

Mindsets: Investigating Resilience

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Abstract

The growth mindset – the belief that attributes are malleable – has been associated with resilience to challenges in academic settings. Emerging research suggests that the growth mindset may be similarly beneficial in mental health related contexts, a finding that could have major implications for those who have experienced childhood maltreatment which leads to a variety of mental and physical health concerns. This study investigates closeness and process praise within the parent-child relationship during adolescence as mediators for the association between childhood maltreatment, resilience, and mindsets. This study also investigates whether mindsets mediate the relationship between childhood maltreatment and resilience. Results indicated that closeness and process praise within a parent-adolescent relationship mediated the relationship between childhood maltreatment, specifically emotional abuse, and resilience. Results also suggested that for individuals who have experienced childhood maltreatment, particularly emotional neglect and emotional abuse, those who have a growth mindset are more likely to be resilient. Results of this study provide important implications for individuals who have experienced childhood maltreatment and the development of resilience.

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About 3.5 million investigations of childhood maltreatment were opened in the United States of America in 2017 (Children's Bureau, 2019). From the year 2013 to 2017, the national number of victims of childhood maltreatment has increased 2.7 percent from 656,000 in 2013 to 674,000 in 2017 (Children's Bureau, 2019). Since the 1990's there has been a substantial amount of literature regarding the negative effects of childhood maltreatment, such as anxiety disorders (Banducci, Lejuez, Dougherty, & MacPherson, 2017; Pavlova et al., 2018), major depressive disorder (Schulz et al., 2017; Shapero et al., 2014) and early mortality due to health complications (Brown et al., 2009; Felitti et al., 1998). This has led to exploration of resilience; identifying factors that buffer and protect individuals from the negative effects of maltreatment. For example, an individual's mindset (Pitzer & Fingerman, 2010) and a close relationship with parental figures (Ge, Natsuaki, Neiderhiser, & Reiss, 2009; Rayburn, Withers, & McWey, 2018) are identified resilience factors for individuals who have experienced childhood maltreatment. Recent research on the growth mindset shows promising implications for the effects of stressful life events (Schroder et al., 2017) – such as maltreatment – and mental health (De Castella et al., 2013, 2015; Schleider, Abel, & Weisz, 2015). Therefore, the current study aims to investigate whether the growth mindset is associated with resilience and whether aspects of the parent-child relationship, specifically during adolescence, may be associated with such mindsets and resilience for those who have experienced maltreatment.

Childhood Maltreatment

Childhood maltreatment, described as physical and emotional neglect, physical, sexual, and emotional abuse (Bernstein et al., 2003), leaves individuals at a high risk for difficulties later in life (Bernstein et al., 2003; Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; MacMillan

et al., 2001). For example, individuals who have experienced childhood maltreatment are more likely to abuse drugs (Greger, Myhre, Klöckner, & Jozefiak, 2017), develop anxiety (Banducci et al., 2017; Pavlova et al., 2018), be antisocial (Bernstein, Stein, & Handelsman, 1998), and be diagnosed with major depressive disorder and other forms of psychopathology (Greger et al., 2017; MacMillan et al., 2001). For adolescence, maltreatment can have a particularly devastating effect. Reviews of research on adolescents who have experienced maltreatment reveal effects such as aggression, sexual promiscuity, engagement in substance abuse and self-harm (Trickett, Negriff, Ji, & Peckins, 2011). Additionally, many adolescents who experience childhood maltreatment suffer from depression (Ge et al., 2009), anxiety, low self-esteem, and a sense of helplessness (Greger et al., 2017; Greger, Myhre, Lydersen, & Jozefiak, 2015). With the understanding that maltreatment leads to serious physical and psychological ailments, research moves to understand the effects of specific forms of maltreatments such as emotional neglect and emotional abuse.

Emotional Neglect. Childhood emotional neglect can be described as deprivation of emotional support and inattentiveness to emotional needs (Bernstein et al., 2003). Emotional neglect is rarely studied in isolation; however, some studies aim to assess the unique characteristics of emotional neglect among other forms of maltreatment. Cecil, Viding, Fearon, Glaser, and McCrory (2017) found that emotional neglect was one of the most prevalent forms of maltreatment. Furthermore, emotional neglect has been associated with a variety of psychopathology such as depression, anxiety, and self-esteem issues (Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003), more specifically emotional neglect has been linked to schizoid personality disorder (Bernstein et al., 1998). However, studies also indicate that cases of

emotional neglect tend to be accompanied by other forms of maltreatment, often associated with emotional abuse (Berzenski, Madden, & Yates, 2018; Cecil et al., 2017; Spertus et al., 2003).

Emotional Abuse. Childhood emotional abuse involves swearing, insulting, and putting a child down verbally (Bernstein et al., 2003). Chamberland, Fallon, Black, and Trocmé (2011) found that emotional abuse was two times as likely to be reported than emotional neglect. Bernstein et al. (1998) linked emotional abuse with a wide range of personality disorders such as anxiety, avoidant behaviors, passive-aggressiveness, as well as more extreme disorders like borderline, histrionic and narcissistic disorders. Research has shown that emotional abuse is associated with lower distress tolerance and mediated the relationship with anxiety (Banducci et al., 2017). Shapero et al. (2014) found that individuals who had been emotionally abused in their childhood were more likely to be hyperreactive to stressful events in life as an adult. Shapero et al., (2014) theorized that the emotional abuse an individual received by a parental figure disrupted healthy attachment and self-model development, internalizing messages of abuse and therefore creating a self-defeating internal dialogue when faced with stressors later in life. Given the negative effects of childhood maltreatment, a better understanding of how individuals overcome maltreatment is needed, particularly in terms of emotional neglect and emotional abuse.

Resilience

Studies regarding the consequences of early adversity and maltreatment have revealed that not everyone experiences the negative effects, and some recover from their traumas better than others (Buckner, Mezzacappa, & Beardslee, 2003; Sapienza & Masten, 2011). Some individuals return to normal functioning or remain seemingly unaffected by their experiences. Although arguably defined in many complex ways, this phenomenon can be termed resilience.

Rutter (2006) describes resilience as the absence of psychological disturbances despite experiencing adversities such as maltreatment.

Extant research has identified a number of resilience factors at the individual, familial, and societal level that buffer and reverse the effects of maltreatment experienced in childhood (Honor, 2017; Liu, Reed, & Girard, 2017; Meng, Fleury, Xiang, Li, & D'Arcy, 2018). Such factors include quality of relationship with parents (Criss, Smith, Morris, Liu, & Hubbard, 2017; Rayburn et al., 2018), self-regulatory skills (Buckner et al., 2003), and mindsets that promote healthy coping strategies (Barendregt, Van der Laan, Bongers, & Van Nieuwenhuizen, 2015; Compas et al., 2017; Meng et al., 2018). Research continues to investigate the specific nature of these factors to help build more effective interventions to early adversity (Ellis, Bianchi, Griskevicius, & Frankenhuis, 2017).

Implicit Theories of Attribution

Mindsets are implicit theories about how the world works and the flexibility of someone's attributes, they contribute to understanding actions of others and outcomes, motivational frameworks and how someone faces challenges (Dweck, Chiu, & Hong, 1995; Kamins & Dweck, 1999). The *growth mindset*, also known as *the incremental theory of attribution*, is the belief that attributes are malleable and can be changed with work and effort (Dweck, 2013; Dweck et al., 1995).

This mindset has been shown to be advantageous when someone is faced with challenges in educational settings, promoting healthy coping (Blackwell, Trzesniewski, & Dweck, 2007; Gunderson, Sorhagen, et al., 2018; Yeager et al., 2016). Research shows that individuals with a growth mindset are more likely to see challenges as opportunities to grow, and are more willing to persist through challenges as opposed to those with a fixed mindset (Blackwell et al., 2007;

Mueller & Dweck, 1998). In addition, those who have, or are taught, a growth mindset handle adversity better than those with a fixed mindset, implementing more effective coping strategies and focusing on mastering a task that is difficult (Blackwell et al., 2007; Kamins & Dweck, 1999; Yeager & Dweck, 2012). Recent research has demonstrated that the growth mindset contributes to better mental health outcomes (Schleider et al., 2015; Schleider & Weisz, 2018; Schroder, Kneeland, Silverman, Beard, & Björgvinsson, 2018), especially for those who have experienced stressful events (De Castella et al., 2013; Schroder et al., 2017).

Implicit Theories of Anxiety. The growth mindset is dynamic and exists in many domains, meaning someone can hold a growth mindset about one domain of their life while holding a fixed mindset about another domain in their life (Dweck, 2013; Schroder, Dawood, Yalch, Donnellan, & Moser, 2016). Schroder et al. (2015) explored seven domains of the growth mindset and their association with different mental health outcomes, results indicated incremental theories, or growth mindsets, about anxiety, personality and emotion were associated with the more positive outcomes. Follow up studies indicated that growth mindsets of anxiety was the most promising domain for mental health outcomes, buffering against negative psychological outcomes to stressful life events, promoting healthy coping strategies and treatment seeking behaviors (Schroder et al., 2016, 2017, 2018). These results give way for further research examining different forms of adversity, such as childhood maltreatment, and the possible positive outcome of growth mindsets of anxiety.

Parent-Child Relationship and Process Praise

Individuals are not born with a growth mindset, rather they develop the incremental theory of attribution as they go about life (Gunderson, Sorhagen, et al., 2018; Haimovitz & Dweck, 2017). Developing a growth mindset has been linked to influences from social networks

such as teachers (Haimovitz & Dweck, 2017; Park, Gunderson, Tsukayama, Levine, & Beilock, 2016) and parents (Gunderson et al., 2013; Gunderson, Sorhagen, et al., 2018; Gunderson, Donnellan, Robins, & Trzesniewski, 2018; Kim, Fung, Wu, Fang, & Lau, 2017). Research also suggest that mindsets can be changed or promoted (Schleider & Weisz, 2018; David Scott Yeager & Dweck, 2012). Process praise – favorable judgement on the process, efforts, and work towards a success – may have a strong influence on whether someone develops an incremental theory of attribution (Gunderson, Donnellan, 2018; Gunderson et al., 2013; Gunderson, Sorhagen, et al., 2018; Mueller & Dweck, 1998). Results suggest that teachers, and especially parents, can be influential in the development of a growth mindset by how much they use process praise when an individual succeeds at a task (Gunderson, Donnellan, et al., 2018; Gunderson, Sorhagen, et al., 2018; Park et al., 2016). These findings indicate that parents can play an important role in the development of a growth mindset.

The quality of a parent-child relationship has been shown to determine whether it is a protective factor against childhood maltreatment, promoting resilience, as well as providing an avenue for promoting growth mindsets (Criss et al., 2017; Ge et al., 2009; Gunderson, Donnellan, et al., 2018; Kim et al., 2017; Meng et al., 2018; Rayburn et al., 2018). Rayburn et al. (2018) found that quality relationships with caregivers buffered against negative psychological outcomes. Withers, McWey, and Lucier-Greer (2016) investigated the parent-child relationship during adolescence further and determined that closeness was one of the major contributing factors of the relationship that made it a high-quality relationship. Additionally, studies have found that a closer relationship during adolescence buffered against psychopathology such as depression and anxiety (Criss et al., 2017; Withers et al., 2016).

Current Study

Altogether, extant research suggests that parents can play a unique role in the development of a growth mindset, promoting healthy coping and therefore resilience to childhood maltreatment. Utilizing a close parent-child relationship during adolescence by encouraging the use of more process praise has the potential to promote a growth mindset. In theory, the development of a growth mindset would facilitate healthier coping strategies, encouraging adolescence and young adults to strive to heal or seek help for the early life traumas and symptoms. This study aims to explore qualities within a parent-child relationship, such as closeness and the use of process praise, during adolescence as mediating factors for psychological outcomes, specifically resilience and mindsets for individuals who have experienced childhood maltreatment in general and those who have experienced emotional neglect and abuse (See Fig. 1). This study also aims to explore mindsets, general mindsets and mindsets about anxiety, as mediating factors for the association between childhood maltreatment and resilience (See Fig. 2).

This study tests four primary hypotheses. First, it is hypothesized that fixed mindsets will be negatively associated with resilience. Second, a close parent-child relationship will mediate the relationship between childhood maltreatment – generally as well as emotional abuse and emotional neglect – and fixed mindsets as well as fixed mindsets of anxiety. Next, it is hypothesized that process praise used by the close parental figure will mediate the relationship between childhood maltreatment – generally as well as emotional abuse and emotional neglect – and resilience. Finally, it is hypothesized that mindsets, along with mindsets of anxiety, will mediate the association between childhood maltreatment, generally as well as emotional neglect and abuse, and resilience.

Methods

Participants

Participants were 391 adults enrolled in psychology coursework from a large public university in the western United States (M age = 22.16, SD = 5.03, range 18-57). The sample consisted of mainly undergraduate students (n = 387, 98.9%) with a small portion of graduate students (n = 4, 1.1%). The sample was primarily female (n = 304, 77.7% female; n = 86, 22% male; n = 1, 0.3% preferred not to answer). Self-report indicated a predominantly Caucasian sample (n = 193, 49.4%), 29.9% Hispanic or Latino (n = 117), 8.4% mixed race (n = 33), 6.4% Asian (n = 25), 3.8% Black or African American (n = 15), 1.3% Other (n = 5), and 0.3% Native Hawaiian or Pacific Islander (n = 1). Two participants chose not to answer (0.5%). Most of the sample reported their marital status as single (n = 366, 93.6%), while the rest reported being married (n = 19, 4.9%), divorced (n = 4, 1%) or preferred not to answer (n = 2, 0.5%). When asked if participants were religious, 41.2% reported being religious (n = 161) while 58% reported not being religious (n = 230). However, when asked about spirituality, 64.5% stated that they were spiritual (n = 252) and 35.5% said that they were not spiritual (n = 139).

Procedure

Participants were recruited through the research management system known as Sona Systems. A paper flyer was posted on the Psychology Department bulletin and class announcements were made to promote participation. The procedure was approved by the university's Institutional Review Board before any data was collected. Participants signed up for participation online and were free to respond where and when it suited them. The entire study took up to 30 minutes to complete. Upon completion, participants were awarded 30 minutes of

research participation credit which they were free to distribute to the psychology course of their choosing.

Measures

Childhood Maltreatment. Using the 28-item short form of *The Childhood Trauma Questionnaire* (CTQ; Bernstein et al., 2003), data was collected on childhood experiences of maltreatment which included physical, emotional and sexual abuse, along with physical and emotional neglect. Each scale consisted of 5 items each, response options ranged from 1 (Never) to 5 (Very Often True). Items were combined to create an overall score for childhood maltreatment. Lower scores indicated less maltreatment while higher scores reflected more childhood maltreatment before the age of 18. The CTQ has shown good criterion validity and reliability across different samples (Bernstein et al., 2003; Paivio & Cramer, 2004). The current sample produced a Cronbach's Alpha of .85 for the entire CTQ.

The current study focused on two subscales assessing emotional abuse and emotional neglect. Participants were asked about their experiences with emotional abuse and neglect before the age of 18. The emotional neglect subscale included 5 questions such as "I felt loved."; "People in my family felt close to each other." Response options ranged from 1 (Never) to 5 (Very Often True). These 5 items were reverse scored due to wording. Internal reliability testing of the emotional neglect subscale of the CTQ resulted in a Cronbach's alpha of .88. All 5 items were then combined to generate a total emotional neglect score. Lower scores indicated little to no emotional neglect while higher scores indicated more emotional neglect. The emotional abuse subscale also consisted of 5 items with questions such as "People in my family called me things like, "stupid," "lazy," "ugly"."; "People in my family said hurtful or insulting things to me." Response options ranged from 1 (Never) to 5 (Very Often True). Internal consistency tests of the

emotional abuse subscale within the current sample produced a Cronbach's alpha of .86. Lower scores indicated little to no emotional abuse while higher scores indicate more emotional abuse.

Close Parental-Child Relationship. In order to assess the level of closeness participants felt to an identified parental figure three sources were utilized. First, participants were asked to identify an adult figure they felt the closest to during adolescence. A total of 13 options were provided to encompass the varying individuals that may play a parental role. After data collection, options were condensed into six categories that included "Biological Mother" ($n = 265, 67.8\%$), "Biological Father" ($n = 68, 17.4\%$), "Grandmother" ($n = 19, 4.9\%$), and "Adult sibling" ($n = 11, 2.8\%$). Other options with a frequency smaller than 10 were condensed to "Other" ($n = 18, 4.6\%$). There were 10 participants who chose "Prefer Not to Answer" (2.6%). This parental figure was used for the following two closeness scales. Those who chose not to answer this item were directed to the end of the study and awarded credit for their participation.

Inclusion of Others in Self (IOS). The single item *Inclusion of Others in Self closeness scale* (IOS; Aron, Aron, & Smollan, 1992) was used to measure the closeness of the participant to the parental figure during the participant's adolescence. Participants are asked to select one Venn diagram from seven to indicate how close they felt their relationship to be with their chosen parent-like figure. A response of 1 indicated a lack of closeness while a response of 7 indicated the highest degree of closeness (See Appendix A). The IOS has been shown to have strong convergent validity with other well established closeness scales (Gächter, Starmer, & Tufano, 2015).

Unidimensional Relationship Closeness Scale (URSC). The 12-item *Unidimensional Relationship Closeness Scale* (URSC; Dibble, Levine, & Park, 2012), with an average internal consistency of .96, was designed to work with the IOS to eliminate the issue of the single item in

the IOS. Therefore, this 12-item scale was used with the IOS for convergent validity of the closeness scores with their chosen relationship in adolescence. Example of items include “My relationship with my [parental figure] is close.”; “My relationship with my [parental figure] is important in my life.”; “My [parental figure] and I disclose important personal things to each other.” Responses were provided on a 7-Point Likert-Scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). Testing the internal reliability of the URSC and the IOS with our sample produced a Cronbach’s Alpha of .95. URSC items were combined with the IOS to create a summed score for closeness. Lower scores indicated relationships that were not close while higher scores indicated close relationships.

Praise. At the initial time of the study, to the best of our knowledge, no survey existed to measure process praise. Therefore, 10 items were created and tested to be used for this study. An exploratory factor analysis resulted in 4 items loading on one factor with a KMO of .735. Questions asked the participant how often certain statements were used by their chosen parental figure during their adolescence. Example questions include, “Contribute my ability to learn new things to my hard work”; “Say that my grades were a result of how much work I put into understanding the material” Responses ranged from 0 (Never) to 5 (Always). Reliability testing produced a Cronbach’s alpha of .72. The four items were then combined to create an overall score of process praise. Lower scores indicated a low frequency of process praise while higher scores indicate a higher frequency of process praised used by the parental figure during adolescence.

Implicit Theories of Attribution. To measure theories of attribution the study used 7 fixed mindset scales that included questions asking about implicit theories of attribution for intelligence (Hong, Chiu, Dweck, Lin, & Wan, 1999), personality (Chiu, Hong, & Dweck,

1997), emotions (Tamir, John, Srivastava, & Gross, 2007), anxiety (Schroder et al., 2015), depression, drinking tendencies, and social anxiety (Schroder et al., 2016). Scales included 4 items except for the personality scale which only included three items. Response options ranged from 1 (Strongly Disagree) to 6 (Strongly agree). All items were fixed minded with the exception of two items in the *Implicit Theories of Emotion* (TOE: Tamir et al., 2007). Those items were reverse scored before analyzing the data. Reliability testing revealed a Cronbach's Alpha of .95. All scales were then combined to create one score for mindsets, lower scores indicating growth mindsets while higher scores reflected fixed minded individuals.

This study focused on the 4-item *Implicit Theories of Anxiety Scale* (TOA: Schroder et al., 2015). Previous research has shown this scale to have good reliability and validity (Schroder et al., 2015, 2016, 2017). Items ask about how fixed they believed their anxiety to be including questions such as "You have a certain amount of anxiety and you really cannot do much to change it."; "To be honest, you cannot really change how anxious you are.". Response options ranged from 1 (Strongly Disagree) to 6 (Strongly agree). For the current study, the Cronbach's alpha was .90. The four items were combined to create one score for theories of attribution. Lower scores indicated a growth mindset towards anxiety while higher scores indicated a fixed mindset towards anxiety.

Resilience. The 25-item *Connor-Davidson Resilience Scale* (CD-RISC; Connor & Davidson, 2003) was used to measure resilience. The CD-RISC has reported a Cronbach's alpha of .89 for diverse populations (Connor & Davidson, 2003). The questionnaire asks individuals about their current state of being with questions such as "I give my best effort no matter what the outcome may be"; "I feel in control of my life."; "I try to see the humorous side of things when I am faced with problems." Responses were from 1 (Not True at All) to 5 (True Nearly All the

Time). Our study produced a Cronbach's alpha of .93. Items were combined to create an overall resilience score. Lower scores indicated a lack of resilience while higher scores indicated very resilient individuals.

Data Analysis

Data was collected between the months of February and May of 2018. There was a total of 398 students who initiated the study. Due to incomplete data, 8 responses were removed from the analysis resulting in our sample ($n = 391$).

Data was analyzed using the Statistical Program for Social Sciences (SPSS). To determine bivariate correlations among variables, Pearson correlations were performed. Mediation was tested next using the SPSS Process macro bootstrapping method with 95% bias-corrected confidence intervals (CI) with 5,000 bootstrapping resamples (available at <http://www.afhayes.com>; Preacher & Hayes, 2008). Bootstrapping empirically estimates the sampling distribution of the indirect effect of the model by resampling and generating a sample distribution, producing confidence intervals (CI), indirect effects, and standard errors. Bias-corrected and accelerated CI that adjusted for bias and skewness were reported. A CI that did not include zero indicated mediation. Mediation models were first examined for the extent to which parent-child closeness and praise mediated the association between the combined scores of childhood maltreatment and fixed mindsets (See Fig. 1). Next, mediation was tested for the extent parent-child closeness and praise mediated the association between emotional abuse and neglect, and fixed mindsets of anxiety. Finally, mediation was tested for the extent that fixed mindsets, in general and about anxiety, mediated the association between childhood maltreatment, generally as well as emotional abuse and neglect, and resilience (See Fig. 2).

Results

Bivariate analysis revealed multiple significant correlations in the hypothesized directions (See Table 1). Childhood maltreatment was negatively associated with feelings of closeness to parental figures, process praise during adolescence, and resilience. Specifically, emotional abuse and emotional neglect were negatively associated with feelings of closeness to parental figures, process praise during adolescence, and resilience. Childhood maltreatment was positively correlated with overall fixed mindsets along with fixed mindsets of anxiety. Furthermore, feelings of closeness to parental figures positively correlated with receiving process praise from the parental figure, and resilience but was negatively associated with fixed mindsets and fixed mindsets of anxiety. Receiving process praise during adolescence by the identified parental figure was not associated with fixed mindsets nor fixed mindsets of anxiety. However, process praise was positively associated with resilience. Finally, the first hypothesis of the study was supported, fixed mindsets were negatively associated with resilience. Further investigation of this relationship revealed that fixed mindsets of anxiety was also negatively related to resilience.

Using multiple regression analyses, the planned mediation models were tested next. The first analyses containing direct paths (*c* path) between childhood maltreatment and resilience and fixed mindset. Results indicated significant paths (maltreatment to resilience, $B = -0.15$, $t(378) = -2.90$, $p < .01$, maltreatment to fixed mindsets, $B = 0.29$, $t(375) = 3.72$, $p < .001$). Closeness to parental figure and praise were tested as mediating factors. Relationships between maltreatment and closeness to parental figure (*a* paths) and closeness to parental figure and resilience (*b* path) were also significant (See table 2). The relationship between closeness and fixed mindsets (*b* path), however, was not significant. Relationships between maltreatment and praise received

from parental figure (*a* path) and praise received from parental figure and resilience (*b* path) were significant (See table 2). Praise received from parental figures and fixed mindsets (*b* path) was not significant. Models with significance for both *a* and *b* paths permitted for further analyses of indirect effects using bootstrapping methods.

The first set of mediation models tested whether closeness to a parental figure mediated the association between childhood maltreatment and resilience. Bootstrapping analyses indicated full mediation $B = -0.06$, $t(377) = -1.10$, $p = .27$, 95% CI $[-0.14, -0.04]$ as the *c* prime path was no longer significant. Next, frequency of process praised was tested as a mediator for the relationship between childhood maltreatment and resilience. Results of bootstrapping analyses showed that use of process praise was a full mediator $B = -0.10$, $t(377) = -1.94$, $p = .05$, 95% CI $[-0.08, -0.02]$ as the *c* prime path was no longer significant.

Testing indicated that fixed mindsets were not mediated by a close parental relationship nor process praise during adolescence. Due to previous research suggesting that growth mindsets about anxiety, specifically, may be helpful for overcoming stressful life events (Schroder et al., 2017), multiple regression analyses were used to test mediating factors for mindsets of anxiety. Furthermore, this study was particularly interested in the emotional neglect and abuse, therefore, the next set of analyses included the subscales of emotional abuse and emotional neglect.

The second set of analyses contained direct paths (*c* path) between emotional neglect and resilience and fixed mindsets about anxiety. Results indicated significant paths (emotional neglect to resilience, $B = -0.92$, $t(379) = -5.73$, $p < .001$, emotional neglect to fixed mindsets about anxiety, $B = 0.14$, $t(378) = 2.41$, $p = .02$). Closeness to parental figure and frequency of process praise were tested as mediating factors. Relationships between emotional neglect and closeness to parental figure (*a* paths) and closeness to parental figure and resilience (*b* path) were

also significant (See table 3). The relationship between closeness and fixed mindsets about anxiety (*b* path), however, was not significant. Relationships between emotional neglect and process praise received from parental figure (*a* path) and praise received from parental figure and resilience (*b* path) were also significant (See table 3). Praise received from parental figures and fixed mindsets about anxiety (*b* path) was not significant. Models with significance for both *a* and *b* paths permitted for further analyses of indirect effects using bootstrapping methods.

The first mediation model tested whether frequency of process praised was as a mediator for the relationship between emotional neglect and resilience. Results of bootstrapping analyses indicated that use of process praise was a partial mediator $B = -0.77$, $t(378) = -4.67$, $p < .001$, 95% CI [-0.27, -0.05], as the *c* prime path was greater than *c* path when process praise was included in the model. Next, closeness to a parental figure mediated the association between childhood emotional neglect and resilience. Results indicated that closeness did not mediate this relationship (CI = -0.40, 0.01).

The third set of analyses contained direct paths (*c* path) between emotional abuse and resilience and fixed mindsets about anxiety. Results indicated significant paths (emotional abuse to resilience, $B = -0.41$, $t(379) = -2.67$, $p < .01$, emotional abuse to fixed mindsets about anxiety, $B = 0.19$, $t(378) = 3.55$, $p < .001$). Closeness to parental figure and frequency of process praise were tested as mediating factors. Relationships between emotional abuse and closeness to parental figure (*a* paths) and closeness to parental figure and resilience (*b* path) were also significant (See table 3). The relationship between closeness and fixed mindsets about anxiety (*b* path), however, was not significant. Relationships between emotional abuse and process praise received from parental figure (*a* path) and praise received from parental figure and resilience (*b* path) were also significant (See table 3). Praise received from parental figures and fixed mindsets

about anxiety (*b* path) was not significant. Models with significance for both *a* and *b* paths permitted for further analyses of indirect effects using bootstrapping methods.

The first mediation model tested whether closeness to a parental figure mediated the association between childhood emotional abuse and resilience. Results of bootstrapping analyses indicated full mediation $B = -0.16$, $t(378) = -0.97$, $p = .33$, 95% CI $[-0.40, -0.12]$ as the *c* prime path was no longer significant. Next, frequency of process praised was tested as a mediator for the relationship between emotional abuse and resilience. Results of bootstrapping analyses indicated that use of process praise was a full mediator $B = -0.28$, $t(378) = -1.80$, $p = .07$, 95% CI $[-0.24, -0.06]$, as the *c* prime path was no longer significant.

The last set of analyses contained direct paths (*c* path) between childhood maltreatment, general maltreatment as well as emotional abuse and emotional neglect, and resilience. Results indicated significant paths (childhood maltreatment to resilience, $B = -0.17$, $t(375) = 3.32$, $p = .001$, emotional neglect to resilience, $B = -0.92$, $t(379) = -5.73$, $p < .001$, emotional abuse to resilience, $B = -0.41$, $t(379) = -2.67$, $p < .01$). Fixed mindsets and fixed mindsets of anxiety were tested as mediating factors. Relationships between maltreatment, generally as well as emotional neglect and abuse, and fixed mindset (*a* paths), and fixed mindsets and resilience (*b* path) were also significant (See Table 4). Significance for both *a* and *b* paths permitted for further analyses of indirect effects using bootstrapping methods.

The first mediation model tested whether fixed mindsets mediated the association between childhood maltreatment and resilience. Results of bootstrapping analyses indicated partial mediation $B = -0.10$, $t(374) = -2.10$, $p = .04$, 95% CI $[-0.12, -0.03]$ as the *c* prime path was greater than the *c* path when fixed mindsets was included in the model. Next, the fixed mindset of anxiety was tested as a mediator for the relationship between childhood maltreatment

and resilience. Results of bootstrapping analyses indicated that a fixed mindset was a partial mediator $B = -0.10$, $t(376) = -2.14$, $p = .03$, 95% CI $[-0.08, -0.01]$, as the c prime path was greater than c path when fixed mindsets of anxiety was included in the model.

The fixed mindset was also tested as a mediator for the association between emotional neglect and resilience. Results indicated that the fixed mindset was a partial mediator for the association between emotional neglect and resilience $B = -0.81$, $t(375) = -5.22$, $p < .001$, 95% CI $[-0.33, -0.07]$, as c prime path became smaller (See table 4). Fixed mindsets of anxiety were tested next as a mediator for the relationship between emotional neglect and resilience. Results indicated that the fixed mindset about anxiety was not a mediator for the association between emotional neglect and resilience mediator $B = -0.79$, $t(377) = -5.18$, $p < .0001$, 95% CI $[-0.26, -0.02]$, as c prime path became smaller.

Next, the fixed mindset was tested as a mediator for the association between emotional abuse and resilience. Results indicated full mediation $B = -0.24$, $t(375) = -1.60$, $p = 0.11$, 95% CI $[-0.39, -0.11]$, as c prime path was no longer significant. Finally, fixed mindset of anxiety was tested as a mediator for the relationship between emotional abuse and resilience. Results indicated full mediation $B = -0.23$, $t(377) = -1.54$, $p = .12$, 95% CI $[-0.31, -0.08]$, as the c prime path was no longer significant.

Discussion

This study aimed to fill the gap in the growth mindset literature within mental health domains, specifically in cases of childhood maltreatment. Closeness and process praise were investigated as mediating factors for the associations between childhood maltreatment and resilience and growth mindsets. This study aimed to identify whether closeness to a parental figure and the style of praise that parental figure gave during the participant's adolescence would

contribute to resilience and a growth mindset for those who had experienced childhood maltreatment. Previous research indicates that a growth mindset is beneficial for challenges in academic settings (Dweck et al., 1995; David Scott Yeager & Dweck, 2012), and recent research highlights the importance of a growth mindset for mental health related difficulties such as anxiety and depression (De Castella et al., 2015; J. Schleider & Weisz, 2018), especially for those who have faced stressful life events (De Castella et al., 2013; Schroder et al., 2016, 2017). These studies set a precedence for growth mindsets within more specific forms of stressful life events that are known to lead to mental health difficulties, such as childhood maltreatment.

The findings of this study are consistent with previous research on resilience as well as mindsets. However, findings of this study also expand the understanding of these relationships further as well as the mechanisms associated with resilience and growth mindsets as they relate to childhood maltreatment. First, expanding on the associations of the growth mindset and beneficial mental health statuses (De Castella et al., 2015, 2013; Schroder et al., 2017), this study linked growth mindsets with resilience. This finding indicates that beliefs that individuals can change is important for a resilient mind and opens the door for more research around the growth mindset and resilience to traumas such as maltreatment. After establishing the association, investigating whether known factors of the growth mindset are associated with resilience, and whether known factors of resilience are associated with a growth mindset were explored in relation to childhood maltreatment.

Investigating the relationship of resilience to childhood maltreatment resulted in findings that were consistent with previous research. For example, a close relationship with a parental figure mediated the relationship between childhood maltreatment and resilience (Criss et al., 2017; Rayburn et al., 2018; Withers et al., 2016), but results also expanded previous research,

and supported the third hypothesis of the study, indicating that the style of praise is important within this relationship. Individuals who experienced childhood maltreatment but also received process praise from a close parental figure during their adolescence were associated with resilience as opposed to those who did not receive a high frequency of process praise from a close parental figure. This relationship was especially strong for those who had experienced emotional abuse. The closeness of the relationship may contribute to the impact of process praise on an adolescent, contributing the internalization of the message and building resilience. For those who experienced emotional abuse, process praise might replace the messages they internalized from their abuse. Focusing on the strategies and the work that the child puts towards success would make them more likely to face challenges and build on their motivation to improve themselves (Gunderson, Donnellan, et al., 2018; Kamins & Dweck, 1999; Nelson, Shacham, & Ben-ari, 2016), and even their challenges with mental health (J. Schleider & Weisz, 2018).

Contrary to this study's second hypothesis, neither closeness to a parental figure nor the process praise within the relationship between a parental figure and adolescent were indicated as mediators for the relationship between childhood maltreatment and mindsets, in general nor for mindsets about anxiety. Additionally, neither closeness nor process praise were found to mediate the associations between emotional neglect and emotional abuse with mindsets in general nor for mindsets about anxiety. This may be due to more influential factors of mindsets such as peers and teachers, who spend a lot of time with children and adolescents. The closeness in the parent-child relationship during adolescence is most likely not enough to influence mindsets especially if the parental figure did not use a high frequency of process praise (Gunderson, Donnellan, et al., 2018). Furthermore, process praise within that close relationship may not be enough to

influence the development of a growth mindset if the individual is receiving different messages from their abuser, friends, peers, teachers, and society. It may be that adolescents who have experienced childhood maltreatment require more than a parental figure that utilizes a high frequency of process praise to develop a growth mindset. Finally, the sample in the study may be different than previously tested samples which may explain the lack of significant results (Gunderson, Donnellan, et al., 2018; Gunderson, Sorhagen, et al., 2018; Kamins & Dweck, 1999).

This study also investigated two specific forms of maltreatment, emotional neglect and emotional abuse. Surprisingly, closeness to a parental figure was not found to be a mediator for the relationship between emotional neglect and resilience but was a mediator for the association between emotional abuse and resilience. The former finding is inconsistent with similar work (Ge et al., 2009; Rayburn et al., 2018; Withers et al., 2016), and indicates that closeness may not be associated with resilience for those who have been neglected. This may be due to issues of self-worth after neglect (Berzenski et al., 2018; Spertus et al., 2003), as closeness does not necessarily address internal messages. Additionally, this finding may be due to issues with attachment, making closeness a less powerful influence for those who have been neglected. There may be more influencing factors to consider for resilience to be developed in cases of emotional neglect. For example, aspects of neglect should be considered such as the timing, extent, and neurological impact of the neglect as well as other forms of maltreatment in the individual's life. However, for emotional abuse, closeness to a parental figure appears to be a protective factor and is associated with resilience. This relationship could potentially validate the individual's worth, calm their anxiety or alleviate their depression by the presence of someone whom they feel close.

Despite the null findings for closeness as a mediator for emotional neglect and resilience, findings supported the third hypothesis of this study. Process praise from a close parental figure was found to be a partial mediator for the association between emotional neglect and resilience as well as full mediator for the association between emotional abuse and resilience. Praise for work and efforts of successful tasks can influence implicit theories about attributes (Kamins & Dweck, 1999), and therefore be internalized by the one receiving the message (Dweck, 2013). The positive reinforcement for work and effort seems to be influential for the development of resilience rather than a just a close relationship with a parental figure alone for those who have experienced emotional neglect. Closeness to a parental figure may make process praise more influential, rewiring internalized messages of emotional abuse leading to more resilient individuals. It is the combination of a close parental figure and use of process praise that is associated with resilience for those who have experienced emotional neglect, while those who have been emotionally abused benefit from one factor as well as the combination of the two factors.

While it has been identified that a growth mindset has benefits outside of academia within mental health domains, it has not been, until this study, shown to be advantageous for those who have experienced childhood maltreatment. This study hypothesized that mindsets, along with mindsets of anxiety, would mediate the association between childhood maltreatment, generally as well as emotional neglect and abuse, and resilience. Results supported this hypothesis, indicating that growth mindsets partially mediated the relationship between general childhood maltreatment and resilience. Furthermore, growth mindsets and growth mindsets of anxiety also partially mediated the relationship between emotional neglect and resilience. Finally, general growth mindsets and growth mindsets of anxiety were full mediators for the

association between emotional abuse and resilience. Therefore, individuals who have experienced childhood maltreatment, particularly emotional neglect and especially emotional abuse, those who have a growth mindset are more likely to be resilient.

Implications

These findings add to the current literature on resilience as well as growth mindsets. These findings support the idea that developing a growth mindset could be useful for recovery treatments, therapy sessions, trainings and parenting classes (Schleider & Weisz, 2018) for individuals facing challenges. Understanding how to develop a growth mindset after experiencing traumatic events, especially events that tear down self-esteem and leave individuals feeling hopeless and helpless (Kamins & Dweck, 1999; Y. Liu, Wang, Zhou, & Li, 2014), would allow recovery treatments to be more effective (Schleider & Weisz, 2018; Schroder et al., 2018, 2017). Developing or promoting an already developed growth could aid in recovery to childhood maltreatment, inspiring individuals to seek out help in the first place and continue working to improve after initiating treatment.

Resilience literature will repeatedly show that only certain characteristics lead to the resilience. This study aims to shed light on the mechanisms that lead to a growth mindset, which is associated with resilience. Understanding how these mechanisms do and do not work allows for professionals to tailor prevention and recovery plans to help those without the identified traits to build the internal skills they need to become resilient to their traumas. These findings would be particularly useful for foster and adoptive families and programs who often face the challenges of children who have experienced childhood maltreatment and would benefit from understanding how to develop resiliency to their experiences.

Limitations

Despite the strengths of this study, there are limitations that must be considered. This study utilized a set of questions assessing process praise that were developed for the purpose of this study. To account for this, the praise items were analyzed in an exploratory analysis and were determined to load on one factor that was identified as process praise, however, items were not tested with other known instruments that assessed process praise. Therefore, the reliability and validity of the items should be tested further. Other sources for process praise assessment may come from Gunderson, Donnellan, et al. (2018) who used similar items to the ones used in this study. Future research should utilize all items designed to measure process praise to develop a validated instrument. Second, generalizability of these results may be limited due to the sample used in this study. The sample consisted of college students enrolled in psychological coursework and was primarily single, Caucasian female undergraduates. The findings of the current study could be extended by investigating these models with diverse samples. Additionally, cause and effect cannot be determined by the cross-sectional design of the current study, future research should investigate these mediation pathways longitudinally. Finally, participants were asked to identify a parental figure and asked about their relationship with that parental figure. It was assumed that the parental figure was chosen as the closest parental-like figure was not the individual that abused the participant, however, the study did not ask the participant if the identified parental figure was the one that abused them. Future research should extend these findings by examining parent-adolescent relationships longitudinally in order to examine changes of these relationships over time. These results would explain the extent to which a close parent-adolescent relationship that includes process praise contributes to resilience when the same parent abused the adolescent in the past.

Future Research

This study and studies similar (De Castella et al., 2015, 2013; Schleider et al., 2015; Schleider & Weisz, 2018; Schroder et al., 2017, 2018) set the foundation for more research on the growth mindset and the usefulness within mental health domains. Expanding on the current study, future research should investigate specific outcomes such as depression, anxiety, self-injurious behaviors, drinking tendencies, help-seeking behaviors, and self-esteem when looking at the relationship between childhood maltreatment and the growth mindset. Longitudinal studies would be extremely advantageous for the understanding of how growth mindsets and resilience develop overtime, and what factors are associated with each concept, for individuals who have experienced childhood maltreatment. Studies should investigate specific traumatic events and the mechanisms associated with developing a growth mindset after experiencing such events. Information from such studies would highlight what factors are more influential for specific traumas and what factors are less effective.

Resilience research would benefit from the testing of multiple resiliency scales with the growth mindset scales to assess the extent of the association. This study did not find closeness to be associated with resilience for those who have been emotionally neglected, therefore, future research should look at this relationship in another sample and work to identify aspects that are associated with resilience. It would be beneficial to study the development of a growth mindset for individuals who have experienced childhood maltreatment as neither closeness nor process praise were associated with growth mindsets. Finally, studies would benefit from using a more validated measure of process praise in their investigation of mindsets.

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Table 1*Correlations among all study variables*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------|---------|---------|---------|---------|--------|--------|---------|-------|
| 1. Maltreatment | - | | | | | | | |
| 2. Emotional Abuse | 0.89** | - | | | | | | |
| 3. Emotional Neglect | 0.77** | 0.66** | - | | | | | |
| 4. Closeness | -0.42** | -0.39** | -0.51** | - | | | | |
| 5. Praise | -0.24** | -0.21** | -0.29** | 0.42** | - | | | |
| 6. Mindset | 0.19** | 0.21** | 0.16** | -0.13** | -0.02 | - | | |
| 7. Anxiety Mindset | 0.13** | 0.18** | 0.12** | -0.12* | -0.03 | 0.87** | - | |
| 8. Resilience | -0.15** | -0.14** | -0.28** | 0.24** | 0.22** | -0.38 | -0.35** | - |
| Mean | 42.34 | 9.22 | 9.65 | 71.41 | 12.73 | 75.79 | 12.78 | 97.63 |
| SD | 14.08 | 4.61 | 4.26 | 14.74 | 4.26 | 21.03 | 4.82 | 13.84 |
| n | 380 | 381 | 381 | 381 | 381 | 378 | 380 | 381 |

* $p < .05$. ** $p < .01$. Two-tailed test

Table 2
Direct and Indirect effects of proposed mediation models

| | B | SE | <i>t</i> | Bootstrapped BC 95% CI |
|-------------------------------|-------|------|----------|------------------------|
| Maltreatment closeness | | | | |
| a path | -0.44 | 0.05 | -9.00*** | |
| b path resilience | 0.19 | 0.05 | 3.78*** | |
| c path resilience | -0.15 | 0.05 | -2.90** | |
| c' path resilience | -0.06 | 0.05 | -1.10 | [-0.14, -0.04] |
| a path | -0.43 | 0.05 | -8.58*** | |
| b path fixed mindset | -0.10 | 0.08 | -1.21 | |
| c path fixed mindset | 0.29 | 0.08 | 3.71*** | |
| c' path fixed mindset | 0.25 | 0.09 | 2.91*** | [-.04, 0.11] |
| Maltreatment praise | | | | |
| a path | -0.07 | 0.02 | -4.80*** | |
| b path resilience | 0.65 | 0.17 | 3.88*** | |
| c path resilience | -0.15 | 0.05 | -2.90*** | |
| c' path resilience | -0.10 | 0.05 | -1.94* | [-0.08, -0.02] |
| a path | -0.07 | 0.02 | -4.34*** | |
| b path fixed mindset | 0.09 | 0.26 | 0.36 | |
| c path fixed mindset | 0.29 | 0.08 | 3.72*** | |
| c' path fixed mindset | 0.30 | 0.08 | 3.70*** | [-0.04, 0.03] |

BC CI Bias-Corrected and Accelerated 95% Confidence Interval

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 3
Direct and Indirect effects of proposed mediation models

| | B | SE | t | Bootstrapped BC 95% CI |
|-------------------------------------|-------|------|-----------|------------------------|
| Emotional abuse closeness | | | | |
| a path | -1.23 | 0.15 | -8.18*** | |
| b path resilience | 0.20 | 0.05 | 3.96*** | |
| c path resilience | -0.41 | 0.15 | -2.67*** | |
| c' path resilience | -0.16 | 0.16 | -0.97 | [-0.40, -0.12] |
| a path | -1.23 | 0.15 | -8.13*** | |
| b path fixed mindset about anxiety | -0.02 | 0.02 | -1.18 | |
| c path fixed mindset about anxiety | 0.19 | 0.05 | 3.55*** | |
| c' path fixed mindset about anxiety | 0.16 | 0.06 | 2.82*** | [-0.02, 0.07] |
| Emotional abuse praise | | | | |
| a path | -0.20 | 0.05 | -4.27*** | |
| b path resilience | 0.66 | 0.17 | 3.95*** | |
| c path resilience | -0.41 | 0.15 | -2.67*** | |
| c' path resilience | -0.28 | 0.15 | -1.81 | [-0.24, -0.06] |
| a path | -0.20 | 0.05 | -4.27*** | |
| b path fixed mindset about anxiety | 0.02 | 0.06 | 0.28 | |
| c path fixed mindset about anxiety | 0.19 | 0.05 | 3.55*** | |
| c' path fixed mindset about anxiety | 0.19 | 0.05 | 3.52*** | [-0.03, 0.20] |
| Emotional neglect closeness | | | | |
| a path | -1.77 | 0.15 | -11.63*** | |
| b path resilience | 0.11 | 0.05 | 2.14** | |
| c path resilience | -0.92 | 0.16 | -5.73*** | |
| c' path resilience | -0.71 | 0.19 | -3.85*** | [-0.40, 0.01] |
| a path | -1.77 | 0.15 | -11.58*** | |
| b path fixed mindset about anxiety | -0.03 | 0.02 | -1.41 | |
| c path fixed mindset about anxiety | 0.14 | 0.06 | 2.41** | |
| c' path fixed mindset about anxiety | 0.09 | 0.07 | 1.35 | [-0.02, 0.12] |
| Emotional neglect praise | | | | |
| a path | -0.29 | 0.05 | -5.94*** | |
| b path resilience | 0.49 | 0.17 | 2.99*** | |
| c path resilience | -0.92 | 0.16 | -5.73*** | |
| c' path resilience | -0.77 | 0.17 | -4.67*** | [-0.27, -0.05] |
| a path | -0.29 | 0.05 | -5.94*** | |
| b path fixed mindset about anxiety | 0.01 | 0.06 | 0.23 | |
| c path fixed mindset about anxiety | 0.14 | 0.06 | 2.41** | |
| c' path fixed mindset about anxiety | 0.14 | 0.06 | 2.37** | [-0.04, 0.03] |

BC CI Bias-Corrected and Accelerated 95% Confidence Interval

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 4*Direct and Indirect effects of proposed mediation models*

| | B | SE | t | Bootstrapped BC 95% CI |
|--|-------|------|----------|------------------------|
| Maltreatment fixed mindset | | | | |
| a path | 0.29 | 0.08 | 3.72*** | |
| b path resilience | -0.24 | 0.03 | -7.37*** | |
| c path resilience | -0.17 | 0.05 | -3.32*** | |
| c' path resilience | -0.10 | 0.05 | -2.10** | [-0.12, -0.03] |
| Maltreatment fixed mindset of anxiety | | | | |
| a path | 0.04 | 0.02 | 2.55*** | |
| b path resilience | -0.10 | 0.14 | -6.84*** | |
| c path resilience | -0.15 | 0.05 | -2.89*** | |
| c' path resilience | -0.10 | 0.05 | -2.14** | [-0.08, -0.01] |
| Emotional neglect fixed mindset | | | | |
| a path | 0.82 | 0.25 | 3.21*** | |
| b path resilience | -0.22 | 0.03 | -7.18*** | |
| c path resilience | -0.99 | 0.16 | -6.09*** | |
| c' path resilience | -0.81 | 0.15 | -5.22*** | [-0.33, -0.07] |
| Emotional neglect fixed mindset of anxiety | | | | |
| a path | 0.14 | 0.06 | 2.41*** | |
| b path resilience | -0.91 | 0.14 | -6.70*** | |
| c path resilience | -0.92 | 0.16 | -5.72*** | |
| c' path resilience | -0.79 | 0.15 | -5.18*** | [-0.27, 0.05] |
| Emotional abuse fixed mindset | | | | |
| a path | 0.98 | 0.23 | 4.17*** | |
| b path resilience | -0.24 | 0.03 | -7.38*** | |
| c path resilience | -0.47 | 0.16 | -3.01*** | |
| c' path resilience | -0.24 | 0.15 | -1.60* | [-0.39, -0.11] |
| Emotional abuse fixed mindset of anxiety | | | | |
| a path | 0.19 | 0.05 | 3.55*** | |
| b path resilience | -0.95 | 0.14 | -6.77*** | |
| c path resilience | -0.41 | 0.15 | -2.65*** | |
| c' path resilience | -0.23 | 0.15 | -1.54* | [-0.31, -0.08] |

BC CI Bias-Corrected 95% Confidence Interval* $p < .10$. ** $p < .05$. *** $p < .01$

Fig 1. Conceptual Model

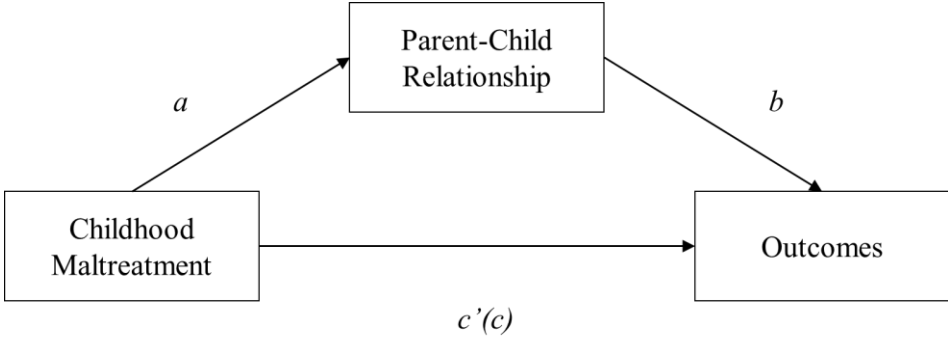


Fig. 2 Conceptual Model

