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Intergenerational Transmission of Alexithymia as a Predictor of Child Posttraumatic Stress Outcomes during COVID-19

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INTERGENERATIONAL TRANSMISSION OF ALEXITHYMIA AS A PREDICTOR OF
CHILD POSTTRAUMTATIC STRESS OUTCOMES DURING COVID-19

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science
at Virginia Commonwealth University.

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Abstract

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The objective of this study was to test the role of parent alexithymia in explaining why some
children are functioning relatively well during the COVID-19 pandemic while others are
experiencing poor mental health. Participants were 88 U.S. children (M_{age} = 9.94 years; 54.5%
female; 59.1% White) and their parents/caregivers (68.2% female; 59.1% White). Two models
were tested: a path model in which the association between parent alexithymia symptoms and
child COVID-19-related posttraumatic stress symptoms (PTSS) was mediated by child
alexithymia symptoms, and a moderator model in which the association between parent
alexithymia symptoms and child PTSS was moderated by child alexithymia symptoms. The
hypothesized mediation model was statistically significant (β = 0.15, SE = 0.05, 95% CI: [0.07,
0.25]), whereas the alternative moderator model was not (β = .06, p = .44). Findings highlight the
importance of parents' emotional understanding and regulation for child mental health during
mass trauma.

Intergenerational Transmission of Alexithymia as a Predictor of Child Posttraumatic Stress

Outcomes during COVID-19

SARS-CoV-2 (Coronavirus; COVID-19) first emerged late December 2019 in Wuhan

City, Hubei province, China. The World Health Organization (WHO) declared COVID-19 a

public health emergency of international concern and on March 11, 2020 WHO announced

COVID-19's status change from epidemic to pandemic (World Health Organization, 2021a). As

of April 4, 2022, there have been 496,858,179 confirmed cases of COVID-19 globally, with

6,186,700 of those resulting in death (World Health Organization, 2021c); for the United States

specifically, as of April 4, 2022, there have been 79,634,695 confirmed cases and 978,465 deaths

(World Health Organization, 2021b).

Like war or natural disasters, COVID-19 can be considered a "mass trauma," defined by

Masten and Marayan (2012) as "extreme adversities and conditions that affect large groups of

children or adolescents and their families at the same time" (p. 2). In more recent work, Masten

(2020) specifically refers to COVID-19 as a mass trauma. As a mass trauma, COVID-19 not

only poses direct risk to well-being but also undermines protective systems usually afforded to

children, such as school systems, childcare facilities, and connection to one's community

(Masten & Narayan, 2012). Additionally, COVID-19 presents novel complications to family

systems and dynamics given the disruption of the lives of children on multiple levels: family

systems, environment, and community (Masten & Motti-Stefanidi, 2020; Weeland, 2021).

Taking away traditional access to these societal protective factors contributed to the ever-

changing dynamic of families during this time with dual-impact: increasing risk and decreasing

protective factors. In the wake of such events, exploring individual differences in outcomes as a

function of family (e.g., dyadic) factors is paramount. Thus, the current study sought to

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understand individual child and parent-child dyadic factors that may help explain heterogeneous child stress outcomes. Broadly speaking, the research question at hand was, "What may be influencing COVID-19 stress outcomes in children?" Given the nature of COVID-19 as a universal stress experience, examining the disparate stress outcomes in children may provide further insight into the contributing factors for such heterogeneity. That is, where a mass trauma has occurred, examining the differences in individuals' functioning (e.g., posttraumatic stress symptoms) should lend itself to a deeper understanding of what other factors contributed to these differences.

COVID-19 provides a unique research opportunity to examine risk and protective factors linked to stress outcomes. Exploring such factors independently of other available resources could allow for better interventions, insomuch as they could be customizable with respect to particular factors of a child. Previous mass trauma intervention research has focused largely on relational interventions and social supports, without taking into account the child's contributions to these processes. Masten and Narayan (2012) conducted a meta-analysis examining mass traumas. They outlined "exemplary" preventative intervention research, which centered on one-size-fits-all interventions without accounting for child and dyadic differences that may influence outcomes. Masten and Narayan (2012) noted a shortage of research regarding the what, for whom, and when of intervention; that is, that intervention efforts are not meeting the needs and individuality of children. Proximal factors are thought to be especially influential on child development (Bronfenbrenner, 1986), particularly during mass traumas (Cobham et al., 2016). Therefore, especially in the wake of COVID-19, research that may inform intervention efforts should aim to understand what proximal factors may be important to consider when aiming to mitigate negative outcomes.

In order to inform the understanding of child outcomes during the COVID-19 pandemic and COVID-19-specific interventions, the current study aimed to consider child and dyadic factors that may be influencing heterogeneous child stress responses to COVID-19. A main model and an alternative model were tested: (1) a path model testing the association between parent emotion expression and child posttraumatic stress symptoms through child's own emotion expression (Figure 1); and an alternative model in which (2) a moderator testing the association between parent x child emotion expression and child posttraumatic stress symptoms (Figure 2).
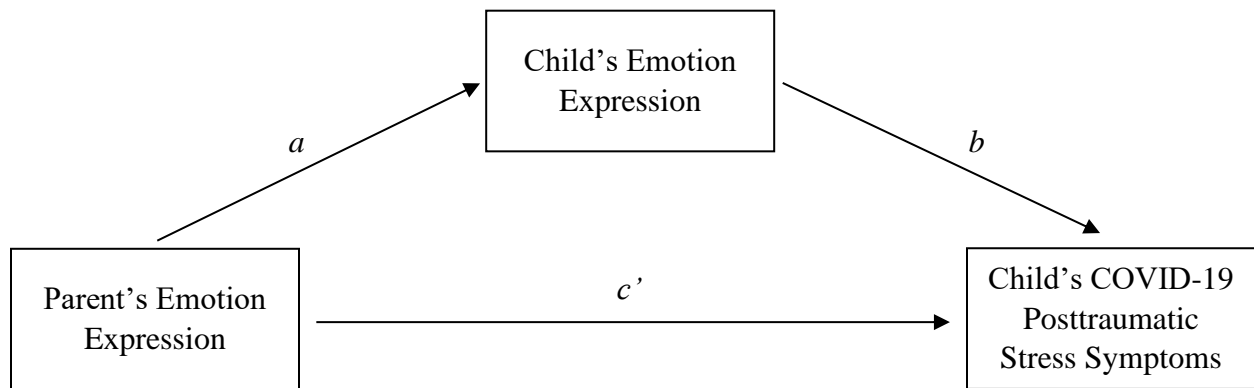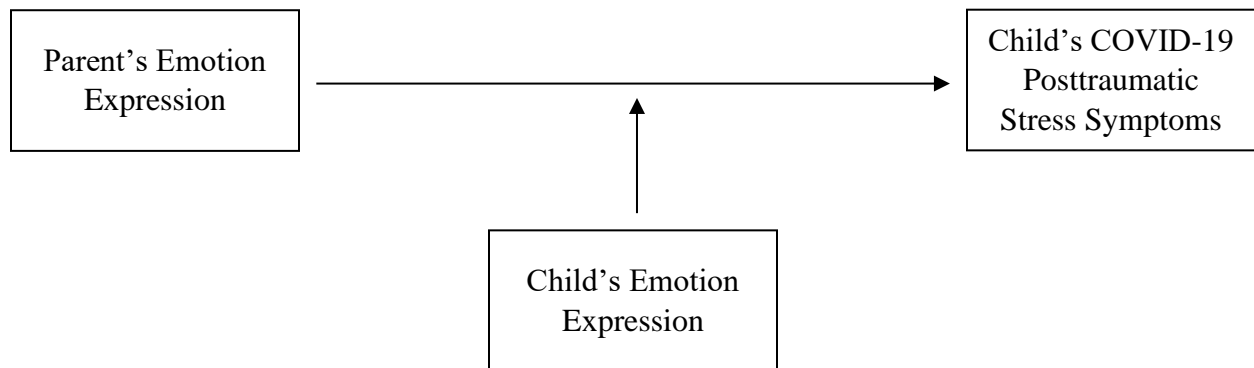
Figure 1. Path model.

Figure 2. Moderator model.

Posttraumatic Stress after Mass Traumas

Meta-analyses reveal that post-traumatic stress disorder (PTSD) is the most frequently studied outcome examined following mass trauma (Galea et al., 2005; Hoven et al., 2012; Neria et al., 2011; Norris et al., 2002; Weems et al., 2013). This is likely because PTSD has been evidenced as the most common type of psychopathology following mass traumas (Breslau et al., 1998). Moreover, consequences of PTSD in children are profound and include substantial functional impairment in a variety of domains such as social functioning, academic performance, and subsequent mental health (Dyregrov & Yule, 2006; Kirkpatrick & Heller, 2014). Prevalence rates of PTSD after mass traumas are consistently high. For example, Osofsky and colleagues (2009) found that 49.1% of students grades 4 through 12 surveyed in the academic year following Hurricane Katrina (2005-2006) met criteria for mental health referral regarding posttraumatic stress symptoms; additionally, 41.6% of students met the criteria the following school year (2006-2007; Osofsky et al., 2009). Research on the September 11, 2001 terrorist attacks provide further support for these prevalence rates. For example, results of a meta-analysis of 9/11 studies concluded that PTSD prevalence rates up to 6 months following the attacks reached levels upwards of 29.6%, with samples consisting of children under 5 years and up to 16 years (Neria et al., 2011). A study conducted 2.5 years following 9/11 found that PTSD still afflicted 35% of children ages 12-16 years (9.5-13.5 years at the time of the attacks); these researchers also concluded that events preceding and/or following mass traumas may have equal or greater long-term impact on PTSD severity than the event itself (Mullett-Hume et al., 2008). Where 9/11 was a singular instance with long-term repercussions, the conclusion outlined by Mullett-Hume and colleagues (2008) may imply magnified ramifications for PTSD in children in ongoing disasters such as COVID-19. Besides the impact of direct exposure to mass trauma, Otto

and colleagues (2007) suggested that for vulnerable populations, such as children, even media viewing of the event alone is sufficient to produce PTSD outcomes (Otto et al., 2007). Where COVID-19 has existed as a long-term mass trauma with ongoing media coverage and increased screen time for children, direct and indirect effects on child PTSD outcomes may be compounded.

Beyond diagnosed PTSD, even heightened posttraumatic stress (PTS), or posttraumatic stress symptoms (PTSS), are indicative of a complex trauma response (Coon et al., 2021). Despite being subthreshold for a PTSD diagnosis, individuals with PTSS may experience debilitating symptomatology with potential for clinically significant consequences (Coon et al., 2021; McLaughlin et al., 2015). In some cases, PTSS may precede PTSD (Sparks, 2018), and while not all individuals who display PTSS go on to be diagnosed with PTSD, PTSS remains a signifier of risk and maladjustment (Coon et al., 2021). PTSS has been found to be long-lasting in both adults and children after mass traumas (Moore & Varela, 2010; Paxson et al., 2012). For example, 46% of 4th-6th grade children still reported moderate to severe levels of PTSS symptoms 33 months following Hurricane Katrina (Moore & Varela, 2010). Children with complex trauma such as PTSS, in turn, are at risk for myriad impairments in social, emotional, behavioral, cognitive, and physical domains (Coon et al., 2021; Kliethermes et al., 2014). Moreover, subthreshold PTSD, or PTSS, is more likely to be experienced when facing indirect exposure to traumatic events, such as when an event happens to a loved one (McLaughlin et al., 2015). In the context of COVID-19, such indirect exposure may be of particular salience, especially for children.

Emerging literature on COVID-19 has evidenced PTSD and PTSS as particular concerns facing children and families. For example, in a review of the literature surrounding quarantine

and psychological impact, Brooks and colleagues (2020) found that negative mental health effects, including PTSS, were commonly associated with quarantine and isolation. Likewise, Fong and Iarocci (2020) examined 17 studies concerned with child-specific outcomes and found quarantine and isolation to be frequently associated with child PTSD and Xiong and colleagues (2020) concluded that COVID-19 presents "unprecedented hazards to mental health globally," with PTSD ranging in prevalence from 7 to 53.8% across eight countries in their study. Furthermore, Bridgland and colleagues (2021) found that in a sample of 1,040 adult participants across five Western countries, "PTSD-like" symptoms existed among a variety of exposure types (e.g., media exposure, direct exposure, anticipated events) and that these PTSD-like symptoms were best predicted by self-reported emotional impact of the events. Researchers concluded that COVID-19 should be understood as a traumatic stressor with potential to lead to PTSD diagnosis. Corroboration of these results have been found across various samples aged 16 years and up (Fong & Iarocci, 2020; La Rosa et al., 2021; Mertens et al., 2020; Rossi et al., 2020).

The literature highlighted reveals the potency of mass traumas in that they commonly result in heightened levels of posttraumatic stress symptoms and disorders in children. Child self-report has been found to result in higher rates of symptoms being reported than parent-report in a sample of Chinese dyads during COVID-19 (Xie et al., 2020) and evidence suggests that perception of traumatic events is indicative of mental health outcomes, including PTSD (Barlow et al., 2017). When considering child stress then, particularly in the context of parents who may struggle to identify their own and others' feelings, using child self-report of PTS is crucial. The current study focuses on PTS/PTSS to examine elevated risk rather than diagnostic cutoffs and to leverage continuous scores to allow more inclusive consideration and better representation of

children's outcomes. The PTS measure being utilized in the current study is specific to COVID-19 stress, allowing for direct interpretation of children's self-reported COVID-19 PTSS.

Parent to Child Transmission of Emotion Expression as a Pathway to Child Stress Outcomes (Figure 1, Path a-b)

Emotion regulation has been defined as the functional ability to manage emotional experiences and expressions via awareness, understanding, and acceptance of emotions in order to meet goals or demands of a situation (Gratz & Roemer, 2004; Gross, 1998; Shields & Cicchetti, 1998; Thompson, 1994). Being able to effectively regulate emotion is a central component of psychological health, and poor emotion regulation has been linked with a myriad of psychopathological symptoms (Edwards & Wupperman, 2017; Finlay-Jones et al., 2015; Gross & Jazaieri, 2014; Gross & Muñoz, 1995; Tull et al., 2007). In particular, emotion regulation difficulties have been associated with more posttraumatic stress symptoms (Mazloom et al., 2016; Shepherd & Wild, 2014; Sundermann & DePrince, 2015). Given the importance of emotion socialization in children's emotional development (Eisenberg et al., 1998; Hajal & Paley, 2020), examining how emotion dysregulation may be transmitted from parent to child via emotion socialization processes could greatly contribute to literature surrounding heterogeneous outcomes.

While emotion dysregulation is often used as an umbrella term (Gross & Jazaieri, 2014), the current study focuses on the more specific constructs of emotional health that underlie alexithymia. First coined by Sifneos (1973), alexithymia is defined as the difficulty with or inability to recognize, describe, and communicate one's emotions accurately and may also be associated with a difficulty to differentiate feelings from other bodily sensations (Bagby et al., 1994; Sifneos, 1973; Taylor et al., 1997; Taylor & Bagby, 2004). The three core difficulties of

alexithymia center on awareness, communication, and interpretation, such that alexithymia characteristics have been defined as 1) lack of emotional experience awareness, 2) difficulty communicating feelings, motivations, and emotional needs to others, and 3) trouble interpreting emotional experiences due to an overfocus on external factors, such as facts and rules, rather than internal factors, such as feelings and motivations (Edwards & Wupperman, 2017; Sifneos, 1973; Taylor et al., 1997; Taylor & Bagby, 2004). Alexithymia has a long been separated into cognitive (e.g., externally oriented thinking) and emotional components (e.g., difficulty identifying and describing emotions) (Haviland, 1996; Haviland et al., 1991; Hendryx et al., 1991; Loas et al., 1996, 2000; Parker et al., 1993). Researchers have often found a) relations between difficulty describing and expressing emotion and other internalizing psychopathology (Haviland et al., 1988, 1991; Hendryx et al., 1991; Loas et al., 2000), and b) inconsistencies with how externally oriented thinking relates to other variables of interest (Haviland et al., 1988; Loas et al., 2000). This may be due to the poor psychometric properties of the externally-oriented thinking subscale, which has led some researchers to recommend against its use (Jeon et al., 2021; Preece et al., 2021). Therefore, the current study focuses exclusively on the emotional component of alexithymia – difficulty identifying, understanding, and describing emotions - as it relates to child PTSS.

Of particular interest is how these outcomes may develop during middle childhood (ages 8-12 years). Middle childhood, where children transition into adolescence, is considered a critical developmental period across a variety of domains (e.g., physical, neurological, cognitive, social, emotional) (Davis & Siegel, 2000; Schonert-Reichl, 2011; Schwarz & Perry, 1994; Young et al., 2019). Schonert-Reichl (2011) notes the importance of this developmental period, comparing the acceleration of brain development during this time to that of infancy. During a

time of such rapid development, it is unsurprising that middle childhood outcomes have been

found to be a more accurate predictor of long-term adjustment and success than other

developmental periods (Pedersen et al., 2007; Schonert-Reichl, 2011). Therefore, middle

childhood is also considered a period of increased risk (McArthur et al., 2021; Schonert-Reichl,

2011; Whiteford et al., 2013), where trauma exposure may have a particularly negative effect on

development (Schwarz & Perry, 1994). Therefore, in the wake of a mass trauma, exploring

factors which inform the emotion climate of the dyad, such as alexithymia symptoms, and the

subsequent psychological effects that may stem from those factors is critical to understanding

how heterogeneous stress outcomes are developed among youth in the COVID-19 crisis.

Proximal factors are thought to be especially influential on child development

(Bronfenbrenner, 1986) and parent emotion has been shown to be particularly influential to child

stress outcomes (Browne et al., 2021; Cohodes et al., 2021; Masten et al., 1990; Masten &

Narayan, 2012). While some researchers explain the relations between parent emotion and child

stress as a function of children's sensitization to stress (Brown et al., 2020, p. 201; R. Feldman et

al., 2004; Hammen, 2015; Laurent, 2014), the current study posits that the child's emotion

regulation, as informed by parental emotion, is another pathway through which such a relation

may be explained (Figure 1, Path a-b). The key difference in this model, as compared to those

such as child stress sensitization, is the active role the child can play in the pathway. While child

emotion regulation is informed by the parent, it may also be informed by a myriad of other

sources (Southam-Gerow & Kendall, 2002). Treating the child as both a passive and an active

participant in the model, rather than exclusively passive, allows for greater implications when

considering how results may inform interventions. This study focuses on the transmission of

emotion expression difficulties from parent to child and how those difficulties inform child

COVID-19 PTS outcomes. More specifically, a pathway is proposed (Figure 1, Path a-b) in which parent's difficulties in identifying, understanding, and expressing their emotions leads to their children experiencing those same difficulties (Figure 1, Path a) which then influence the child's interpretation of and subsequent stress related to COVID-19 (Figure 1, Path b).

Intergenerational Transmission of Alexithymia (Figure 1, Path a)

With regard to parenting practices, intergenerational transmission is the process through which an earlier generation influences the attitudes, traits, and behaviors of the next generation through genetic and/or contextual means, both intentionally and not (D. H. Feldman & Goldsmith, 1986; Van Ijzendoorn, 1992). Intergenerational transmission of alexithymia, specifically, has been suggested by a number of researchers (Fukunishi & Paris, 2001; Gatta et al., 2015; Paniccia et al., 2018; Valera & Berenbaum, 2001; Way et al., 2007). For example, parental alexithymia scores have been associated with children's emotional difficulties, higher risk of psychopathology, and higher alexithymia levels (Fukunishi & Paris, 2001; Gatta et al., 2017; Yelsma et al., 2000). Such associations have been conceptualized in a variety of ways, but most center on socialization practices such as emotionally restrictive home environments and poor emotion communication (Berenbaum & James, 1994; Le et al., 2003; Yelsma et al., 2000) as well as modeling alexithymia characteristics (e.g., children seeing parents struggling to identify their emotions) (Fukunishi & Paris, 2001; Le et al., 2003). Some researchers have even directly implicated emotion socialization practices and as contributing to the intergenerational transmission of alexithymia (Chemtob et al., 2010; Edwards et al., 2017; Hajal & Paley, 2020; Le et al., 2003). The current model assumes that parent emotion and child emotion are connected via processes of emotion socialization and meta-emotion philosophy, leading to the intergenerational transmission of alexithymia (Figure 1, Path a).

Researchers agree that emotion socialization is largely influenced by proximal factors, where parents teach their children vital emotional competencies both implicitly and explicitly (Eisenberg et al., 1998; Katz et al., 2012; Morris et al., 2007). Indirect practices include social referencing, modeling, and overall affective environment, whereas direct practices involve coaching or teaching, active discussion of emotion, and reactions to children's emotion expression (Brand & Klimes-Dougan, 2010). Both types of practice directly influence the child's emotion regulation and have been studied for decades. For example, researchers in the 1960s worked to identify specific behaviors, such as attending, that enhance emotion regulation, and researchers in the 1990s expanded this to include identifying approaches, such as emotion coaching, that enhance emotion regulation (Eisenberg et al., 1998; Gottman et al., 1996; Tomkins, 1962, 1963). More recent work corroborates this relation, evidencing the intergenerational transmission of emotion dysregulation through processes such as emotion socialization (Buckholdt et al., 2014; Leerkes et al., 2020). Literature on parent modeling and socialization have linked parental alexithymia and child outcomes such as lack of emotional and social competence, with particular focus on early childhood outcomes (Denham et al., 1997; Kliewer et al., 2016; Liang et al., 2012). Beyond early childhood, Kliewer and colleagues (2016) examined the impact of parent alexithymia on parent solicitation and adolescent felt acceptance; results underscored that parent alexithymia can impact children beyond early childhood.

Similarly, Gottman and colleagues (1997) posited the parental meta-emotion philosophy (PMEP), which outlined that meta-emotion styles taught by parents could be highly influential to children's emotion regulation development. Where meta-emotion is an organized set of feelings and thoughts that parents have about their own emotions and those of their children, researchers proposed two specific styles of meta-emotion: 1) responding to emotion expression using

acknowledgment, encouragement, and identification to inform adaptive regulation, and 2) responding using distress, minimization, and punishment to inform dysregulated emotion functioning (Gottman et al., 1996). Katz and colleagues (2012) explain PMEP as benefitting emotion socialization research in four key ways: first, by outlining the behaviors (styles of meta-emotion) which guide socialization, second, by linking parents' emotion beliefs regarding themselves to parents' emotion beliefs regarding their children, third, by emphasizing the behaviors of awareness, acceptance, and emotion coaching as central processes within each style, and fourth, by asserting PMEP as a new and unique parenting dimension. Likewise, Eisenberg and colleagues (1998) theorized emotion socialization as the process of shaping children's emotion expression and regulation, namely by teaching cultural norms of emotion. Within this, Eisenberg and colleagues (1998) distinguished parental emotion socialization behaviors as being either supportive (encouraging, emotion- or problem-focused, active discussion) or non-supportive (avoidance, minimizing) and categorized the socialization of emotion into three broad topics: 1) reactions to emotion expression, 2) discussion of emotion, and 3) modeling of emotion. Where Gottman and colleagues (1996) grouped behaviors into supportive and non-supportive styles, Eisenberg and colleagues (1998) grouped by processes, with the understanding that supportive and non-supportive practices may occur within each group and that such practices may occur both implicitly or explicitly. Regardless of the grouping, research indicates PMEP to be influential on children's development of emotion regulation. For example, Liang and colleagues (2012) found meta-emotion philosophy to be a mediator of the relationship between emotion coaching and children's social competence and Denham and colleagues (1997) found that parents with better emotion coaching skills yielded children with higher emotional competencies.

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Together, the theories outlined highlight important theoretical assumptions underlying the proposed model. First, meta-emotion informs a parent's beliefs about emotion and goals for themselves and their child. Second, emotion socialization will occur regardless of style, and dimensions of socialization will ultimately guide a child's emotional development. The current study also assumes that children's emotion expression and awareness are influenced by parental meta-emotion and socialization of emotion; it is supposed that meta-emotion underlies the emotion socialization practices utilized by parents. The current study will focus primarily on the overlap between Gottman's behaviors and Eisenberg's second and third outlined processes: awareness and understanding of emotion and how it is communicated between parent and child, as understood through the lens of alexithymia (Figure 1, Path a).

Child Alexithymia as a Predictor of Child Stress Outcomes (Figure 1, Path b)

When considering how emotion socialization and meta-emotion theories may inform heterogeneous outcomes, a further look at the consequences of emotion dysregulation is necessary. The development of emotion regulation is paramount in preventing psychopathology, wherein emotion dysregulation is an underlying factor in nearly all clinical disorders (Gross & Muñoz, 1995). In a meta-analysis conducted by Johnson and colleagues (2017), authors outline how supportive emotion socialization behaviors have been associated with greater child emotion regulation skills and lower rates of internalizing psychopathology. Researchers note that the inverse of this was also evidenced, where non-supportive emotional socialization behaviors have been associated with child emotion regulation difficulties and more internalizing psychopathology (Johnson et al., 2017). Kopp (1992) found that toddlers who were able to communicate their feelings were less likely to become distressed during stressful situations. Likewise, Eisenberg and colleagues (2010) found that youth's emotional regulation and

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reactivity were linked to parental emotion-related socialization behaviors. Thus, taken together the literature suggests that a child's ability to identify, understand, and discuss their emotion leads them to possess adequate skill sets to control their arousal during stressful events. However, as suggested by Johnson and colleagues (2017), non-supportive socialization can lead to poor child outcomes. According to Eisenberg and colleagues (1998), children who are unable to freely discuss their emotions, negative emotions in particular, may be disadvantaged in their social and emotional competence due to their lack of expression and understanding. Furthermore, alexithymia symptoms within families have been linked with general family pathology (Lumley et al., 2007), making such transmission particularly concerning with regard to the impact of COVID-19 on families and children. The current study posits that difficulties in emotional expression (i.e., individuals with difficulties identifying, expressing, and understanding the emotional experience) may be at higher risk of psychopathological outcomes (Figure 1, Path b).

Differential posttraumatic stress outcomes during mass traumas have previously been linked with alexithymia tendencies (Craparo et al., 2014; Hua et al., 2014; Taylor & Bagby, 2004; Way et al., 2007; Yehuda et al., 1997; Zlotnick et al., 2001). Zlotnick and colleagues (2001) explored such associations in treatment-seeking psychiatric patients, Yehuda and colleagues (1997) examined non-treatment-seeking Holocaust survivors, and Craparo and colleagues (2014) focused on Italian flood survivors. In all three cases, an association between alexithymia and posttraumatic symptomatology was present. Emerging COVID-19 literature supports this notion, where increased report of alexithymia symptoms such as difficulty identifying and describing feelings in a sample of Chinese college students amidst the COVID-19 crisis was associated with depression and PTSD (Tang et al., 2020). Likewise, Osimo and colleagues (2021) examined differential responses to COVID-19 lockdown in Italy and found

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that individuals with lower emotional stability, resilience, and higher alexithymia had worse

emotional responses to the COVID-19 lockdowns. Furthermore, Merlo and colleagues (2021)

and Serafini and colleagues (2020) concluded that alexithymia acts as a risk factor for

developing psychopathology related to COVID-19. Such findings are indicative of what factors

may be contributing to heterogeneous outcomes, with alexithymia tendencies being a specific

vulnerability (Merlo et al., 2021; Osimo et al., 2021; Serafini et al., 2020; Tang et al., 2020).

Previous literature on mass trauma indicates that parents with responses which reflect

their emotional distress are linked to children with higher levels of PTS; in this case, researchers

concluded that witnessing parents lack emotional control may intensify child distress (Wilson et

al., 2010). Such a notion has been suggested before in resilience and disaster literature, simply

expressed as terrified parents being terrifying to children (Masten et al., 1990; Masten &

Narayan, 2012). This effect has begun to be evidenced in COVID-19 literature, such as Cohodes

and colleagues (2021) who found that children of parents with high levels of emotion coaching

had lower levels of pandemic-related stress, whereas children of parents who reported higher

levels of stress and pandemic-related anxiety has higher levels of pandemic-related stress.

Likewise, Browne and colleagues (2021) found caregiver pandemic-related distress to be

positively related to children's mental health problems. The current study aims to examine how

alexithymia symptomatology and behaviors may be transmitted intergenerationally, informed by

emotional socialization and meta-emotion philosophy, and thus impact child COVID-19 PTS

outcomes. Where parenting via emotion socialization and meta-emotion philosophy occurs, it

may be understood that parents with alexithymia symptoms may struggle to effectively socialize

their children to emotions and coping styles that may contribute to better understanding of the

pandemic and associated feelings of stress. Emerging literature on COVID-19 suggests that the

pandemic has contributed to child PTS outcomes (Fong & Iarocci, 2020). At current, research on child alexithymia symptoms and PTS outcomes is limited, with the majority of alexithymia research focusing on adults; the current study intends to address this gap. Related research on child and family functioning during the pandemic, though, provides insight into how child alexithymia and stress outcomes may be related. The current study posits that emotion regulation difficulties in parents and children will lead to worsened child PTS due to a greater difficulty understanding and processing COVID-19. Some preliminary literature on COVID-19 indicates this is plausible, with pre-COVID-19 stress and mental health problems being found to exacerbate negative effects of the pandemic (Browne et al., 2021; Peltz et al., 2021; Ren et al., 2021). More specifically, families with more negative interactions pre-COVID-19 were found to have more difficulty adjusting to COVID-19 (Qu et al., 2021; Sun et al., 2021); a special issue by Weeland (2021) indicates that the findings outlined suggest COVID-19 disproportionality affects children and families with existing risk factors.

An Alternative Model: Child Emotion as a Moderator (Figure 2)

An alternative model may be proposed in which child emotion acts as a moderator, rather than a mediator, on the relation between parent emotion and child stress (Figure 2). It is plausible that the synergy between parent and child alexithymia influences child outcomes; such a model emphasizes child alexithymia as an influence on the relationship between parent emotion health and child stress outcomes, rather than an explanation. One advantage to such an argument is the lack of dependency child alexithymia has on parent alexithymia. Where children experience a multitude of proximal influences (e.g., school, peers, caregivers) all of which may influence their emotion regulation skills, it could be advantageous to understand child alexithymia as an influence on the existing proximal relations rather than an explanatory process, leading to

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flexibility in understanding child outcomes as they are informed by the dyad. However, this model does not allow for the theoretical underpinnings of emotion socialization and PMEP, and discounts the literature evidencing the existence of intergenerational transmission of alexithymia.

The Current Study

The current study aimed to fulfill two primary gaps in the literature. First, the current study attempted to replicate previous literature on mass trauma that found witnessing parents' lack of emotional control intensified child distress (Masten et al., 1990; Masten & Narayan, 2012; Wilson et al., 2010). While preliminary COVID-19 literature evidences that parents who report higher pandemic-related stress yield children with higher pandemic-related negative outcomes, such effects remain to be seen for parents with a heightened difficulty in identifying, expressing, and understanding their emotions (Figure 1, Path a-b). Second, the current study aimed to explain the relations between parent emotion expression and child PTS outcomes via child emotion expression. Literature suggests that perception of traumatic events is indicative of mental health outcomes (Barlow et al., 2017). Thus, children with difficulties in identifying, expressing, and understanding their emotional experience, as it is (theoretically) transmitted via emotion socialization and PMEP, may be at-risk of higher PTS. However, such associations have not yet been evidenced, particularly regarding COVID-19 outcomes (Figure 1, Paths a and b).

The current study had two main hypotheses. First, it was hypothesized that parents' emotional expression abilities (i.e., greater difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking) would be positively associated with their children's stress response to COVID-19, specifically their COVID-related PTSS. Second, it was hypothesized that the association between parent alexithymia and child PTSS would be partially mediated by children's emotional expression abilities. More specifically, that greater difficulty

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identifying feelings, difficulty describing feelings, and externally oriented thinking in parents

would be associated with poorer emotional awareness and more expressive reluctance in

children, which in turn will be associated with greater child PTSS. Together, these hypotheses

were theorized to comprise a mediator model (Figure 1). Additionally, the current study utilized

a moderator model (Figure 2) in order to explore the alternative argument.

Method

Participants

Participants in the current study were drawn from the Families Adjusting to COVID-19

Together (FACT) Study. The FACT study recruited U. S. children ages 8-12 and their primary

caregivers. Parental inclusion criteria were as follows: 1) ability to read English at or above an

8th grade level without assistance, 2) have a child between the ages of 8 and 12 years, 3) be the

legal guardian of this child, 4) live with this child more than half of the time, or 4 days/week, and

5) confirm that the child can complete a series of survey questions mostly on their own. Per

parent report, child inclusion criteria included: 1) be between the ages of 8 and 12 years and 2)

have the ability to complete a survey independently. The sample for this study was dyads from

whom we had complete data on the main variables of interest ($N = 88$). This sample size is

adequate to detect medium mediation effects with power set to 0.80 (Fritz & MacKinnon, 2007).

Procedures

The Families Adapting to Covid Together (FACT) study was based in a risk and

resilience perspective and was broadly aimed to test parts of a heuristic model for how COVID-

19 disruptions may impact child adjustment. The primary aims of FACT were to 1) examine

child socioemotional adjustment directly and indirectly through parent/caregiver well-being and

2) to examine individual, dyadic, and family level risk and protective factors that may inform

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pandemic-related impacts. A priori analyses were conducted to determine necessary sample size for testing moderated mediation using bias-corrected bootstrapping. The FACT study tested for medium size conditional indirect effects with an expected power of 0.80, which required a minimum sample size of 149 dyads (Fritz & MacKinnon, 2007). Since complete data is necessary in order to retain power, a conservative 20% missing data was factored in, resulting in a final minimum sample size of 178.8 dyads, rounded up to 180 dyads. Rolling recruitment was intended to allow time for data verification until the 180 necessary dyads were procured.

The FACT study collected cross-sectional data and was conducted entirely online in Qualtrics software. It utilized two recruitment methods: (1) snowball sampling via a flier posted on social media platforms and online parenting-specific discussion boards, and (2) Qualtrics panel sampling services. Once the study was accessed via links provided in the recruitment flyer/email, parent/caregiver participants completed a brief eligibility screening. If the participant passed eligibility, they were sent through to the study's CAPTCHA check and consent form. After parents gave consent and permission for their own and their child's participation, they completed the parent portion of the survey. The child was then able to link to their assent form and surveys. At the end, parents were shown links to resources and to the reimbursement form. Families who met eligibility requirements were reimbursed for their time by a $25.00 amazon.com electronic gift card.

In order to maintain data integrity, several strategies were used. First, design features built into the survey programming to maintain data integrity included a CAPTCHA check as well as Qualtrics features to prevent indexing and "ballot box stuffing." The latter two features disallow a participants' device from remembering the survey's link and make the survey inaccessible after completion, respectively. Second, data monitoring strategies included

examining IP addresses for duplicates and out of range locations (i.e., outside of the US) as well as examining time spent completing the survey. Third, the surveys consisted of several basic precautions such as open-ended questions, reverse-coded questions, and attention checks. Responses to these questions were examined for accuracy and data from participants with suspect responses was discarded.

Measures

Demographics

Socio-demographic information was collected in a 7-section format including questions on: parent, co-parent, household (e.g., income, residents), child (e.g., grade level, age, sex), child medical conditions, child school situation, and responsibilities. All demographics were placed at the beginning of the parent survey. Within the parent section the following were collected: relationship to child, gender identity, age, ethnicity/race, education, employment status before and during COVID-19, COVID-19 employment exposure risk, and marital status. Within co-parent demographics, only collected for participants who endorsed having a co-parent, the following were collected: relationship to child, education, employment status before and during COVID-19, and COVID-19 employment exposure risk. Household demographics were as follows: annual income before and during COVID-19, household makeup (children, adults, bedrooms), childcare and teaching responsibilities related to COVID-19, vaccination status of self and child, and rationale for child vaccination status. Parent-report child demographics included: gender identity, ethnicity/race, age, and grade level. Additionally, if a parent reported a child medical condition the following was assessed: difficulties and delays regarding work, activities, and medication before and during COVID-19. Parent-report child school demographics included: attendance format before COVID-19 and currently as well as childcare

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utilized. Lastly, responsibility demographics were collected for those who endorsed having a co-parent, division of the following tasks were collected: childcare, household labor, and child school management.

Parental Comfort with Emotion

The Toronto Alexithymia Scale-20 (TAS-20; Bagby et al., 1994) is a 20-item self-report measure used to assess the parent/caregiver's comfort with emotion. It is intended, in part, to help understand how parents socialize their children to cope. Rated on a Likert scale of 1 (*Not at all like me*, or *Not true*) to 5 (*Completely like me*, or *Very true*), scores are summed to create 3 subscales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT). Higher scores on the subscales indicate greater difficulty with identifying and describing feelings or higher levels of EOT. Example items include, "I am often confused about what emotion I am feeling;" "It is difficult for me to reveal my innermost feelings, even to close friends;" and "I prefer to just let things happen rather than to understand why they turned out that way." Given issues with the psychometric properties of the EOT subscale in past studies (e.g., see Arenliu et al., 2021; Jeon et al., 2021; Kooiman et al., 2003; Preece et al., 2021; Williams & Gotham, 2021), in this study only the DIF and DDF subscales were used. Psychometrics for the DIF and DDF in previous studies were all acceptable, with test-retest reliability reported as $r = .71$ (DIF) and $r = .68$ (DDF) (Kooiman et al., 2003) and internal consistency reported as $\alpha = .78$-.81 (DIF) and $\alpha = .75$ (DDF) (Bagby et al., 1994). Psychometrics were found using three distinct samples, from which racial demographics were not reported: 965 undergraduate students (59.7% female) with a mean age of 21.8 years, 72 undergraduate students (66.7% female) with a mean age of 20.8 years, and 401 undergraduate students (60.3% female) with a mean age of 20.8 years plus 218 psychiatric out-patients (56.9% female) without a mean

age reported (Bagby et al., 1994). Additional psychometrics were found using two distinct samples, from which racial demographics were not reported: 519 undergraduate students (67% female) with a mean age 21.4 years and 159 psychiatric patients (59% female) with a mean age of 39.4 years (Kooiman et al., 2003). As suggested by previous literature (Kooiman et al., 2003) and based on the high correlation of DIF and DDF scores ($r(86) = .70$, $p < .001$), this study combined items from the DIF and DDF subscales to yield a total score ($\alpha = 0.89$).

Emotion Expression Difficulties in Children

The Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002) is a 16-item self-report measure for children adapted from the 30-item TAS. The EESC is intended to measure emotion expression difficulties in a way which is developmentally appropriate for children. Items are rated on a Likert scale from 1 (*not at all true*) to 5 (*extremely true*) where higher scores are indicative of poorer emotion functioning. Example items include, "I have feelings that I can't figure out" and "It is hard for me to show how I feel about somebody." The EESC consists of two 8-item subscales: poor emotion awareness (PA) and reluctance to express emotion (ER). High internal consistencies for the two subscales ($\alpha = .83$, PA; $\alpha = .81$, ER) and moderate test-retest reliability ($r = .59$, PA; $r = .56$, ER) were found in previous research (Penza-Clyve & Zeman, 2002). While the validation study for the EESC was completed on a sample of 208 children (47.6% female, 95.2% European American) ages 9 to 12 years in an urban working-class area (Penza-Clyve & Zeman, 2002), the EESC has been established for use on younger and older participants as well. For example, Kranzler and colleagues (2016) conducted analyses with a sample of 204 youth (57.8% female, 67.6% White) ages 7 to 16 years and found consistent reliability across grades ($\alpha = .86$-.92) and for the sample ($\alpha = .90$). In this study, internal consistency was excellent for the two subscales ($\alpha = .87$, PA; $\alpha = .85$, ER), which were highly

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correlated (r(86) = .80, p < .001). Following the recommendation of recent literature (Caiado et al., 2022) and given the high correlation between subscales, this study utilized the total score only (α = 0.92).

Posttraumatic Stress Symptoms in Children

The UCLA-BCSCA for PTSD questionnaire was developed from the UCLA PTSD Reaction Index for *DSM-5* Brief Form (RI-5-BF; Kaplow et al., 2020; Rolon-Arroyo et al., 2020); consisting of 11 items, the scale is intended to measure post-traumatic stress symptoms that are directly related to the COVID-19 outbreak. Items are self-reported by the child using a Likert scale ranging from 1 (*none of the time*) to 5 (*most of the time*). Example items include, "When something reminds me of what happened or is still happening, I get very upset, afraid, or sad," and "When something reminds me of what happened, I have strong feelings in my body like my heart beats fast, my head aches or my stomach aches." Psychometric properties for this scale are currently unavailable due to its novelty, but were available for the scale from which it was adapted: the RI-5-BF. The RI-5-BF (Kaplow et al., 2020; Rolon-Arroyo et al., 2020) was developed utilizing a sample of 486 youth (54% female, 54% Black) with a mean age of 13.32 years as well as a sample of 41 youth (59% female, 39% Black) with a mean age of 12.44 years to determine psychometrics; both samples were conducted in children as young as 7 years and resulted in excellent internal consistency (α > .93), strong intercorrelation (r = .70–.89), and excellent discriminant validity (d = 2.48). In this study, a total summative score was used to examine child PTSS on a continuous scale (α = .92).

Covariates

Mass disaster literature suggests that child age, child gender, parent gender, child race, socioeconomic status, and child psychopathology such as anxiety and depression should be

controlled for in analyses. More specifically, age predicts negative psychological symptomatology in samples of youth following a variety of traumatic events (Fong & Iarocci, 2020; Giannopoulou et al., 2006; Masten & Motti-Stefanidi, 2020; Masten & Narayan, 2012; Masten & Osofsky, 2010; Osofsky et al., 2009; Shannon et al., 1994; Wilson et al., 2010). It is also suggested that child gender, where female gender has been evidenced as having more risk of negative outcomes, may influence outcomes (Breslau et al., 1998; Fong & Iarocci, 2020; Giannopoulou et al., 2006; Hoven et al., 2012; Masten & Narayan, 2012; Masten & Osofsky, 2010; Shannon et al., 1994; Zhou et al., 2020). Other factors to consider include race (Shannon et al., 1994), parent gender (Brand & Klimes-Dougan, 2010), family makeup (Masten & Motti-Stefanidi, 2020), and sociodemographic factors such as socioeconomic status (Fong & Iarocci, 2020; Neria et al., 2011), as such factors have been associated with child outcomes. Concerning the study of alexithymia specifically, Honkalampi and colleagues (2000) and Picardi and colleagues (2011) suggest controlling for depression given the strong association between conditions. Therefore, child age, child gender, parent gender, child race, socioeconomic status, and child psychopathology (anxiety and depression diagnosis before or during the pandemic) were tested as potential covariates.

Results

All analyses were conducted in SPSS (Version 28.0) predictive analytics software.

Descriptive and Demographic Statistics

Descriptive statistics for all demographics of interest were run and means, standard deviations, *n*, and percentages are reported in Table 1. Additionally, descriptive statistics for variables of interest were run and necessary *n*, score ranges, means, standard deviations, normality statistics, and bivariate correlation coefficients are reported in Table 2.

About one-fifth (21.6%; *n*=19) of children in this sample had PTSS high enough to be categorized as a potential PTSD diagnosis per measure cutoffs (Kaplow et al., 2020; Rolon-Arroyo et al., 2020), while 29.5% (*n*=26) were classified as mild PTSD symptoms and the remaining 48.9% (*n*=43) were only minimally symptomatic.

Table 1

Demographic Descriptives

	Child	PC
Age		
Min.	8	25
Max.	12	57
Mean (*SD*)	9.94 (1.33)	36.23 (6.19)
Gender, *n* (%)		
Female	48 (54.5)	60 (68.2)
Male	40 (45.5)	28 (31.8)
Race, *n* (%)		
American Indian or Alaskan Native	2 (2.3)	3 (3.4)
Asian	3 (3.4)	5 (5.7)
Black or African American	14 (15.9)	13 (14.8)
Native Hawaiian or Other Pacific Islander	1 (1.1)	1 (1.1)
Hispanic or Latinx	10 (11.4)	10 (11.4)
White	52 (59.1)	52 (59.1)
Multi-Racial	6 (6.8)	4 (4.5)
Education, *n* (%)		
High school diploma, GED, or less	-	12 (13.6)
Some college or vocational training	-	37 (42.0)
College degree	-	39 (44.3)
Family Income, *n* (%)		
$0-9,999	-	9 (10.3)
$10,000-39,999	-	32 (36.3)
$40,000-84,999	-	20 (22.5)
$85,000-164,999	-	27 (30.5)

Table 2

Measure Descriptives

	N	Min.	Max.	*M*	*SD*	Skewness		Kurtosis		*r*	
						Stat.	*SE*	Stat.	*SE*	EESC	PTSS
TAS	88	12	46	26.52	9.28	0.26	0.26	-1.04	0.51	0.42*	0.64*

EESC	88	16	65	40.66	12.62	-0.26	0.26	-0.87	0.51	--	0.57*
PTSS	88	0	34	11.73	9.10	0.58	0.26	-0.54	0.51	--	--

*Correlation significant at the 0.001 level (2-tailed).

Preliminary Analyses

Before beginning analysis, data were screened following recommendations of Tabachnick and Fidell (2013) for: 1) missing data, 2) univariate normality, outliers, and linearity 3) multivariate normality, outliers, linearity, and homoscedasticity, and 4) multicollinearity. Data fit all of the necessary assumptions with no transformation needed. Next, a series of correlations and t-tests were run to examine the aforementioned sociodemographic variables (child age, child gender, parent gender, child race, socioeconomic status, child anxiety and depression) as covariates for potential inclusion in the proposed models. No sociodemographic variables were uniquely and significantly associated with outcome variable (PTSS) or the mediator (EESC) (Table 3) and thus were not statistically controlled in main models.

Table 3

Covariate Coefficients

	EESC		PTSS	
	$r, t,$ or F	2-tailed Sig.	$r, t,$ or F	2-tailed Sig.
Child				
Age*	-0.06	0.56	0.09	0.41
Gender**	-0.28	0.78	-0.97	0.34
Race***	1.56	0.17	0.45	0.84
Anxiety Diagnosis**	-1.32	0.19	-1.94	0.06
Depression Diagnosis**	-1.06	0.29	-1.47	0.15
Parent gender**	1.60	0.11	1.96	0.05
Family SES*	-0.14	0.20	-0.02	0.85

*Pearson correlation
**Independent samples t-test
***One-way ANOVA
Note: for both gender variables, 0=male and 1=female

Primary Analyses

Each path and interaction model was tested separately using regression analysis in SPSS version 28 and the Process Macro version 4.0 for SPSS (Hayes, 2013). First, the hypothesized direct path was tested using linear regression to determine that there was a statistically significant direct pathway from parent alexithymia to PTSS ($\beta = 0.64$, $SE = 0.08$, $p < 0.001$). Next, the indirect path was tested using Model 4 in the PROCESS 4.0 macro (Hayes, 2013) for SPSS. Using 5000 bootstraps with replacement, the bias corrected 95% confidence intervals were examined to determine that there was a statistically significant indirect pathway from parent alexithymia to PTSS through child emotion expression ($\beta = 0.15$, $SE = 0.05$, 95% CI: [0.07, 0.25]). The standardized coefficient, standard error, and significance value for each pathway, including the hypothesized direct path, were examined and can be found in Table 4.

Table 4

Indirect and Total Effects

Type	Path	*B*	*SE*	β	*p*	95% CI Lower	Upper
Component	a	0.56	0.13	0.41	0.00	0.30	0.83
	b	0.26	0.06	0.37	0.00	0.14	0.38
Direct	c'	0.48	0.08	0.49	0.00	0.31	0.64
Indirect	a-b	0.15	0.05	0.15		0.07	0.25
Total	c	0.62	0.08	0.64	0.00	0.46	0.79

Second, the alternative (moderator) model was tested to determine whether there were significant interaction effects of parent alexithymia with child emotion expression on child PTSS. Predictor variables were mean centered prior to analysis and a product term created. Using the Baron & Kenny (1986) method, a hierarchical linear regression was run to test the direct effects of the predictor (parent emotion expression) and moderator (child emotion expression) on the outcome (child COVID-19 PTS symptoms). Since no covariates were

necessary, in this regression the predictor variables were added to Block 1, and the product term entered into Block 2. No moderator effects were indicated, that is, the association between the product term and the dependent variable was not statistically significant ($\beta = 0.06$, $p = 0.44$).

Discussion

The current study aimed to consider child and parent factors that may influence heterogeneous child stress responses to COVID-19. Results supported the hypothesized path model, wherein greater parent alexithymia symptoms were associated with higher child COVID-19-related PTSS, and this direct effect was partially mediated by greater child alexithymia symptoms. The competing moderator model was not supported by results; that is, the direct relationship between parent alexithymia symptoms and child COVID-19-related PTSS was not moderated by child alexithymia symptoms.

COVID-19 as a mass trauma undermined protective systems usually afforded to children, such as school systems, childcare facilities, and connection to one's community (Masten & Narayan, 2012). Additionally, children have faced extreme emotional circumstances such as economic shortages, school closings, and quarantine restrictions and are in the position to not only have their personal reaction to such events, but witness and be subject to their parents' emotional reactions as well. Literature suggests that identifying, understanding, and expression emotion is critical to the development of adequate skillsets for controlling arousal during stressful events (Eisenberg et al., 2010; Gross & Muñoz, 1995; Johnson et al., 2017; Kopp, 1992) and that without these skills (and environments which foster them) children may be disadvantaged in their social-emotional competencies and emotion processing abilities (Eisenberg et al., 1998; Lumley et al., 2007). Examining the influence of proximal factors, such as parent emotion, has far-stretching implications given current events. That is, if such a factor

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influences heterogeneous outcomes during a mass trauma, then logically such factors would influence children's outcomes during other, smaller scale, traumatic experiences. Taken together, this makes the transmission of alexithymia from parent to child particularly concerning during COVID-19, where it is paramount that children process the emotions they are experiencing and witnessing. My findings suggest that without the skills to adequately process these emotions, children face higher posttraumatic stress levels.

Existing literature suggests that child stress may be influenced by witnessing parents' own expression of negative emotion during mass traumas (Browne et al., 2021; Cohodes et al., 2021; Masten et al., 1990; Masten & Narayan, 2012; Wilson et al., 2010), but less research has explored what this looks like in parents who struggle to express emotion or lack awareness of their emotions. Thus, the current findings corroborate and expand upon existing mass trauma research by examining parents with a heightened difficulty identifying, expressing, and understanding their emotions, where greater difficulties were linked with greater child distress, as measured by PTSS. This may be because children witness and reflect their parents' stress, but given the alexithymia symptoms present in the sample it seems more likely that this association is due to a lack of emotion processing, and the current study explored a pathway through which this association between parent alexithymia and child COVID-19-related PTSS might be explained: the intergenerational transmission of alexithymia. Meyer and colleagues (2014) note the importance of emotion socialization and PMEP as indicative of the attention parents devote to helping their children identify and understand emotions. I argue that parents' own ability to understand and express their emotions informs such socialization and PMEP, where parents with higher alexithymia symptoms are less likely to devote attention to positive emotion socialization processes due to their own lack of understanding surrounding such techniques. It stands to reason

that one cannot teach what they don't understand. This pattern has been evidenced in other studies (Berenbaum & James, 1994; Le et al., 2003; Yelsma et al., 2000), where the socialization practices of parents with alexithymia have been directly implicated as problematic for children's emotional development (Chemtob et al., 2010; Edwards et al., 2017; Hajal & Paley, 2020; Le et al., 2003). As a consequence, parents are more likely to be unable to guide and encourage children's own understanding and processing of emotion and/or dismiss or minimize emotions; whether intentional or inadvertent, the same effect applies: children do not learn to identify and express their own emotions and in turn struggle to process emotional events such as the COVID-19 pandemic.

These findings are particularly important given the developmental stage of children studied. Middle childhood, a time of rapid development and increased risk (Davis & Siegel, 2000; McArthur et al., 2021; Schonert-Reichl, 2011; Schwarz & Perry, 1994; Whiteford et al., 2013; Young et al., 2019), is also the developmental period during which alexithymia symptoms begin appearing (Hemming et al., 2019). The current study not only provides evidence for the transmission of alexithymia from parent to child, but also suggests that this transmission carries consequences for children processing traumatic events. Future work would benefit from further exploring the pathway between alexithymia symptoms and stress outcomes and should investigate how emotion-based interventions may target the parent-child as a unit, rather than individual, in order to mitigate such outcomes. Unlike child stress sensitization models, in which it is theorized that early life stressors sensitize children to having more negative reactions to later life stressors (Hammen, 2015), my findings evidence the active role a child can play in their experience; while child emotion regulation is proximally informed by their parent, other factors that may promote healthy development should be investigated.

Mass trauma research has found PTSD prevalence rates to range from 30-50%, even years after the event (Moore & Varela, 2010; Mullett-Hume et al., 2008; Neria et al., 2011; Osofsky et al., 2009). While the current study utilized a continuous PTSS scale for analyses, diagnostic categories were assessed for comparative purposes. Descriptive statistics revealed that only 21.6% (n=19) of the sample had PTSS high enough to be categorized as a potential PTSD diagnosis, while 29.5% (n=26) were classified as mild PTSD symptoms and the remaining 48.9% n=43) were only minimally symptomatic. These findings did not align with other mass trauma literature, which may be due to the immediate and acute effects of COVID-19 not translating to particularly high levels of PTSS. Even still, roughly 22% of the current sample experiencing PTSS to the extent they may be categorized as having PTSD shed light into the traumatic effect that COVID-19 has had on children.

The alternative moderator model was not supported. The lack of support for a reasonable alternative explanation lends itself to further validate the path model, providing additional evidence that alexithymia is intergenerationally transmitted rather than operating as a synergistic influence on stress outcomes. Child alexithymia symptoms acting as an explanatory factor, rather than an influence, suggest that involving the parent in prevention and intervention work intending to mitigate child internalizing psychopathology may be a crucial consideration, as opposed to focusing exclusively on increasing children's individual emotion regulation. Improving emotion-based communication between the parent-child dyad should be explored in more depth. These findings do indicate some level of dependency between parent and child alexithymia; while the child remains an active agent, parent emotion socialization practices are particularly influential on child outcomes. In the context of COVID-19, families were unexpectedly isolated from other social supports (Larsen et al., 2021). Children being partially

reliant on their parents for emotional processing of this mass trauma, then, face inequities depending on how emotionally well-equipped their parent is. Future work should investigate this further, such as exploring how emotional climates shifted and how these associations may operate cyclically.

Limitations

This study was not without some notable limitations. First, the data used were cross-sectional. Traditionally, mediation requires causal order of the measured variables (Baron & Kenny, 1986); without this, the assumption of uncorrelated errors that underlies mediation analyses is suspect, which must be taken into account in interpretation. However, Shrout (2011) suggests that mediation with cross-sectional data should not be ruled out entirely, and that cross-sectional analyses grounded in theory which describe causal direction of the measured processes should be considered. Given the theoretical bases for the current model, existing literature on the associations between alexithymia and PTSS, and the lack of support for the alternative model, I argue that the current findings are valid if only at the level of partial mediation and suggested causal chain. Regardless, these findings warrant further exploration and replication and future studies should seek to corroborate results with longitudinal methods.

Additionally, parent-child dyads were not analyzed in pairs. While the results provide valuable insight into the associations between parent-child alexithymia scores, it would be advantageous to explore these associations with respect to the dyadic unit. Future work should corroborative these exploratory findings through the use of repeated measures and longitudinal design. It would also be interesting to explore how objective measures of the dyadic relationship influence and are influenced by the existing pathway. Future studies may look into factors such

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as dyadic cohesion or communication for further insight into the processes informing the parent-child emotional climate.

Furthermore, other variables not included could have played a role, such as geographic location and familial exposure or death due to COVID-19 (Fong & Iarocci, 2020; Hoven et al., 2012; Masten & Narayan, 2012). Interestingly, none of the available covariates were found to be associated with the endogenous variables; future work should seek to replicate this with a larger sample and explore why variables which are usually correlated were unrelated under alexithymia and COVID-19 conditions.

Lastly, recruitment difficulties resulted in a modest sample size and lack of racial/ethnic and economic diversity. Though measurement errors are reported and were generally low and the study retained adequate power to detect medium effects, it would be beneficial for future work to expand the sample and further validate these findings. Regarding diversity, a measure of culture or associated values would be interesting to explore as a potential covariate or predictor variable. Generalizability of the current findings is limited, as the sample fits the WEIRD (Western, Educated, Industrialized, Rich, Democratic) classification, as outlined by Henrich and colleagues (2010). Future work should corroborate these findings in more diverse samples, though the validation of measures used for non-WEIRD samples may be warranted.

Conclusions

These findings demonstrate the importance of emotion regulation during mass trauma, and particularly how alexithymia is transmitted from parent to child to subsequently inform heterogeneous PTSS. To my knowledge, this is the first study to evidence this effect with specific regard to COVID-19-related outcomes. Where parenting via emotion socialization and meta-emotion philosophy occurs, parents with alexithymia symptoms may struggle to effectively

socialize their children to emotions and coping styles. In turn, children struggle to process the

emotions associated with a traumatic event, and experience heightened PTSS. Altogether, this

path model underscores the importance of the parent-child emotional climate, particularly during

mass trauma.

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List of Appendices

Appendix A

TAS-20 (Bagby et al., 1994)

Instructions: For each statement, please select which option is most true for you.

Responses are rated on the following 5-point scale:
1 = Not At All Like Me, or Not True
2 = A Little Like Me, or A Little True
3 = Somewhat Like Me, or Sometimes True
4 = Quite A Bit Like Me, or Pretty True
5 = Completely Like Me, or Very True

Statements:
1. I am often confused about what emotion I am feeling.*
2. It is difficult for me to find the right words for my feelings.*
3. I have physical sensations that even doctors don't understand.*
4. I am able to describe my feelings easily.*
5. I prefer to analyze problems rather than just describe them.
6. When I am upset, I don't know if I am sad, frightened, or angry.*
7. I am often puzzled by sensations in my body.*
8. I prefer to just let things happen rather than to understand why they turned out that way
9. I have feelings that I can't quite identify.*
10. Being in touch with emotions is essential.
11. I find it hard to describe how I feel about people.*
12. People tell me to describe my feelings more.*
13. I don't know what's going on inside me.*
14. I often don't know why I am angry.*
15. I prefer talking to people about their daily activities rather than their feelings.
16. I prefer to watch "light" entertainment shows rather than psychological dramas
17. It is difficult for me to reveal my innermost feelings, even to close friends.*
18. I can feel close to someone, even in moments of silence.
19. I find examination of my feelings useful in solving personal problems.
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

*Items belong to the DIF or DDF subscale

Appendix B

EESC (Penza-Clyve & Zeman, 2002)

Instructions: Please respond to each question or statement by marking one box per row.

Responses are rated on the following 5-point scale:
1 = Not at all true
2 = A little true
3 = Somewhat true
4 = Very true
5 = Extremely true

Statements:
1. I prefer to keep my feelings to myself.
2. I do not like to talk about how I feel.
3. When something bad happens, I feel like exploding.
4. I don't show how I really feel in order not to hurt others' feelings.
5. I have feelings that I can't figure out.
6. I usually do not talk to people until they talk to me first.
7. When I get upset, I am afraid to show it.
8. When I feel upset, I do not know how to talk about it.
9. I often do not know how I am feeling.
10. People tell me I should talk about my feelings more often.
11. Sometimes I just do not have the words to describe how I feel.
12. When I'm sad, I try not to show it.
13. Other people don't like it when you show how you really feel.
14. I know I should show my feelings, but it is too hard.
15. I often do not know why I am angry.
16. It is hard for me to show how I feel about somebody.

UCLA-BCSCA for PTSD questionnaire (Kaplow et al., 2020; Rolon-Arroyo et al., 2020)

Instructions: For your reactions to what's happening because of the coronavirus illness, tell us for each problem listed below how often the problem happened to you in the past month. How much of the time during the past month...

Responses are rated on the following 5-point scale:
0 = None
1 = Little
2 = Some
3 = Much
4 = Most

Statements:
1. I try to stay away from people, places, or things that remind me about what happened or what is still happening.
2. I get upset easily or get into arguments or physical fights.
3. I have trouble concentrating or paying attention.
4. When something reminds me of what happened or is still happening, I get very upset, afraid, or sad.
5. I have trouble feelings happiness or love.
6. I try not to thank about or have feelings about what happened or is still happening.
7. When something reminds me of what happened, I have strong feelings in my body like my heart beats fast, my head aches or my stomach aches.
8. I have thoughts like "I will never be able to trust other people."
9. I feel along even when I am around other people.
10. I have upsetting thoughts, pictures or sounds of what happened or is still happening come into my mind when I don't want them to.
11. I have trouble going to sleep, wake up often, or have trouble getting back to sleep.

Vita

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