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The Role of Childhood Trauma in Intergenerational Trauma (IGT):  
A Mediator and Moderator of IGT Transmission Amongst Survivors of the 1994 Genocide in  
Rwanda against the Tutsi

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**Year Completed: 2022**

**Degree Awarded: Master of Public Health**

Yale School of Public Health

Social and Behavioral Sciences

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**Abstract**

Emerging research has focused on the intersection of personal and parental trauma within intergenerational trauma (IGT) transmission, specifically offspring adverse childhood experiences due to trauma-related parenting behaviors. However, the role that offspring childhood trauma and its various subtypes may play in moderating or mediating IGT transmission, as well as the impact of caregiver sex, are still remains largely understudied. We examined how the transmission of PTSD between survivors of the 1994 genocide to their offspring might be either (a) mediated by overall and subtypes of offspring childhood trauma, or (b) moderated by overall and subtypes of offspring childhood trauma, and (c) how these relationships might vary by parental sex. A total of 171 Rwandan citizens between 18-40 years old, who were offspring of genocide survivors, completed an online Qualtrics survey. We performed a series of regression models investigating childhood trauma as a mediator or moderator across subsets of maternal-exposure and paternal-exposure participant data. We found significant indirect effects of maternal PTSD symptoms on offspring secondary PTSD symptoms via overall childhood trauma (Est.=0.12, SE=0.05, p=.022) and physical neglect (Est.=0.13, SE =0.05, p =.005), and of paternal PTSD symptoms on offspring secondary PTSD symptoms via overall childhood trauma (Est.=0.10, SE=0.05, p=.042) and physical abuse (Est.=0.06, SE=0.03, p =.044). Additionally, the link between paternal PTSD and offspring secondary PTSD was significantly weaker among children with higher emotional abuse and with higher physical neglect. This study elucidates heterogeneous roles that childhood trauma subtypes may have within IGT transmission, particularly differentiated by parental sex. These findings have implications on clinical interventions amongst survivors of genocides and other vulnerable populations, and point toward the need for further research.

**Key words:** *Intergenerational trauma, Rwanda, genocide, childhood trauma, Social and Behavioral Sciences*

**Acknowledgements**

This work was made possible through partnership with Groupe des Anciens Étudiants Rescapés du Génocide (GAERG) and its affiliated community partners. Thank you to Dr. Sarah Lowe and Dr. Katie Wang for their crucial guidance and support, and Dr. Jessica Bonumwezi for laying the ground-work in this project. We would also like to thank all the participants of this study for their time and valuable contributions.

<b>Table of Contents</b>	4
<b>List of Tables</b> .....	5
<b>1. Introduction</b> .....	6
<b>2. Methods</b> .....	10
<b>3. Results</b> .....	15
<b>4. Discussion</b> .....	28
<b>References</b> .....	34

**List of Tables**

- Table 1. Demographic and Clinical Characteristics of the analytic sample **(page 12)**
- Table 2. Correlations between study variables **(page 14)**
- Table 3. Mediation Effects of CTQ and Subscale Scores on Effect Between Maternal PTSD Score and Offspring Secondary PTSD Score **(page 16)**
- Table 4. Moderation Effects of CTQ and Subscale Scores on Effect Between Maternal PTSD Score and Offspring Secondary PTSD Score **(page 18)**
- Table 5. Mediation Effects of CTQ and Subscale Scores on Effect Between Paternal PTSD Score and Offspring Secondary PTSD Score **(page 20)**
- Table 6. Moderation Effects of CTQ and Subscale Scores on Effect Between Paternal PTSD Score and Offspring Secondary PTSD Score **(page 22)**
- Table 7. Conditional Effects of Offspring Emotional Abuse and Offspring Physical Neglect Between Paternal PTSD Score and Offspring Secondary PTSD Score **(page 23)**

## **1. Introduction**

### **1.1 The 1994 Genocide In Rwanda Against the Tutsi, Intergenerational Trauma**

#### **Transmission**

The 1994 Rwandan genocide by the Hutus against the Tutsi resulted in the slaughter of 800,000 Rwandan citizens over the course of one hundred days, with the goal of eliminating the Tutsi ethnic group (Sitkin et al., 2019). Beyond the high death toll, this genocide involved sexual violence, torture, and displacement (Prunier, 2008), exposures that heighten risk for posttraumatic stress disorder (PTSD) among survivors (Jina et al., 2013; Johnson & Thompson, 2008; Lie, 2002). A study found that average post-genocide PTSD prevalence is elevated both amongst genocide survivors (at 37%), and amongst the general Rwandan population (at 25%) (Musabaganwa et al., 2020), compared to a global national prevalence of 3.9% within recent years prior to COVID-19 (Koenen et al., 2017).

The reason the burden of adverse mental health outcomes is so high amongst the Rwandan population (Musabaganwa et al., 2020) may be in part due to intergenerational trauma transmission, or the experiences of adverse trauma-related stress in future generations as a consequence of trauma exposure of earlier generations (Sangalang & Vang, 2017).

Literature has shown significant associations between psychiatric symptoms amongst Holocaust survivors and their children (Dashorst et al., 2019), and mental health outcomes of post-Kosovo war civilians with offspring depressive symptoms (Schick et al., 2013). Other literature has highlighted instances of intergenerational trauma transmission amongst refugee populations (Sangalang & Vang, 2017) and other victims of political violence (Cerdeña et al., 2021).

Understanding the mechanisms behind intergenerational trauma transmission, particularly within this genocide survivor group, may be critical for developing effective clinical interventions that best serve this population.

## **1.2 Childhood Trauma and Current Theoretical Understanding**

### **1.2.1 What is Known**

An emerging body of literature has sought to illuminate the intersection of personal and parental trauma within intergenerational trauma transmission (Dreyer, 2018; Freedman, 2015), with a specific emphasis on offspring adverse childhood experiences as a consequence of trauma-related parenting behaviors. For example, research has illustrated the impact of cumulative maternal trauma on various negative parenting outcomes, including parental abuse potential, psychological and physical aggression, and overall punitiveness (Banyard et al., 2003; Cohen et al., 2008). Additional studies have shown that punitiveness mediates the relationship between maternal and child trauma (Dreyer, 2018), and that negative parenting behavior mediates the relationship between caregiver trauma history and child victimization (Scheid et al., 2021).

Similar findings exist within specific research on genocide survivor trauma as well, suggesting that childhood trauma might be an important explanatory factor for the intergenerational transmission of genocide-related trauma. In particular, one study found that adult offspring of Holocaust survivors had significantly higher self-reports of childhood trauma relative to a comparison group, largely explained by parental PTSD (Yehuda et al., 2001). There have also been studies suggesting a dose-response of childhood trauma exposure in offspring associated with the degree of genocide-related trauma experienced by parents (Uwizeye et al., 2021).

There is also a wealth of research on the impacts of childhood trauma on adult psychopathology (Perry, 1994; Wu et al., 2010), including higher rates of PTSD and risky behaviors, and poorer quality of life (Wu et al., 2010). There are studies demonstrating that PTSD outcomes persist into adulthood for survivors of childhood trauma, and also many comorbid diagnoses alongside PTSD for these survivors (Hubbard et al., 1995).



### 1.2.2 Gaps in Understanding

Despite the burgeoning literature, there remain many unknowns within the study of childhood trauma in relation to intergenerational trauma transmission. First, the particular role that offspring childhood trauma may play in the association between parental and offspring PTSD is still understudied. One potential role childhood trauma could play is as a mediator for intergenerational trauma transmission, in which the association between parental trauma and offspring trauma can be partially explained by offspring's experience of childhood trauma. For example, parenting styles have been found to mediate the relationship between maternal trauma and toddler DSM-related symptoms (Schwerdtfeger et al., 2013). Alternatively, childhood trauma may serve as a moderator in intergenerational trauma transmission, in which levels of childhood trauma associated with parental trauma differ, depending on the degree to which offspring has experienced childhood trauma related to parenting. For example, parental hostility and helpless state of mind (Terry et al., 2021) has been found to moderate the relationship between parental childhood trauma and offspring behavior problems (Sauvé et al., 2021). While childhood trauma mediation suggests a plausible mechanism by which trauma may be passed on intergenerationally, moderation by childhood trauma may suggest subgroups of lower and higher risk for perpetuating cycles of trauma which external mitigation could differentially target (Rodriguez et al., 2018).

Second, there is a lack of specificity in our understanding of childhood trauma within the field of intergenerational trauma, as only recently has there been a movement toward distinguishing experiences of trauma, or threat, from deprivation, or neglect (Guyon-Harris et al., 2021; McLaughlin & Sheridan, 2021). Various studies have also associated particular subtypes of childhood trauma to PTSD diagnoses, including: emotional abuse, sexual abuse, physical abuse, and physical neglect, though with varying degrees of overall significance when run through a meta-analysis (Carr et al., 2013). Given that there are unstandardized conceptions of

childhood trauma within this area of research – some studies focusing more specifically on intergenerational transmission of specific subtypes of trauma such as sexual abuse (Leifer et al., 2004; McCloskey & Bailey, 2000), whereas others focus on broad experiences of parental trauma on particular subtypes of offspring trauma (Montgomery et al., 2019), and still others looking at parental trauma upon holistic offspring trauma (Dreyer, 2019), there is a need for specificity about how particular subtypes might differentially function within intergenerational trauma transmission.

Finally, we also still need to better understand the particular differences that caregiver sex may have in terms of trauma transmission to offspring. There is some literature highlighting the asymmetrical impact of maternal and paternal trauma on offspring. For example, some research highlights the importance of maternal exposure in intergenerational trauma transmission or maternal mental health and child maltreatment (Browne et al., 2020; Dashorst et al., 2019; David, 2021), such as that maternal mental illness and personality disorder predicted child abuse while paternal mental illness did not (David, 2021). On the other hand, some studies found only a correlation between trauma-related paternal mental health outcomes and child mental health outcomes but not so with maternal mental health outcomes (Schick et al., 2013), while others emphasize the role of paternal caregivers in network with overall family relationships (Guterman & Lee, 2005). There exists a lack of standardization in methodology here too, with a subset of these intergenerational trauma studies focusing specifically on maternal trauma (Cort et al., 2011; Doi et al., 2021; Dreyer, 2021; Schwerdtfeger et al., 2013), and others do not differentiate between maternal versus paternal exposure of trauma (Scheid et al., 2021). Given the growing research suggesting that the pathways by which parental trauma exposure affect offspring may differ by caregiver sex (Browne et al., 2020), it may be important to integrate differentiation between childhood trauma subtype and caregiver sex in collective study.

### **1.3 Study Aims**

We sought to examine how the transmission of PTSD between survivors of the 1994 genocide to their offspring might be either (a) mediated by overall and subtypes of offspring childhood trauma beyond other risk factors, or (b) moderated by overall and subtypes of offspring childhood trauma beyond other risk factors, and (c) how these relationships vary by maternal vs. paternal genocide exposure.

## **2. Methods**

### **2.1. Participants**

The current study included 171 participants recruited via posters, flyers, and verbal announcements with the assistance of Groupe des Anciens Étudiants Rescapés du Génocide (GAERG), a community organization whose mission is to promote education about the genocide against the Tutsi in Rwanda, as well as GAERG partner organizations and snowball sampling. All data were collected in February, 2021. Inclusion criteria were: a) being ages 18-40 years old, b) identifying as a Rwandan citizen, c) identifying as a child of a Rwandan genocide survivor who was not alive during the genocide.

We created an analytic sample through aforementioned inclusion criteria of participants being 18–40-year-old Rwandan citizens who had a primary caretaker live through the 1994 genocide against the Tutsi, but who did not live through it themselves. Furthermore, we excluded 134 participants who had missing data in any variables used in analyses, with the exception of maternal trauma exposure score and maternal PTSD score for those who only identified paternal exposure, and vice versa – leaving us with the 171-participant analytic sample.

## **2.2 Procedures**

This study design was cross-sectional. Participants completed a web-based survey hosted on the secure Qualtrics platform. This survey collected information, including: demographic characteristics, standardized inventories of post-traumatic stress disorder for parents (Yehuda et al., 2006), post-traumatic stress disorder for self (Motta et al., 2001), major depression, and generalized anxiety (Degoratis et al., 1974), genocide-related trauma experienced by parents, and offspring childhood trauma (Bernstein et al., 2003).

All participants provided written consent. Participants were compensated with the equivalent of \$10 USD in Rwandan Francs for their participation. The dataset was part of a larger study “Coming of Age After the Genocide: Mental Health of Rwandan Young Adults.” IRB approval was acquired from the Yale University Institutional Review Board, the Montclair State University Institutional Review Board, the Rwanda National Ethics Committee, the Rwandan National Council for Science and Technology, and the Rwandan National Commission for the Fight Against Genocide.

## **2.3 Measurement Instruments**

### **2.3.1 Exposures**

#### **2.3.1.1 Parental Post-Traumatic Stress Disorder (PTSD)**

Genocide-related parental PTSD was measured based on the Parental PTSD Questionnaire (PPQ) (Yehuda et al., 2006), a 50-item self-report inventory that captures children’s perceptions of parental experiences of PTSD symptoms related to the genocide – separated by primary female and primary male caretaker, as well as children’s trauma-experiences related to their parent’s experiences of the genocide. Participants endorse a series of statements on a 4-point Likert scale (0 = Not at all, 3 = Very often; e.g. “My mother experienced recurrent distressing thoughts about the trauma/genocide”), with higher scores on the inventory indicating greater genocide-related parental PTSD. This scale was found to have strong convergent validity for

PTSD when validated against the Clinician-Administered PTSD Scale (CAPS) (Blake et al., 1995, Yehuda et al., 2006), and also demonstrated test-retest reliability and internal consistency in the current sample ( $\alpha = 0.76$  for maternal exposure group,  $\alpha = 0.76$  for paternal exposure group).

### **2.3.2 Outcomes**

#### **2.3.2.1 Post-Traumatic Stress Disorder for Self**

Secondary trauma for the children of survivors was measured based on the Modified Secondary Trauma Questionnaire (STQ) (Motta et al., 2001), an 18-item inventory that captures children's secondary trauma related to their parent's experiences of the genocide. Participants endorse a series of statements on a 5-point Likert scale (1 = Rarely/Never, 5 = Very often; e.g. "I force myself to avoid certain thoughts or feelings that remind me of (person above's) difficulties."), with higher scores on the inventory indicating greater secondary trauma. The STQ has previously demonstrated good internal consistency (Motta et al., 2001), also shown in the current sample ( $\alpha = .76$ ).

### **2.3.3 Mediator/Moderator**

#### **2.3.3.1 Childhood Trauma**

Childhood trauma was measured based on the Childhood Trauma Questionnaire – Short Form (CTQ-SF; Bernstein et al., 2003), a 28-item inventory that captures participant's experiences growing up as a child and teenager. Participants endorse a series of statements on a 5-point Likert scale (1 = Never True, 5 = Very often true; e.g. "When I was growing up...I didn't have enough to eat."), with higher scores on the inventory indicating greater overall experiences of trauma. The inventory also yields five sub-scales: physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect, with higher scores on each respectively indicating greater degrees of childhood trauma exposure in that category. The CTQ-SF has previously demonstrated moderate to strong criterion-related validity (Bernstein et al., 2003),

also mostly shown in the current sample ( $\alpha = 0.92$  for total CTQ score,  $\alpha = 0.68$  for CTQ sexual abuse subscale,  $\alpha = 0.76$  for CTQ physical abuse subscale,  $\alpha = 0.84$  for CTQ emotional abuse subscale,  $\alpha = 0.59$  for CTQ emotional neglect subscale, and  $\alpha = 0.80$  for CTQ physical neglect subscale).

### **2.3.4 Demographic Variables and Other Covariates**

The following participant demographic variables were included as covariates in analysis. Age was coded in year. Gender was dummy-coded by a) female with b) male as the reference level. Education level was included as an ordinal variable, broken down by the following levels: a) none, b) some years of primary school, c) primary school graduate, d) some years of secondary school, e) secondary school graduate, f) some years of college, g) college graduate, h) graduate school: Master's or Doctorate degree. Socioeconomic Status (SES) was also included as an ordinal variable, broken down by socioeconomic category (icyiciro cy'ubudehe): a) first category – those with no means to rent homes of their own and unable to feed themselves without assistance, b) second category – those who are able to afford some form of rented or cheap owned accommodation and work part-time jobs, c) third category – those who are full-time employees or employers, d) fourth category – those who are wealthy, including large business owners and government officials from the director level onward (Dushimimana, 2019). Finally, current relationship status was dummy-coded by a) Other relationship statuses, with b) Married or living with a partner as the reference level.

Participants were asked to endorse who among their primary caretakers was a genocide survivor, with 10 possible categories (e.g., “biological mother,” “adoptive father”). If there was a female primary caretaker endorsed as a genocide survivor, then this was coded as “maternal” exposure; if there was a male primary caretaker endorsed as a genocide survivor, then this was coded as “paternal” exposure. A binary covariate was included to delineate those who had both maternal and paternal exposure. Another binary covariate was included to delineate those who

had biological exposure (e.g., biological father and/or biological mother primary caregiver genocide survivorship status).

Finally, parental trauma exposure score was included as an ordinal variable, measured by a 12-item inventory that captures offspring self-report of parental experiences in 1994 during the genocide against the Tutsi, separated by primary female and primary male caretaker. Participants endorse a series of experiences by indicating Yes or No (e.g., “did/were your mother or other female caretaker...Held captive or kidnapped?”), with higher scores indicating greater number of genocide-related trauma event exposures. This scale has not been previously validated, but was generated with reference to common traumatic experiences that occurred during the 1994 genocide against the Tutsi as well as from exposure items used in prior research on the genocide (Gishoma et al., 2014; Schaal & Elbert, 2006).

## **2.4 Data Analysis**

### **2.4.1 Descriptive Statistics and Exploratory Analyses**

We ran descriptive analyses to better understand the demographic and clinical characteristics of our analytic sample. The sample was then subdivided into maternal exposure (n=137) and paternal exposure groups (n=123) for hypothesis testing; those who reported both exposures were included in both categories of analyses.

We performed two sample t-tests and chi-square tests on the continuous and categorical variables, respectively, checking for differences between the analytic sample and those dropped due to missing data. We then investigated bivariate correlations between variables in the analytic sample using Pearson's Correlation.

### **2.4.2 Multivariate Analyses**

We performed a series of regression models investigating the potential role that overall childhood trauma played as a) a mediator in the association between maternal PTSD symptoms and offspring secondary PTSD symptoms, b) a moderator in the association between maternal

PTSD symptoms and offspring secondary PTSD symptoms, c) a mediator in the association between paternal PTSD symptoms and offspring secondary PTSD symptoms, d) a moderator in the association between paternal PTSD symptoms and offspring secondary PTSD symptoms. Analyses a) and b) were done with the maternal exposure subset of the analytic data, and c) and d) with the paternal exposure subset respectively. Furthermore, the set of analyses was repeated with each of the five childhood trauma subscales. Based on prior studies showing associations between these variables and mental health outcomes, we controlled for: age (Kessler et al., 2005), gender (Rutter et al., 2003), education level (Breslau et al., 2006), SES (Peeverill et al., 2021), relationship status (Silver et al., 2002), biological exposure status (Bomyea et al., 2012), whether one or both caretakers were exposed, and parental trauma exposure score (Ryb et al., 2009).

All data cleaning was performed using the Statistical Package for the Social Sciences (SPSS) (IBM Corp, 2020), and all analyses were performed in R (R Core Team, 2020). Specifically, the PROCESS function within the BruceR package was used (Bao, 2022), and the processR package (Moon & Hong, 2021). Indirect effects were computed as a product of both the effect of parental PTSD scores on total CTQ scores or CTQ subscores and the effect of total CTQ scores or CTQ subscores on offspring STS score, using 100 bootstrapped samples. Statistically significant moderation effects were interpreted by looking at the conditional effects of parental PTSD scores on offspring STS scores at the 15<sup>th</sup> and 85<sup>th</sup> percentiles of offspring CTQ scores.

### **3. Results**

#### **3.1 Descriptive Statistics and Exploratory Analyses**

Table 1 shows descriptive data for all variables in the current study. The sample consisted of 171 unique participants with mean age 23.22 years ( $\pm 2.22$  years). A little over half were male



(n=90, 52.6%), over a third reported some years of college experience (n=67, 39.2%), and over half were in the 3rd SES category (n=93, 54.4%). The vast majority were not married nor living with a partner (n=165, 95.6%). More than half of participants had dual caregiver exposure to genocide-related trauma (n=100, 58.5%), and the vast majority reported biological exposure (n=167, 97.7%). Finally, 80.1% (n=137) of participants had maternal exposure, and 71.9% (n=123) of participants had paternal exposure. Also worth noting, though not displayed in Table 1, the entire sample resided in Rwanda, with the majority living in the Kigali province (n=64, 37.4%), apart from 12 individuals whose residence was unknown.

The exposure variables (maternal, paternal, biological exposure, both) and the maternal and paternal trauma exposure scores were the only variables that were statistically significantly different in the analytic sample compared to those who were dropped due to missing data. Specifically, there was a greater relative proportion of maternal exposure in the analytic sample than expected ( $p < 0.001$ ), a greater relative proportion of paternal exposure in the analytic sample than expected ( $p < 0.001$ ), and a greater relative proportion of dual exposure in the analytic sample than expected ( $p < 0.01$ ). Furthermore, there was a greater relative proportion of biological exposure scores in the analytic sample than expected ( $p < 0.001$ ). Finally, there were higher relative maternal trauma exposure scores ( $p < 0.1$ ) and higher paternal trauma exposure scores in the analytic sample compared to those who were dropped due to missing data ( $p < 0.1$ ).

Table 1. Demographic and Clinical Characteristics of the analytic sample.

Characteristic (N=171)	<i>M</i>	<i>SD</i>	%	<i>n</i>
Age	23.22	2.22		
Gender				
Male			52.6	90
Female			47.4	81
Education				
Primary School Graduate			0.6	1
Some Years of Secondary School			7.0	12
Secondary School Graduate			29.8	51
Some Years of College			39.2	67
College Graduate			23.4	40
Socioeconomic Status (Icyicro cy'ubudehe)				
1st category			5.3	9
2nd category			39.8	68
3rd category			54.4	93
4th category			0.6	1
Relationship Status				
Married or Living with Partner			3.5	6
Other			95.6	165
Exposure Status				
Dual Caregivers Exposed			58.5	100
Biological Exposure			97.7	167
Maternal Exposure			80.1	137
Paternal Exposure			71.9	123
Clinical Variables				
Offspring STS Score	39.57	12.40		
Offspring CTQ Score	43.76	14.44		
CTQ Sexual Abuse Subscore	7.26	3.40		
CTQ Physical Abuse Subscore	7.21	3.48		
CTQ Emotional Abuse Subscore	7.95	3.80		
CTQ Emotional Neglect Subscore	11.90	4.31		
CTQ Physical Neglect Subscore	9.45	3.39		
Maternal PTSD Score	35.60	9.25		
Maternal Trauma Exposure Score	4.68	3.19		
Paternal PTSD Score	35.68	12.11		
Paternal Trauma Exposure Score	4.91	3.25		

Note. CTQ = Childhood Trauma Questionnaire; STS = Secondary Trauma Scale

Table 2 illustrates bivariate correlations between all the main study variables. There were strong correlations observed between both maternal PTSD symptoms and offspring secondary PTSD symptoms, as well as paternal PTSD symptoms and offspring secondary PTSD symptoms ( $0.60 \leq r < 0.80$ ). Second, there were moderate correlations observed between maternal PTSD symptoms and total childhood trauma, as well as childhood emotional abuse, and childhood physical neglect ( $0.40 \leq r < 0.60$ ), weak correlations observed between maternal PTSD symptoms and childhood sexual abuse and childhood physical abuse ( $0.20 \leq r < 0.40$ ), and a very weak correlation observed between maternal PTSD symptoms and childhood emotional neglect ( $r < 0.20$ ). Third, there were weak correlations observed between paternal PTSD symptoms and total childhood trauma, childhood sexual abuse, childhood physical abuse, childhood emotional abuse, and childhood physical neglect ( $0.20 \leq r < 0.40$ ). There was no statistically significant correlation observed between paternal PTSD symptoms and childhood emotional neglect. Finally, there were moderate correlations observed between offspring secondary PTSD symptoms and total childhood trauma, as well as childhood emotional abuse, and childhood physical neglect ( $0.40 \leq r < 0.60$ ), weak correlations observed between offspring secondary PTSD symptoms and childhood sexual abuse and childhood physical abuse ( $0.20 \leq r < 0.40$ ), and a very weak correlation observed between offspring secondary PTSD symptoms and childhood emotional neglect ( $r < 0.20$ ). Most childhood trauma types were strongly correlated with one another.

Table 2. Correlations between study variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Maternal PTSD Score	--								
2. Paternal PTSD Score	.78***	--							
3. Offspring STS Score	.66***	.66***	--						
4. Total CTQ Score	.41***	.32***	.41***	--					
5. CTQ Sexual Abuse Subscore	.34***	.28**	.39***	.78***	--				
6. CTQ Physical Abuse Subscore	.34***	.32***	.33***	.84***	.65***	--			
7. CTQ Emotional Abuse Subscore	.41***	.32***	.42***	.88***	.69***	.82***	--		
8. CTQ Emotional Neglect Subscore	.16**	.02	.15*	.68***	.30**	.35***	.39***	--	
9. CTQ Physical Neglect Subscore	.40***	.36***	.40**	.82***	.52***	.56***	.64***	.58***	--

Note. CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## 3.2 Multivariate Analyses

### 3.2.1 Maternal Trauma

Table 3 illustrates the mediation effects of overall offspring childhood trauma and offspring childhood trauma subtypes on maternal trauma to offspring trauma. Table 4 illustrates the results of the moderation effects of overall offspring childhood trauma and offspring childhood trauma subtypes on maternal trauma to offspring trauma. Tables 5 and 6 display the respective mediation and moderation effects of overall offspring childhood trauma and offspring childhood trauma subtypes on paternal trauma to offspring trauma.

As shown in Table 3, there was a statistically significant association between maternal PTSD symptoms and offspring secondary PTSD symptoms ( $p < 0.001$ ), as well as continued statistically significant associations between the variables above and beyond childhood trauma (across all subtypes and overall childhood trauma). There were also consistently statistically significant associations between maternal PTSD symptoms and offspring childhood trauma ( $p < 0.001$ ) across all subtypes and overall childhood trauma. When examining the relationship between offspring childhood trauma and offspring secondary PTSD symptoms, there were some statistically significant associations ( $p < 0.01$ ) for overall childhood trauma, childhood sexual abuse, childhood physical neglect, and statistically significant associations ( $p < 0.05$ ) for childhood emotional abuse. Finally, there was a statistically significant indirect effect of the overall childhood trauma on the relationship between maternal PTSD symptoms and offspring secondary PTSD symptoms ( $p = 0.022$ ), and a statistically significant indirect effect of physical neglect score on the relationship between maternal PTSD symptoms and offspring secondary PTSD symptoms ( $p = 0.005$ ). The other subtypes did not have statistically significant indirect effects.

Table 3. Mediation Effects of CTQ and Subscale Scores on Effect Between Maternal PTSD Score and Offspring Secondary PTSD

Score

	Total CTQ Score		CTQ Subscale Scores									
			Sexual Abuse		Physical Abuse		Emotional Abuse		Emotional Neglect		Physical Neglect	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Total Effects												
Maternal PTSD --> Offspring STS Score	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09
Maternal PTSD --> Offspring CTQ Score	0.74***	0.12	0.14***	0.03	0.10***	0.03	0.18***	0.03	0.14***	0.04	0.17***	0.03
Associations within Mediation Model												
Maternal PTSD --> Offspring STS Score	0.62***	0.10	0.65***	0.10	0.711**	* 0.09	0.64***	0.10	0.711***	0.09	0.61***	0.10
Offspring CTQ Score -> Offspring STS Score	0.17**	0.06	0.68**	0.25	0.35	0.26	0.57*	0.24	0.25	0.20	0.78**	0.23
Indirect Effect (Maternal PTSD --> Offspring CTQ Score --> Offspring STS Score)	0.12*	0.05	0.1	0.05	0.04	0.04	0.1	0.01	0.04	0.03	0.13**	0.05
P-value	0.022		0.057		0.386		0.088		0.158		0.005	

Note. CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.

Age, gender, education, socioeconomic status, relationship status, whether there was biological exposure, whether dual caregivers were exposed, and maternal trauma exposure score. Full results are available upon request.

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

As shown in Table 4, there were no statistically significant moderating effects of any of the childhood trauma subtypes nor overall childhood trauma upon the relationship between maternal PTSD symptoms and offspring secondary PTSD symptoms.

Table 4. Moderation Effects of CTQ and Subscale Scores on Effect Between Maternal PTSD Score and Offspring Secondary PTSD

Score

	Total CTQ Score		CTQ Subscale Scores									
			Sexual Abuse		Physical Abuse		Emotional Abuse		Emotional Neglect		Physical Neglect	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Total Effects												
Maternal PTSD --> Offspring STS Score	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09	0.75***	0.09
Associations within Moderation Model												
Maternal PTSD --> Offspring STS Score	0.64***	0.10	0.69***	0.10	0.71***	0.09	0.66***	0.10	0.71***	0.09	0.62***	0.10
Offspring CTQ Score -> Offspring STS Score	0.13	0.07	0.40	0.30	0.13	0.30	0.42	0.30	0.24	0.20	0.73**	0.28
Interaction Term (Maternal PTSD* Offspring CTQ Score) --> Offspring STS Score	0.01	0.01	0.05	0.03	0.04	0.03	0.02	0.03	0.01	0.02	0.02	0.03
P-value	0.188		0.081		0.157		0.395		0.572		0.393	

Note. CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.

Age, gender, education, socioeconomic status, relationship status, whether there was biological exposure, whether dual caregivers were exposed, and maternal trauma exposure score. Full results are available upon request.

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



### 3.2.2 Paternal Trauma

As shown in Table 5, there was a statistically significant association between paternal PTSD symptoms and offspring secondary PTSD symptoms ( $p < 0.001$ ), as well as continued statistically significant associations between the variables above and beyond childhood trauma (across all subtypes and overall trauma). There were also statistically significant associations between paternal PTSD symptoms and offspring childhood trauma ( $p < 0.001$  or  $p < 0.01$ ) across overall childhood trauma and most subtypes, apart from emotional neglect. When examining the relationship between offspring childhood trauma and offspring secondary PTSD symptoms, there were some statistically significant associations for ( $p < 0.001$ ) for childhood sexual abuse, overall childhood trauma ( $p < 0.01$ ) and childhood physical abuse ( $p < 0.01$ ), and statistically significant associations ( $p < 0.05$ ) for childhood emotional abuse. Finally, there was a statistically significant indirect effect of overall childhood trauma on the relationship between paternal PTSD symptoms and offspring secondary PTSD symptoms ( $p = 0.042$ ), as well as a statistically significant indirect effect of childhood physical abuse ( $p = 0.044$ ). The other subtypes did not have statistically significant indirect effects.

Table 5. Mediation Effects of CTQ and Subscale Scores on Effect Between Paternal PTSD Score and Offspring Secondary PTSD

Score

	CTQ Subscale Scores											
	Total CTQ Score		Sexual Abuse		Physical Abuse		Emotional Abuse		Emotional Neglect		Physical Neglect	
	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>
Total Effects												
Paternal PTSD --> Offspring STS Score	0.67 ***	0.08	0.67 ***	0.08	0.67 ***	0.08	0.67 ***	0.08	0.67 ***	0.08	0.67 ***	0.08
Paternal PTSD --> Offspring CTQ Score	0.44***	0.1	0.10***	0.03	0.08**	0.02	0.12***	0.03	0.04	0.03	0.11***	0.02
Associations within Mediation Model												
Paternal PTSD --> Offspring STS Score	0.57***	0.08	0.56***	0.08	0.61***	0.08	0.58***	0.08	0.66***	0.08	0.60***	0.09
Offspring CTQ Score --> Offspring STS Score	0.22**	0.07	1.05***	0.07	0.79**	0.30	0.72*	0.28	0.17	0.24	0.60	0.32
Indirect Effect (Maternal PTSD --> Offspring CTQ Score --> Offspring STS Score)	0.10*	0.05	0.11	0.06	0.06*	0.03	0.08	0.06	0.01	0.02	0.07	0.06
P-value	0.042		0.063		0.044		0.183		0.636		0.281	

Note. CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.

Age, gender, education, socioeconomic status, relationship status, whether there was biological exposure, whether dual caregivers were exposed, and paternal trauma exposure score. Full results are available upon request.

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

As shown in Table 6, there were no statistically significant associations between the interaction term (the interaction between paternal PTSD symptoms and offspring childhood trauma) and offspring secondary PTSD symptoms across the overall childhood trauma or the majority of the childhood trauma subtypes, apart from statistically significant associations between the paternal PTSD and childhood emotional abuse interaction term and offspring secondary PTSD, and between the paternal PTSD and childhood physical neglect interaction term and offspring secondary PTSD ( $p < 0.05$ ). Finally, there were statistically significant moderating effects of childhood emotional abuse and childhood physical neglect upon the relationship between paternal PTSD symptoms and offspring secondary PTSD symptoms ( $p < 0.05$ ). Overall childhood trauma and the other childhood trauma subtypes did not have statistically significant moderating effects.

Specifically, as shown in Table 7, the association between paternal PTSD symptoms and offspring secondary PTSD symptoms was stronger when childhood abuse was low ( $b = 0.68$ ) than when childhood emotional abuse was high ( $b = 0.49$ ). Furthermore, the association between paternal PTSD symptoms and offspring secondary PTSD symptoms was stronger when physical neglect was low ( $b = 0.77$ ) than when childhood emotional abuse was high ( $b = 0.41$ ).

Table 6. Moderation Effects of CTQ and Subscale Scores on Effect Between Paternal PTSD Score and Offspring Secondary PTSD Score

	CTQ Subscale Scores											
	Total CTQ Score		Sexual Abuse		Physical Abuse		Emotional Abuse		Emotional Neglect		Physical Neglect	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Total Effects												
Paternal PTSD --> Offspring STS Score	0.67***	0.08	0.67***	0.08	0.67***	0.08	0.67***	0.08	0.67***	0.08	0.67***	0.08
Associations within Moderation Model												
Paternal PTSD --> Offspring STS Score	0.58***	0.08	0.57***	0.08	0.61***	0.08	0.5***	0.08	0.66***	0.08	0.61***	0.08
Offspring CTQ Score --> Offspring STS Score	0.25**	0.08	0.98**	0.3	0.72*	0.35	1.06**	0.32	0.17	0.24	0.78*	0.33
Interaction Term (Paternal PTSD* Offspring CTQ Score) --> Offspring STS Score	-0.01	0.01	0.01	0.02	0.01	0.02	-0.04*	0.02	-0.03*	0.02	0	0.02
P-value	0.301		0.751		0.696		0.046		0.209		0.019	

Note. CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.

Age, gender, education, socioeconomic status, relationship status, whether there was biological exposure, whether dual caregivers were exposed, and paternal trauma exposure score. Full results are available upon request.

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

Table 7. Conditional Effects of Offspring Emotional Abuse and Offspring Physical Neglect Between Paternal PTSD Score and Offspring Secondary PTSD Score

	<b>Conditional Effects</b>			
	<u>CTQ Emotional Abuse</u>		<u>CTQ Physical Neglect</u>	
	<i>Low (16th percentile)</i>	<i>High (85th percentile)</i>	<i>Low (16th percentile)</i>	<i>High (85th percentile)</i>
	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>
Slopes Equation Parental PTSD --> Offspring STS Score	<i>0.865-0.038*W</i>		<i>1.084-0.052*W</i>	
	0.68	0.49	0.77	0.41

*Note.* CTQ = Childhood Trauma Questionnaire. STS = Secondary Trauma Scale.  
*W = CTQ Score in Slopes Equation*  
 Age, gender, education, socioeconomic status, relationship status, whether there was biological exposure, whether dual caregivers were exposed, and paternal trauma exposure score. Full results are available upon request.  
 \**p*<.05

#### 4. Discussion

In this study, we examined overall and subtypes of offspring childhood trauma as mediators and moderators of the relationship between parental PTSD and offspring secondary traumatic stress among children of survivors of the 1994 genocide against the Tutsi in Rwanda. We found statistically significant indirect effects of overall childhood trauma and childhood physical neglect on the relationship between maternal PTSD symptoms and offspring secondary PTSD symptoms. We also found statistically significant indirect effects of overall childhood trauma and childhood physical abuse on the relationship between paternal PTSD symptoms and offspring secondary PTSD symptoms. Additionally, we found statistically significant moderating effects of both childhood emotional abuse and childhood physical neglect on the relationship between paternal PTSD symptoms and offspring secondary PTSD symptoms – with a weaker association between paternal and offspring PTSD with higher emotional abuse and with higher physical neglect. There were no statistically significant indirect or moderating effects of the other childhood trauma subtypes, nor of overall childhood trauma, in the remainder of analyses.

Overall childhood trauma and physical neglect as mediators of maternal trauma transmission is somewhat supported by existing literature – with findings of parenting styles serving as a mediator between maternal trauma and toddler DSM-related symptoms (Schwerdtfeger et al., 2013). However, there is also literature suggesting that childhood physical neglect is not significantly associated with anxiety disorders, including PTSD (Carr et al., 2013). Perhaps maternal parenting behavior that perpetuate the most offspring trauma involve those that lead to offspring neglect. Additionally, these findings integrated with previous literature may suggest that PTSD is a comorbid symptoms of other mental health outcomes more closely tied to physical neglect, such as personality disorders and/or schizophrenia (Carr et al., 2013).

Physical abuse as a mediator of paternal trauma transmission is somewhat supported within the literature. Within the meta-analysis done by Carr et al. (2013), childhood physical abuse was significantly associated with PTSD amongst other mental health outcomes. There is also a wealth of literature investigating paternal factors that might contribute to offspring physical abuse – including paternal substance use and employment status (Guterman & Lee, 2005) – both of which may be impacted by paternal exposure to genocide-related trauma. There is even some research investigating paternal involvement in childcare as protective against mother's physical abuse of children (Guterman & Lee, 2005). Perhaps physical abuse is particularly critical in understanding transmission of trauma specifically through paternal caregiver behaviors.

Emotional abuse as a moderator of paternal trauma transmission is also somewhat supported by literature. Carr et al. (2013) found that childhood emotional abuse was significantly associated with PTSD and other psychopathology. Furthermore, parental hostile and helpless state of mind has been shown to be a moderator of the association between parental trauma and offspring behavior problems (Sauvé et al., 2021), and the disorganized and dysregulated state has been associated with offspring childhood maltreatment, including types of abuse,

though within maternal caregivers (Terry et al., 2021). However, few previous studies have tied emotional abuse specifically to intergenerational trauma transmission, nor have any tied emotional abuse to paternal caregivers. Furthermore, the link between paternal PTSD and offspring secondary PTSD being weaker when emotional abuse is higher is a unique finding that is largely unmatched by existing literature. Perhaps these results suggest that emotional abuse may play an important and understudied role within a more complex network of additional compensatory variables in trauma transmission particularly with relation to paternal trauma exposure.

Finally, physical neglect as a moderator of paternal trauma transmission is a relatively unique finding when compared against existing literature. Again, the Carr et al. (2013) meta-analysis showed that childhood physical neglect is not significantly associated with PTSD; however, those authors note that some studies group both emotional and physical neglect as a single subtype, and emotional neglect is associated with PTSD outcomes (Carr et al., 2013). However, there are studies demonstrating associations between paternal depression and offspring neglect, though these exist in conjunction with strong maternal mental health effects on physical neglect as well (Lee et al., 2012). Therefore, these study results may suggest that our current understanding of offspring physical neglect amongst those with paternal vs. maternal exposures of trauma may need to be enhanced by study of other comorbid parental mental health outcomes. There may be stronger effects of neglect when understood as a collective subtype, rather than parsed out by emotional and physical neglect. Additionally, the link between paternal PTSD and offspring secondary PTSD being weaker when physical neglect is higher is a unique finding that is also novel in existing literature. Again, this may be due to network effects of physical neglect in relation to unknown additional compensatory variables that strengthen the relationship between paternal PTSD and offspring secondary PTSD.

With reference to the asymmetry across parental sex in these findings – specifically there being certain subtypes that moderate and have indirect effects on the relationship between paternal PTSD to offspring PTSD and only indirect effects present on the relationship between maternal PTSD to offspring PTSD, these may be due to differences in the centrality of paternal vs. maternal caregiving. There is some literature that suggests paternal influences on offspring abuse and neglect are often in network with larger family systems, including relationship with the maternal caregiver (Guterman & Lee, 2005), while maternal influences on offspring trauma are often stronger or independent of paternal factors (Browne et al., 2020). Thus, the moderation effects of certain childhood trauma subtypes might point to ways paternal influences operate often with relationships to maternal caregivers, whereas maternal influences may operate more directly to offspring childhood experiences. However, these heterogeneous findings across the various childhood trauma subtypes ultimately point to the need for further research.

In summary, this study elucidates particular heterogeneous roles that childhood trauma subtypes may have within intergenerational trauma transmission, particularly differentiated along maternal versus paternal trauma exposure. It highlights how certain subtypes have indirect effects on maternal trauma transmission while others have indirect or moderating effects on paternal trauma transmission in asymmetrical ways.

#### **4.1 Limitations**

Several limitations of the current study are worth noting. First, there were systematic differences between the baseline dataset and those that were included in the final analytic sample, particularly within the variables of biological exposure, and dual caretaker exposure. These differences may have accounted for magnified results amongst this analytic sample compared to the general population, given research in epigenetic mechanisms of trauma transmission (Yehuda & Lehrner, 2018) and the reinforcing effects dual caregiver exposure might have on



parenting and trauma. Nonetheless, this limitation is unlikely to have significantly affected the directionality or specificity of results. Second, many potential covariates were not accounted for, including social support, caregiver couple-dyad relationships, and parenting styles, which have been documented to impact parent-child relationship and the transmission of trauma (Banyard et al., 2003; Rodriguez et al., 2018). Each of these might have influenced the results to skew in unanticipated directions. However, these variables were outside the scope of the goals of this study, which were to elucidate the effects of childhood trauma above and beyond other potential factors. Third, the Cronbach alpha values for the CTQ sexual abuse subscale and CTQ emotional neglect subscales within this sample were low ( $\alpha = 0.68$  and  $\alpha = 0.59$  respectively), which may have affected the validity of findings found through analysis. However, the vast majority of the measurement instruments had strong criterion-related validity within the data and these two subscales were not present amongst the statistically significant findings. Finally, the study population represents a relatively narrow age range, given the inclusion criteria of participants not having personally lived through the genocide, but who were over 18, and that the genocide occurred less than 30 years ago. Whereas there is significant research studying how parental childhood trauma may be transmitted down to offspring (McCloskey & Bailey, 2000), there may be differential effects for parents who experience trauma in middle-age and shortly before rearing children. Those who lived through the 1994 genocide as children, and thus may have experienced the most dramatic trauma impacts, likely do not yet have offspring who would be old enough to qualify for this study. Thus, there may be limitations to the generalizability of these findings, and more research is needed.

## **4.2 Future Research Directions**

One important direction of future research may be to study the survivors who were children during the 1994 genocide and their offspring. In the next 20 years, these offspring may age into adulthood and face unique stressors and mental health challenges due to the heightened vulnerability of their parents during extremely traumatic events. It may be critical to see how intergenerational trauma transmission affects this particular subpopulation. Additional study should also be conducted evaluating the effects of social networks, structural trauma, and on both PTSD outcomes and posttraumatic growth of offspring of genocide survivors. Furthermore, parental exposure to trauma, parsed out by caregiver sex, biological status, and dual caregiver exposure needs further study, as each of these factors may compound on one another in ways we do not yet understand. Finally, the study of childhood trauma subtypes within intergenerational trauma transmission must be expounded upon as we further refine our conceptualization of childhood trauma into updated categories and/or dimensions (Guyon-Harris et al., 2021; McLaughlin & Sheridan, 2014).

#### **4.3 Clinical Implications**

The current study emphasizes the important role that offspring childhood trauma plays within intergenerational trauma transmission. Thus, evidence-based treatments based on family models and parenting support may be critical for the mitigation and ultimate prevention of trauma being passed down through generations. In particular, family-level interventions may involve differentiation in parenting by caregiver sex, according to most associated offspring childhood trauma subtypes (e.g., physical neglect vs. emotional abuse, etc.). This study also highlights the roles that non-biological caregivers might have in transmitting trauma, and the need for targeted intervention amongst these less traditional parenting pathways too.

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