned effects are not merely due to social desirability.

The fact that parent-reported violence is associated with prospectively higher levels of parenting perfectionism may be explained by guilt. Imagine a parent who has been violent with their children, which then sparks a sense of guilt in them. To reduce or deal with this sense of guilt, the parent could aim to be a better parent, not only to preserve their self-esteem but also for the children's sake. This reconciliation attempt would thus result in an increase in the parent's standards (perfectionistic strivings) and in the concern of being perfect (perfectionistic concerns). Past cross-sectional studies have shown that violence is negatively related to guilt (Broekhof et al., 2021; Carlo et al., 2013; Tangney et al., 1996), and that guilt is then related with an increase in perfectionism (Chang et al., 2021; Fedewa et al., 2005). Considering that the current interpretation is based on correlations and that correlation is not causation (as also shown in the present study), future studies should test the relationship between variables in (i) a mediation model to see whether guilt explains *why* violence towards the offspring leads to more parental perfectionism, and (ii) in a moderation model to see *in what case* violence leads to more parental perfectionism (i.e., when the parent feels guilty), making use of designs that allow to have an indication of causality. The current study also suggests that, although violence increases parenting perfectionism, the latter does not seem to reduce violent behaviors in subsequent times. Two interpretations can explain this. *First*, it is possible that the methodology employed in the current study does not allow to see the effects of perfectionism on violence, because the time laps is too short. In fact, to the author's knowledge, it is currently unknown *if and after how much time* an increase in parenting perfectionism could reduce violent behaviors. This could explain why we observed a link between violence at time 1 and perfectionism (strivings and concerns) at time 2, but no link between violence

at time 2 and perfectionism (strivings and concerns) at time 3. More longitudinal studies, on parenting perfectionism and violence, with different time lapses, should be conducted to better understand the relationship they entertain. Second, if in fact the time lapses in the current study are not an issue, another explanation is that parents, after having been violent, have an increase in their standards and concerns over being a good parent, but that this subsequent perfectionism is not enough of a driving force to later decrease violence. If this is the case, this finding has a strong clinical implication, underlying that violent behaviors exceed the want to be a better parent. Thus, understanding why wanting to be a better parent does not seem to translate into a decrease in violence is of utmost importance. Considering the clinical implication, this should potentially be investigated in more qualitative or mixed-methods studies, as a potential explanation would emerge from the parent's words, thereby allowing for more quantitative investigations. Aside from research, this finding should also be considered by clinicians, who should try to understand what leads to violence for each parent, even when they are concerned over being perfect parents.

Another important finding of the present study is that, as pointed above, our results do not support the fact that parental perfectionism would feed parental violence though the mediation of parental burnout. The mediation hypotheses were built upon highly and consistent correlations between parental burnout and perfectionism. Yet, most parental burnout research is still cross-sectional (90% according to Mikolajczak et al.'s meta-analysis). Although research has unraveled important links between this syndrome and numerous variables, correlation does not mean causation. It is therefore very important to probe the causality and direction of cross-sectional associations. For example, the link between parental burnout and perfectionism has only ever been investigated cross-sectionally (Kawamoto et al., 2018; Lin, Szczygieł, et al., 2021b; Raudasoja et al., 2022; Sorkkila & Aunola, 2019), showing consistent associations between perfectionism and parental burnout. The cross-sectional nature of studies can lead to false and dangerous causal conclusions. In fact, had we performed a mediation model with only time 1 in the current study, we would have concluded that parental burnout significantly mediates the link between perfectionistic concerns and violence towards the offspring (results can be viewed in **Supplementary Table S3**). Whereas longitudinally, this does not hold. Our results emphasize

the urgent need for the field to shift to more causal or quasi-causal experimental designs, to understand if variables entertain a causal relation with parental burnout. Considering the sensitive nature of parental burnout and violence against the offspring, and their impact on society, we have much to gain in using research designs that would allow more robust interpretations.

Limitations

Despite its strengths, the limitations of the current study should also be acknowledged. First, although the sample seems to be well balanced demographically wise, it is not the case for the family type. Most parents in the current study are in a biparental family. This does not allow us to generalize results to single parents, who are more at risk of child maltreatment (for a meta-analysis, see Stith et al., 2009). Second, a further limitation is the arbitrary choice of time intervals between measures (2 months). Although this time lag appears sound to detect changes in the variables under study, the present results would benefit from being replicated in intensive longitudinal methods (with measures every day) to detect more dynamic changes between variables.

Implication

The current findings have implications in future research, which should try to understand why violence may increase perfectionism, through more causally indicative research designs. Clinicians should also try to understand why parents resort to violence, and how it relates to worries in perfectionism. Ideally, both the research and the clinical fields should collaborate in order to elucidate why and in what case there is a link between violence and perfectionism.

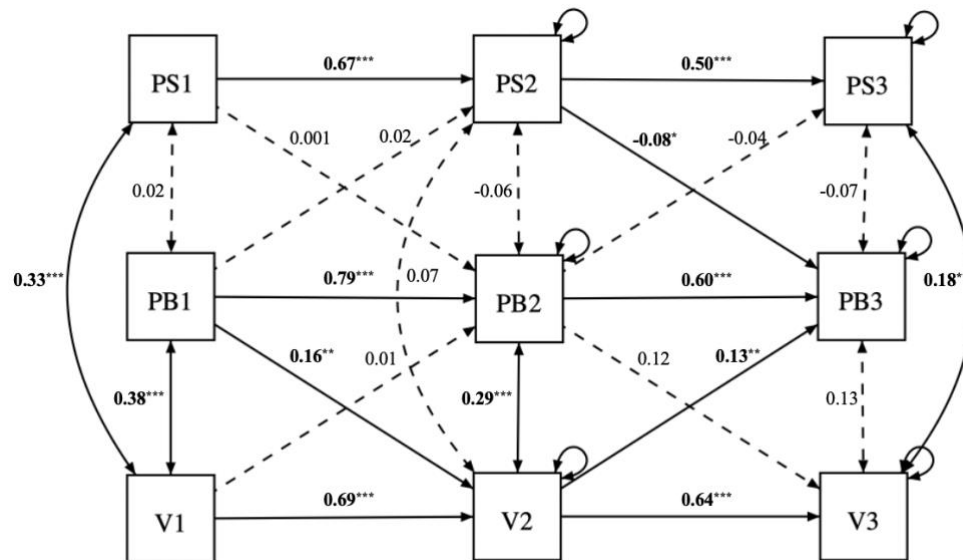
Conclusion

In conclusion, violence towards the offspring prospectively leads to an increase in perfectionistic strivings and perfectionistic concerns in parents, which unfortunately does not seem to prospectively translate in less violence (at least in the short term). Future studies should rely on (quasi) causal designs to unravel the effects of child maltreatment on the whole family system.

10.1.5 Supplementary Materials

Figure S1

Cross-Lag Model Investigating the Mediating Role of Parental Burnout Between Perfectionistic Strivings and Violence Towards the Offspring

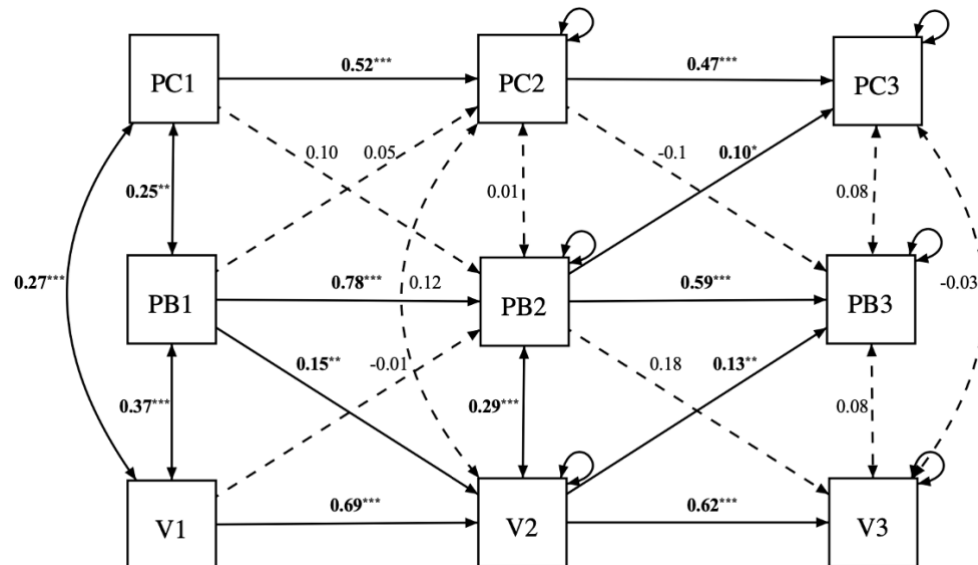


Note. PS1 = Perfectionistic Strivings at Time 1. PS2 = Perfectionistic Strivings at Time 2. PS3 = Perfectionistic Strivings at Time 3. PB1 = Parental Burnout at Time 1. PB2 = Parental Burnout at Time 2. PB3 = Parental Burnout at Time 3. V1 = Violence at Time 1. V2 = Violence at Time 2. V3 = Violence at Time 3. Significant paths and covariances are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant paths and covariances are depicted with dotted lines, and their coefficients are not in bold and with no asterisks. Bootstrapping = 1000 samples.

The first mediation model comprising perfectionistic strivings had an initial inadequate fit to the data: $\chi^2(15) = 162.52, p < .001$; CFI = .89; TLI = .73; RMSEA = 0.21, 95% CI = [0.18, 0.24], SRMR = .15. When covariances between highly correlated variables were added, the model showed better fit: $\chi^2(7) = 67.98, p < .001$; CFI = .95; TLI = .76; RMSEA = 0.19, 95% CI = [0.16, 0.24], SRMR = .04. Yet, as shown in **Figure S1** hereinabove, we did not find support for the hypothesized mediation. The results of the model did not change when controlling for social desirability.

Figure S2

Cross-Lag Model Investigating the Mediating Role of Parental Burnout Between Perfectionistic Concerns and Violence Towards the Offspring



Note. PC1 = Perfectionistic Concerns at Time 1. PC2 = Perfectionistic Concerns at Time 2. PC3 = Perfectionistic Concerns at Time 3. PB1 = Parental Burnout at Time 1. PB2 = Parental Burnout at Time 2. PB3 = Parental Burnout at Time 3. V1 = Violence at Time 1. V2 = Violence at Time 2. V3 = Violence at Time 3. Significant paths and covariances are in black and their standardized coefficients are marked in bold with asterisks (* $p < .05$, ** $p < .01$, *** $p < .001$). Non-significant paths and covariances are depicted with dotted lines, and their coefficients are not in bold and with no asterisks. Bootstrapping = 1000 samples.

The second mediation model comprising perfectionistic concerns also had an initial bad fit to the data: $\chi^2(15) = 147.91, p < .001$; CFI = .89; TLI = .74; RMSEA = 0.20, 95% CI = [0.17, 0.23], SRMR = .12. After covariances were added, the final model had a better fit to the data: $\chi^2(4) = 57.33, p < .001$; CFI = .96; TLI = .60; RMSEA = 0.22, 95% CI = [0.18, 0.29], SRMR = .04. However, as shown in **Figure S2** hereinabove, we did not find support for the hypothesized mediation. These same results were observed when adding and controlling for social desirability.

Table S3

Mediation Analyses between Perfectionistic Concerns, Parental Burnout, and Violence towards the Offspring, all at Time 1

Effect	Standardized Estimate	SE	95% CI		Z	p
			LL	UL		
Indirect (a*b)	0.04	0.004	0.002	0.02	2.48	.001**
PB1 → PC1	0.24	0.01	0.01	0.04	3.44	<.001***
PC1 → V1	0.18	0.13	0.15	0.66	3.19	.001**
Direct (c)	0.32	0.02	0.04	0.12	4.27	<.001***
Total (c + a*b)	0.37	0.02	0.06	0.13	5.13	<.001***

Note. PB1 = Parental Burnout at Time 1. PC1 = Perfectionistic Concerns at Time 1. V1 = Violence at Time 1. Bootstrapping = 1000 samples.

*p < .05. **p < .01. ***p < .001.

