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THE EFFECT OF
CHILDHOOD MATERNAL
TRAUMA EXPERIENCED
BEFORE THE AGE OF 18
ON YOUNG ADOLESCENT
CHILDREN AGED 8-15

Alyssa Schneider

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Abstract

Childhood trauma is a pervasive and prevalent issue, and one that impact the entirety of the familial unit. Furthermore, maternal childhood trauma, or childhood trauma that was experienced by individuals that are now mothers, has the potential of being passed down and having far-reaching impacts for their children. This is known as the intergenerational transmission of trauma. However, this has primarily been studied in infants and children. As such, this study aimed to elucidate the effects of maternal childhood trauma on young adolescent children using a diary study method with the children and assessing childhood trauma in the mothers. It was hypothesized that mothers who experienced higher levels of trauma in the first 18 years of their lives would have adolescent children who reported higher levels of depression, more day-to-day negative interactions with their mothers, and greater negative emotionality and less positive emotionality overall. Additionally, in experiencing more depressive symptoms and more day to day negative interactions, we hypothesized that these adolescents would also respond more negatively to those interactions compared to adolescents of mothers who had not experienced childhood trauma. A majority of the findings did not support these hypotheses. However, importantly, through a generalized linear mixed model, maternal childhood trauma was found to be associated with offspring feeling both more ashamed and more abandoned compared to their peers whose mothers had not experienced childhood trauma. While this study did not look at mother-child attachment, a large portion of the research addressing the effects of maternal childhood trauma on offspring, focuses on the importance of attachment and bonding, and how maternal childhood trauma negatively impacts this. The significance of those interpersonal factors being associated with maternal childhood trauma could indicate that mother-child attachment is a potentially important factor to assess in future research.

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The effect of childhood maternal trauma experienced before the age of 18 on young adolescent children ages 8-15

Introduction

The experience of trauma is highly prevalent throughout the world, and the United States is no exception. In the United States, 61% of men and 51% of women report exposure to at least one traumatic event in their lifetime (Benjet et al., 2016). Furthermore, about 8-12% of American youth have experienced at least one sexual assault, 9-19% have experienced physical abuse or physical assault by a caregiver, and 38-70% have witnessed community violence (Saunders et al., 2014). About 1 in 10 have witnessed serious violence between caregivers, 1 in 5 have lost a family member or friend to homicide, 9% have experienced internet-assisted victimization, and 20-25% have been exposed to a natural or man-made disaster such as Chernobyl or 9/11 (Saunders et al., 2014). Additionally, it is estimated that 20-48% of American youth have experienced multiple types of trauma across these different categories (Saunders et al., 2014).

The impact of this trauma cannot be overstated. Childhood trauma impacts the emotional, mental and physical health of those that experience it throughout their lives. With regards to emotional health, those who experience childhood trauma experience a multitude of deleterious emotions such as shame, hopelessness, and anger (ISTSS, N.D.). As far as mental health is concerned, individuals that experience childhood trauma have higher rates of anxiety, depression, suicide and self-harm, post-traumatic stress disorder (PTSD), substance use issues, and relationship difficulties (ISTSS, N.D.).

Not only can childhood trauma deleteriously impact the individual who experiences it, but it can also have adverse effects if an individual has children of their own because it can impact their parenting skills negatively. For example, childhood trauma can impair the

individual's ability to accurately read and respond to their child's emotions (Dvir et al., 2014). Many of the issues relating to parenting difficulties stem from the fact that parenting in itself can be triggering, as it can serve as a reminder of past trauma, since many childhood traumas result from actions of a parent or guardian (Widom et al., 2015). Furthermore, one mechanism that can be used to cope with trauma is avoidance of negative emotions or memories. However, this can also impair the relationship between parent and child as it may cause the individual to be emotionally distant from their child (Chu et al., 2008; Widom et al., 2015).

The effects of childhood trauma on victim's offspring themselves are numerous and long-lived. For example, one study showed that the children of parents who had four or more adverse childhood experiences were four times more likely to have mental health issues regardless of parent psychopathology (Hughes et al., 2016). Research clearly shows a link between the experience of maternal trauma in childhood and deleterious social, cognitive and behavioral effects on children. Researchers have studied attachment relationships and have found that infants of abused and neglected mothers were classified as having insecure attachment, showing a strong relationship between mother and child attachment, and childhood trauma experienced by the mother, which further speaks to the impact of intergenerational transmission of trauma (Benoit, 2004; Berthelot et al., 2015). In studying the effect of maternal childhood experiences of maltreatment on the social-emotional development of children, researchers have also found that mothers with childhood maltreatment spend more time experiencing negative emotions, as well as less time experiencing positive or neutral emotions when interacting with their children (Crugnola et al., 2019). This shows that maternal trauma can affect not only the social-development of their children but can affect the emotional relationship and regulation experienced by mother and child.

In investigating whether maternal trauma experienced in the first 18 years of the mother's life is associated with higher levels of externalizing and internalizing symptoms in the children of mothers exposed to trauma, as well as greater dysfunction in the mother-child relationship, researchers have utilized both interviews and self-report to show that there is clinically significant dysfunction in the parent-child relationship (Lange et al., 2019). Overall, researchers have found childhood maternal trauma to be correlated with higher levels of internalizing and externalizing symptoms of the child, as well as greater dysfunction in the mother-child relationship according to the mother (Fenerci et al., 2017). With regards to development, research has shown that the social and emotional development of the children of mothers who experienced childhood trauma can become negatively impacted through maternal psychosocial factors, which include everyday stressors, self-esteem issues, and depression or depressive symptoms (Lutenbacher et al., 1998, Folger et al., 2017). This research shows that maternal trauma potentially contributes to maladaptive behavior in children and can contribute to dysfunctional relationships between mother and child.

There is a relative dearth of research examining the lasting effects of childhood maternal trauma on offspring beyond infancy and toddler/preschool age; however, due to the research documenting intergenerational transmission of trauma, it is imperative to elucidate the latent and lasting effects of childhood maternal trauma on adolescent children (Savage et al., 2019). Therefore, for the present study, we chose to investigate the intergenerational transmission of trauma from mother to offspring.

We chose to do this due to the fact that there is a body of research that has focused on intergenerational transmission of trauma in clinical samples of mothers and has primarily focused on PTSD and depression and how these mental health disorders can affect offspring

(Hoffman et al., 2019). In particular, studies have shown that children of mothers who have PTSD are more prone to depressive symptoms, secondary traumatization, and parent-child role reversal at a younger age (Hoffman et al., 2019).

In studies that focused on maternal depression without trauma exposure and the effect on offspring in particular, offspring showed the highest levels of depressive symptoms, as well as maladaptive stress responses when they were exposed to maternal depression (Monti et al., 2017). Additionally, most of the research has focused on the effects of maternal childhood trauma on the fetus, infant or preschool-age child, with research showing that that higher severity of maternal emotional neglect in childhood is significantly related to greater impairment in the mother-infant bonding process, but this has not been examined in children right before and during adolescence (Lehnig et al., 2019). As such, we chose to examine the intergenerational transmission of maternal trauma to offspring using a young adolescent population due to adolescence often being a time for the emergence of many different disorders (WHO, 2019).

Adolescence is a both a crucial and a formative time, where one in six individuals with mental health disorders are 10-19 years old, and half of all mental health disorders emerge by the age of 14 years old (WHO, 2019). As such, adolescence is an effective time to implement preventative measures such as school-based programming and education that would only be possible with early detection and treatment of risk and emergence of mental health disorders (Kessler et al., 2007).

Importantly, the role of the relationship between mother and adolescent on adolescent mental health cannot be overlooked. In studies that have looked at the association between relationship quality of mothers and their adolescent children, and the mental health outcomes of the children, researchers have shown that mother-adolescent relationships that are more positive

are associated with higher self-esteem and fewer depressive symptoms in the adolescent children (Bynum et al., 2006). In studies that have focused specifically on self-esteem and the role of parent-adolescent relationships, researchers have found that, with mothers in particular, the mother-adolescent relationship is significantly linked to adolescent self-esteem (Keizer et al., 2019). That is, more positive mother-adolescent relationships contribute to increased self-esteem in the adolescent children (Keizer et al., 2019). As such, it is important not only to focus on adolescents, but the role of the relationship between the mother and the adolescent child.

We investigated the role of intergenerational transmission of trauma utilizing diary-based methodologies due to the fact that these methodologies have been found to elucidate daily changes in the behavior and interactions of youth and adolescents and have the ability to distinguish stable individual differences from meaningful change (Iida et al., 2012). Furthermore, through diary study methods, it is possible to not only consider how an individual feels about something or someone, but also the variability in those feelings (Iida et al., 2012). Additionally, diary methodologies are useful in helping to eliminate issues that might arise from retrospective memory being used to complete surveys, whereas diary study utilizes daily reporting (Iida et al., 2012). Particularly in children and adolescents, diary study methods have been identified by researchers as the preferred method for the reasons listed above. Importantly, research that has shown that this type of methodology is the most effective in studying and gleaning insight into the health, well-being, and general quality of life among this age group in particular (Hunt et al., 2014).

This study used diary-based methods to investigate the hypotheses that mothers who experienced higher levels of trauma in the first 18 years of their lives would have adolescent children who reported higher levels of depression, more day-to-day negative interactions with

their mothers, and greater negative emotionality and less positive emotionality overall. Additionally, in experiencing more depressive symptoms and more day to day negative interactions, these adolescents would also respond more negatively to those interactions compared to adolescents of mothers who had not experienced childhood trauma. This is due to the fact that childhood trauma affects attachment style, which in turn impacts the relationship the mothers experience with their children (Chu et al., 2008, Widom et al., 2015, McDonnell et al., 2016).

Method

This study was conducted as a sub-study of a larger study that included 150 young adolescents. However, the young adolescents that were included in this sub-study were those whose mothers completed the survey sent to them. This paper will discuss the 79 young adolescents and 55 mothers who participated in this sub-study.

Participants

Child portion of the study

A sample of 79 young adolescents were included. The average age was 11.9 or about 12, the sample was split between individuals who identified as females (50.9%) and individuals who identified as males (49.1%), and a majority of the participants identified as Caucasian/White (70.2%). Inclusion criteria included having daily access to a device connected to the internet, and the ability to come into the lab once with their parents. Participants were recruited via flyers in the New Haven county area, mailing lists, Craigslist, and social media. Advertisements invited youth 9-15 years old to participate in a daily-diary study about emotions and social experiences. Participants

received \$40 if they completed 60% (13 out of 21 surveys) and \$60 if they completed at least 90% (19 out of 21 surveys). If after the diary demonstration (see below) they decided not to participate, or if they completed less than 60% of the surveys, they received \$10. Two participants decided not to start the diary and 10 subjects filled out less than 60% of the diaries. Three participants were excluded because their data indicated that they did not complete the diary seriously. All study procedures were approved by the Yale University IRB.

Mother portion of the study

Fifty-five mothers ages 32-55 were included. There were 41 mothers who identified as White or Caucasian, seven who identified as Asian or Asian American, three who identified as Black, African American or African, two who identified as Middle Eastern or Arab, and four who identified as Hispanic. Additionally, with regards to educational backgrounds, there were six that had a high school graduate, diploma or equivalent (e.g. GED), two who had trade/technical/vocational training, seven who had some college credit with no degree, four who had an associate's degree, two who had a professional degree, 14 who had a bachelor's degree, 16 who had a master's degree, five who had a doctorate degree, and eight who had some high school but no diploma. Finally, with regards to marital status, 46 of the mothers were married, six who were never married, four who were divorced, and one who was widowed. Participants were recruited through the email addresses that were collected when their children completed the initial portion of the study. The email sent to participants stated that we were emailing to follow up on their child's participation in the daily-diary study about emotions and social experiences and were interested in learning more about the parents' role. Participants

were contacted a maximum of four times if they did not respond, and were paid \$10 for completion of the survey, either via cash or Amazon gift card.

Procedure

An experience sampling method (ESM) was used to measure different behavioral and emotional factors in adolescents over 21 days, and these data were from a larger study focused on the day-to-day emotional experiences of children. This method was chosen as it allows the monitoring of adolescents in daily life, enabling us to assess the frequency, pattern, and intensity of affective processes and behaviors that are otherwise difficult to capture, thus addressing some of the limitations of retrospective self-report measures. Furthermore, this approach is particularly useful when measuring behaviors that may happen intermittently (Trull & Ebner Priemer, 2009).

Adolescents and their parents were invited to an initial lab session during which the adolescents were introduced to the online diaries. A research assistant went over a hard copy of the daily questions with adolescents and their parents and explained them in detail. Informed consent and assent were obtained from participants as well as their parents. Adolescents were asked to fill out one practice survey as well as a demographic questionnaire on the lab computer. After the practice, participants received another explanation about the compensation, and gave the email address to which the survey questionnaire was to be sent to. Adolescents completed the diaries on a secure website (Qualtrics, Provo, Utah) over a period of 21 days using a phone, tablet or computer/laptop. They received an email with a link to the same questionnaire every evening either at 7pm or at 9pm, a time determined by each participant's daily routine as closest to their bedtime. Participants were instructed to complete the survey as soon as

possible, ideally before going to bed that night. The link expired after 14 hours.

Adolescents were contacted during the diary period once a week to ensure compliance and to address technical difficulties (e.g., missing emails). The daily survey took approximately 8-12 minutes to complete. Following the completion of the diary, the mothers of the adolescents were emailed a Qualtrics link that directed them to the survey that was comprised of eight questionnaires. Informed consent was obtained via Qualtrics where participants were prompted to read the informed consent and electronically confirm understanding and agreement with regards to participation. Mothers completed all questionnaires at a single time point.

Measures

Child portion of the study

Mood. To assess young adolescent participants' affect, 13 items (five positive emotions which included excited, proud, happy, joyful, and relaxed, as well as eleven negative emotions, which included nervous, guilty, miserable, mad, lonely, abandoned, humiliated, isolated, ashamed, embarrassed, and sad) from the Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) were used. The PANAS-C is a self-report scale measuring both positive (e.g. *Happy*) and negative affect (e.g. *Sad*) in children and adolescents. In each diary entry, youth were asked to rate the extent to which they were currently experiencing different moods or emotions. Items were rated on a 5-point Likert scale ranging from *very slightly or not at all* to *extremely*. The wording of one item was changed to be more suitable for children (*calm* was replaced by *relaxed*). Instructions were adapted for use of ESM, to refer to their current feelings as opposed to their feelings during

the last two weeks outlined in the PANAS-C. Moreover, two items from Silk et al. (2003, 2011) were added (*Bored* and *Stressed*) and conceptualized as negative emotions. The Cronbach's alpha coefficient for the Positive Affect Scale is 0. and for the Negative Affect Scale is 0.92 which, together, comprise the PANAS-C scale.

Interpersonal feelings. Six items from Gadassi et al. (2014) and Snir et al. (2015) were used to assess interpersonal feelings in the young adolescents. In each diary entry participants were asked to rate on a 5-point Likert scale (*very slightly or not at all to extremely*) the extent to which they were currently experiencing different interpersonal feelings (e.g. *Abandoned*).

Depressive Symptoms. To assess depressive symptoms in the young adolescents, the short version of the Children's Depression Inventory was used (CDI-S; Kovacs, 1985). The CDI-S is a self-report measure consisting of 10 items used to assess severity of depressive symptoms. It has been found to be similar to the full measure in its specificity and sensitivity to screen for depression in children (Allgaier et al., 2012). For each item, youth were asked to pick one out of three sentences that they felt best describes them in that moment. For example, one group consisted of the sentences *I am sad once in a while*, *I am sad many times* and *I am sad all the time*. Instructions were adapted for use of ESM similarly to other measures. The Cronbach's alpha of the CDI-S is 0.86.

Mother portion of the study

Adverse Childhood Experiences Questionnaire (refer to Appendix)

The Adverse Childhood Experiences (ACEs) Questionnaire was given to the mothers to measure 10 types of childhood trauma in the first 18 years of life, five personal, (physical

abuse, sexual abuse, verbal abuse, physical neglect, and emotional neglect), and five related to other family members, (a parent who has alcohol use issues, a mother who is a victim of domestic violence, a family member in jail, a family member diagnosed with a mental illness, and the disappearance of a parent through divorce, death, or abandonment). Each item receives a score of either 1 or 0. The Cronbach's alpha for the ACE Questionnaire is 0.88.

Beck Depression Inventory

Symptoms of depression were assessed in the mothers using the 21-item Beck Depression Inventory (BDI; Beck et al., 1961). It was used to measure characteristic attitudes and symptoms of depression in the mothers (ie. The BDI has been widely used and validated, and internal consistency for the BDI ranges from 0.73 to 0.92 with a mean of 0.86, and with alpha coefficients of 0.86 and 0.81 for both clinical and non-clinical populations (Beck et al., 1961). The Cronbach's alpha for the BDI is 0.89.

Inventory to Diagnose Depression- Lifetime Version

Depression in mothers was further assessed using the Inventory to Diagnose Depression-Lifetime (IDD-L), which is a 22-item scale designed to diagnose a lifetime history of major depressive disorder (Zimmerman et al., 1987). Whereas the BDI assesses current symptomatology of depression, the IDD-L assesses the lifetime history. The IDD-L has been widely utilized and validated, with a high internal consistency reflected in an alpha value of 0.92 (Zimmerman et al., 1987). The Cronbach's alpha for the BDI is 0.92.

Data Analysis

Data were analyzed utilizing R Studio. The data from the mothers and children were initially merged and then were analyzed utilizing both the lme4 program for data from questionnaires that had continuous and binary outcomes, and the ordinal program for data from questionnaires that had Likert scale outcomes. Due to the fact that data was only taken from the mothers at a single time point, whereas data was taken from the adolescents every day for a period of 21 days for day-level data as opposed to person-level data, a generalized linear mixed model was used to statistically analyze the data. Both a linear mixed model and a generalized linear mixed model were used due to the fact that the data had more than one source of random variability in that outcomes were measured more than once for the same adolescent and reflected repeated measures taken over a period of 21 days. However, a linear mixed model was used for data where the outcome was continuous, and a generalized linear mixed model was used for data where the outcome was binary or ordinal. The total ACE score was computed for each of the mothers and that score was used to compare to the day-level data generated from the adolescents, including daily interactions reported with their mother, overall mood, emotion regulation of negative mood, and depressed mood. This was done utilizing both the lme4 program for questionnaires that had both continuous and binary outcomes, as well as the ordinal program for questionnaires that had Likert scale responses. Furthermore, the BDI and IDDL composite scores of the mothers were also utilized to assess how depression and negative mood scores affected adolescent offspring, and this was done utilizing the lme4 program for questionnaires that had both continuous and binary outcomes, and the ordinal program for questionnaires that had Likert scale responses. The clmm function in R Studio was used for cumulative mixed models for those data that originated from questionnaires that had ordinal responses, and

glmer function was used for generalized liner mixed models for data that originated from questionnaires that had binary outcomes. Finally, the lmer function was used for linear mixed effect models for data that originated from questionnaires that had continuous outcomes.

Results

It will be recalled that women who experience higher levels of trauma in the first 18 years of their lives are expected to have young adolescent children who report higher levels of depression, more day-to-day negative interactions with their mothers, and greater negative emotionality and less positive emotionality overall. Additionally, it was expected that, in experiencing more depressive symptoms and more day to day negative interactions, these young adolescents would also respond more negatively to those interactions compared to young adolescents of mothers who had not experienced childhood trauma. In particular, with relation to the ACE scores of their mothers, young adolescents would report higher mean negative affect scores, lower mean positive affect scores, which, as Table 1 (Appendix) reveals, was not the case. Additionally, with relation to the ACE scores of their mothers, young adolescents were expected to report more negative interactions with their mothers if there were higher trauma scores reported by the mothers which, as Table 1 reveals, was not the case. Furthermore, with relation to the ACE scores of their mothers, young adolescents were expected to report greater negative emotion regulation means, higher CDI scores, rumination means, and self-criticism means which, as Table 1 reveals, was not the case. For all of the hypotheses and parameters shown in Table 1, a linear mixed model was used. These findings do not support the hypotheses that young adolescent children of mothers who experienced trauma in the first 18 years of their life will report higher levels of depression, more day-to-day negative interactions with their

mothers, and greater negative emotionality and less positive emotionality overall. These findings additionally do not support the hypothesis that the young adolescents of mothers who experienced childhood trauma would respond more negatively to these negative interactions.

Once again recalling we recall the hypotheses that women who experience higher levels of trauma in the first 18 years of their lives are expected to have young adolescent children who report higher levels of depression, more day-to-day negative interactions with their mothers, and greater negative emotionality and less positive emotionality overall, and that, in experiencing more depressive symptoms and more day to day negative interactions, these young adolescents would also respond more negatively to those interactions compared to young adolescents of mothers who had not experienced childhood trauma. In particular, with regards to negative interactions with their mothers, these young adolescents were expected to have more instances of fighting with their mothers, feeling left out by their mothers, feeling criticized by their mothers, feeling insulted by their mothers, feeling made fun of by their mothers, and feeling let down by their mothers if their mothers experienced trauma in the first 18 years of their lives, which, as Table 2 (Appendix) reveals, was not the case. Furthermore, the young adolescents of mothers that experienced trauma in the first 18 years of their life were expected to feel more upset, nervous, guilty, miserable, mad, bored, stressed, lonely, abandoned, isolated, ashamed, embarrassed and sad, which as Table 2 reveals, was partially the case. Findings supported that young adolescents of mothers who experienced trauma in the first 18 years of their lives were more likely to feel abandoned and ashamed compared to the young adolescents of mothers who did not experience trauma in the first 18 years of their lives, as Table 2 reveals. For all of the hypotheses and parameters shown in Table 2, a generalized linear mixed model was used. These findings do not support the hypotheses that young adolescent children of mothers who

experienced trauma in the first 18 years of their life will report higher levels of depression, have more day-to-day negative interactions with their mothers, and greater negative emotionality and less positive emotionality overall. However, these findings partially support the hypothesis that the young adolescents of mothers who experienced childhood trauma would respond more negatively to these negative interactions.

When assessing the number of instances over the course of 21 days when the children fought with their mother or felt left out by their mother, there was a significant relationship between these reported interactions and the sum BDI scores reported by the mothers, but not between these reported instances and the ACE and IDD-L sum scores reported by the mothers. However, when assessing the number of instances, the children felt insulted, criticized, made fun of, or let down by their mothers, there was no significant relationship between these values and the ACE, BDI, and IDD-L sum scores reported by the mothers. When assessing the relationship between the children reporting feeling upset, nervous, guilty, miserable, mad, stressed, lonely, ashamed, and sad, and the ACE, BDI, and IDDL sum scores reported by the mothers, there was no significant relationship. However, in assessing the relationship between the children reporting feeling bored ($\Pr(>|z|= 0.017)$), isolated ($\Pr(>|z|= 0.003)$), or embarrassed ($\Pr(>|z|= 0.011)$), and the BDI sum score reported by the mothers, there was a significant relationship. Specifically, children whose mothers had higher BDI scores reported feeling bored, isolated, or embarrassed more than their counterparts. Furthermore, in assessing the relationship between the children reporting feeling bored ($\Pr(>|z|= 0.014)$), lonely ($\Pr(>|z|= 0.038)$), or embarrassed ($\Pr(>|z|= 0.023)$), and the IDD-L sum score reported by the mothers, there was a significant relationship. Additionally, in assessing the relationship between the children reporting feeling abandoned (\Pr

(>|z|= 0.052) or ashamed (Pr (>|z|= 0.043), and the ACE sum score reported by the mothers, there was a significant relationship. F

Overall, other than the significant association between young adolescents feeling more abandoned and ashamed, and the increased ACE scores of their mothers, the hypotheses were not supported by these findings.

Discussion

The present research study aimed to elucidate the effects of maternal childhood trauma on young adolescent offspring, and to do this utilizing daily diary data collected from the young adolescents and childhood trauma scores collected from the mothers. We hypothesized that mothers who experienced higher levels of trauma in the first 18 years of their lives would have adolescent children who reported higher levels of depression, more day-to-day negative interactions with their mothers, and greater negative emotionality and less positive emotionality overall. Additionally, in experiencing more depressive symptoms and more day to day negative interactions, we hypothesized that these adolescents would also respond more negatively to those interactions compared to adolescents of mothers who had not experienced childhood trauma.

The results showed that mothers who had higher BDI scores also more frequently fought with their young adolescents on a daily basis, and young adolescents with mothers with higher BDI scores also felt more left out and criticized by their mothers on a daily basis. Additionally, the young adolescents of mothers who had higher BDI and IDD-L scores, reported both being more bored and more embarrassed on a daily basis. Young adolescents of mothers who had higher IDD-L scores, reported feeling lonelier on a daily basis and young adolescents of mothers with higher BDI scores reported feeling more isolated on a daily basis. Importantly, young

adolescents of mothers with higher ACE scores reported feeling both more abandoned and more ashamed on a daily basis.

The results that showed that higher levels in maternal depression symptoms and overall depressed mood were linked to children perceiving more negative interactions with their mother on a daily basis were consistent with prior literature showing that maternal depression is linked to deleterious relational outcomes in children (Monti et al., 2017; Brazeau et al., 2017).

Additionally, the finding that interpersonal factors in children including boredom, loneliness, isolation and embarrassment that were associated with higher depression symptomatology and an increase in depressed mood also aligns with the literature regarding maternal depression and the effect on offspring (Monti et al., 2017). A majority of the research regarding intergenerational transmission of psychopathology in the parent-child dyad has focused on the role of maternal depression. Research has shown that maternal antenatal and postnatal depression have deleterious mental health outcomes for offspring, and research has shown this in varied ages with regards to offspring, including one study that focused on young adolescents that were age 13 at the time of the study (Plant et al., 2017). As such, maternal depression research supports the preliminary findings in this study and with this population.

Interestingly, the two interpersonal factors that were found to be reported more frequently in the children of mothers with increased childhood trauma were feeling abandoned and feeling ashamed. It is difficult to ascertain whether or not this aligns with current literature as there is a dearth of research regarding adolescent children and the effect of maternal trauma on them as compared to infant children, especially with regards to ecological momentary assessment data. However, prior work that has focused on fetal and infant effects, has shown that mothers who experienced childhood trauma are at a heightened risk of struggling to bond with

their infant, and are more likely to experience maladaptive maternal emotions that result in emotional neglect with regards to their offspring (Lehnig et al., 2019). Additionally, research that has focused on maternal self-efficacy has shown that sensitive and responsive caregiving of offspring is linked to higher rates of maternal self-efficacy (Brazeau et al., 2017). However, low maternal self-efficacy is associated with the experience of childhood trauma, which, in turn, negatively impacts the mother as a caregiver in her ability to bond with her child (Brazeau et al., 2018). Again, these studies have been primarily done in infants with a focus on mother-infant bonding, so the need for research such as ours that focuses on children past the preschool age is crucial to fully elucidate the mechanistic pathway between maternal childhood trauma and adolescent psychopathology.

The limited statistical power and non-significant findings need to be emphasized for this study before delving into possible interpretation due to the implications of these limitations. However, there are possible interpretations behind these findings.

As noted above, in contrast to what we expected to find, we did not see that the childhood trauma scores of the mothers were, in large part, related to the young adolescent scores on a majority of the measures studying depressive symptomatology, positive and negative affect, and negative interpersonal factors on a daily basis. However, it is important to note that this was a community-based sample and, as such, was not clinical. A clinical sample of mothers that were depressed or anxious might reveal different results as those disorders can be manifestations of trauma, and a majority of the mothers in the sample did not experience childhood trauma (Hughes et al., 2016). Additionally, the overall socioeconomic status of the sample was fairly high, which could potentially indicate fewer external stressors and therefore increase buffering against deleterious interpersonal effects as a result of childhood trauma. Furthermore, we did not

look at mother-child attachment, which could elucidate important effects since a large body of the research focuses on the negative impact on mother-child bonding as a result of maternal childhood trauma (Chu et al., 2008; Crugnola et al., 2019). Additionally, the results showed that young adolescents feeling abandoned and feeling ashamed were significantly associated with maternal childhood trauma. These are both interpersonal factors that indicate potential attachment issues, and a potential hinderance in maternal-child bonding. Future research could benefit from studying the effect of maternal childhood trauma on mother-child attachment.

Another important factor to consider is the role of resilience. In studies that have focused on the mediating effects of resilience on the relationship between childhood trauma and posttraumatic stress symptoms, research has shown that resilience fully mediates the relationship between childhood trauma and posttraumatic stress symptoms, even more so than trauma experienced after childhood (Lee et al., 2020). This strong effect of resilience could help explain why the associations between maternal childhood trauma and deleterious mental health outcomes in their offspring were not seen.

Research has also shown that, despite exposure to childhood trauma being a powerful risk factor for multiple forms of psychopathology across development, children with higher levels of social support are less likely to experience these deleterious mental health outcomes from trauma exposure (McLaughlin et al., 2020). Despite the fact that this study was focusing on the intergenerational transmission of childhood trauma from mother to offspring, these research findings could help explain why there was not an overall association between maternal childhood trauma and psychopathology in their offspring. If these mothers experienced social support, whether that be from other caregivers, teachers, friends, other family, or any other number of

personal connections, they might be less likely to pass on the effects of their own trauma to their children.

Furthermore, research has shown that familial social support can buffer the intergenerational transmission of maternal childhood trauma to preschool age children and potential maladaptive externalizing behavior (Hatch et al., 2020). Despite the fact that this was done in very young children, this still shows the potential for the mediating effects of social support and resilience in the relationship between maternal childhood trauma and deleterious mental health outcomes in the offspring of those mothers.

Many of the percentages and averages regarding the mental and physical repercussions from trauma are estimations due to the fact that so much of the trauma experienced by children in the first 18 years of their life, and even after, goes unreported due to the often-sensitive nature of the traumatic event. Additionally, much of the trauma that is endured by children and adolescents is perpetuated by a family member or someone close to them or in a position of trust. As such, the estimates for the overall prevalence of trauma are thought to be much lower than the actual percentages or averages (Fernerici et al., 2017). Furthermore, due to the relatively smaller sample size of the mothers, there was limited statistical power which could have contributed to the findings, in part.

Future research should try to have a larger sample of mothers included in order to see more trends with regards to trauma and the impact on offspring. However, future research should also focus on resiliency as it relates to trauma and why children, at least to some extent, do not necessarily always perpetuate the cycle of trauma. Additionally, in focusing on the mechanisms that prevent children from exhibiting the deleterious effects of trauma experienced by their

mothers, preventative strategies can be explored to prevent the intergenerational transmission of trauma.

Appendix

Adverse Childhood Experiences Questionnaire

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household often ... Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt? Yes No If yes enter 1 _____

2. Did a parent or other adult in the household often ... Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured? Yes No If yes enter 1 _____

3. Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have oral, anal, or vaginal sex with you? Yes No If yes enter 1 _____

4. Did you often feel that ... No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other? Yes No If yes enter 1 _____

5. Did you often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it? Yes No If yes enter 1 _____

6. Were your parents ever separated or divorced? Yes No If yes enter 1 _____

7. Was your mother or stepmother: Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife? Yes No If yes enter 1 _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? Yes No If yes enter 1 _____

9. Was a household member depressed or mentally ill or did a household member attempt suicide? Yes No If yes enter 1 _____

10. Did a household member go to prison? Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score

Table 1: Mean scores and ACE, BDI and IDD-L total scores

<i>Measure being assessed</i>	<i>ACE Total Score: t value</i>	<i>ACE Total Score: Standard Error</i>	<i>BDI Total Score: t value</i>	<i>BDI Total Score: Standard Error</i>	<i>IDD-L Total Score: t value</i>	<i>IDD-L Total Score: Standard Error</i>

Negative Affect Mean Score	0.591	0.057	-0.734	0.011	0.803	0.008
Positive Affect Mean Score	1.278	1.101	0.409	0.229	0.501	0.173
Negative interaction with mom	0.315	0.085	-1.785	0.017	2.082	0.013
Negative Emotion Regulation Mean	-1.516	0.038	-1.751	0.007	0.519	0.005
CDI sum	0.519	0.039	-0.938	0.008	0.467	0.006
Rumination Mean	3.644	0.185	-1.179	0.038	0.054	0.028
Self-criticism mean	1.630	0.015	-1.149	0.003	-0.804	0.002

Table 2: Interpersonal factors and interactions and ACE, BDI, and IDD-L total scores

<i>Measure being assessed</i>	<i>ACE Total Score: Standard Error</i>	<i>ACE Total Score: z value</i>	<i>ACE Total Score: Pr (> z)</i>	<i>BDI Total Score: Standard Error</i>	<i>BDI Total Score: z value</i>	<i>BDI Total Score: Pr (> z)</i>	<i>IDD-L: Standard Error</i>	<i>IDD-L Total Score: z value</i>	<i>IDD-L Total Score: Pr (> z)</i>
Fight with mom	0.129	0.599	0.5488	0.037	-2.295	-0.021*	0.020	-0.087	0.9305
Left out by mom	0.173	1.104	0.2696	0.059	-2.100	0.035*	0.026	0.037	0.9703

Criticized by mom	0.100	0.944	0.3201	0.031	-1.966	0.049*	0.016	-0.824	0.4098
Insulted by mom	0.147	1.784	0.0745	0.034	-0.390	0.6966	0.025	-1.353	0.1760
Made fun of by mom	0.145	0.856	0.392	0.039	-1.101	0.271	0.024	-0.783	0.434
Let down by mom	0.149	0.513	0.608	0.046	-1.901	0.057	0.023	-0.152	0.8791
Upset	0.126	0.238	0.812	0.026	-0.570	0.568	0.019	1.064	0.287
Nervous	0.117	0.049	0.961	0.024	0.172	0.863	0.018	0.901	0.367
Guilty	0.079	-0.062	0.951	0.016	-1.098	0.272	0.012	1.492	0.136
Miserable	0.093	0.914	0.361	0.019	-1.340	0.180	0.014	0.375	0.708
Mad	0.120	0.368	0.713	0.025	-0.404	0.686	0.018	0.619	0.536
Bored	0.076	-0.248	0.804	0.016	-2.380	0.017*	0.012	2.445	0.014*
Stressed	0.110	1.049	0.294	0.022	0.289	0.772	0.017	-0.479	0.632
Lonely	0.127	-0.437	0.662	0.026	-1.246	0.212	0.020	2.065	0.038*
Abandoned	0.124	1.937	0.052*	0.027	-1.649	0.099	0.020	0.450	0.652
Isolated	0.122	0.841	0.400	0.031	-2.930	0.003*	0.020	2.239	0.025
Ashamed	0.123	2.021	0.043*	0.025	-1.230	0.218	0.019	2.107	0.035
Embarrassed	0.101	0.598	0.549	0.023	-2.539	0.011*	0.016	2.260	0.023*
Sad	0.127	0.407	0.683	0.029	-1.873	0.061	0.020	1.386	0.165

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