

**Mentalizing mediates the association between emotional abuse in childhood
and potential for aggression in non-clinical adults**

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Abstract

Background: Emotional abuse in childhood has been linked to a higher expression of aggressive behavior in adulthood. The identification of protective factors that mitigate this association is needed. Mentalizing—the capacity to understand behavior in terms of intentional mental states—appears to be a promising candidate factor that possibly modifies maladaptive consequences of early emotional abuse.

Objective: This study investigated associations between the history of emotional abuse, aggressive behavior in adulthood and mentalizing capacities in a non-clinical sample of adults.

Methods: 214 healthy adults completed questionnaires measuring retrospectively rated experiences of emotional abuse in childhood, mentalizing capacities and aggressive behavior in a cross-sectional design.

Results: Results indicated associations between emotional abuse in childhood, uncertainty about mental states, and aggressive behavior in adulthood. Moreover, certainty about mental states counteracted the negative effect of emotional abuse and partially mediated the associations between emotional abuse and aggressive behavior in adulthood.

Conclusion: This study extends current research and sheds further light on the relationship between emotional abuse in childhood, the health-promoting capacity of mentalizing, and aggressive behavior in non-clinical adults.

Keywords: mentalizing, aggressive behavior, emotional abuse, reflective functioning, RFQ

Introduction

Emotional abuse encompasses a pervasive pattern of maladaptive interactions with close caregivers (Glaser, 2002; Robinson, 2019). It is defined as “acts towards the child that cause or have a high probability of causing harm to the child’s health or physical, mental, spiritual, moral or social development. These acts must be reasonably within the control of the parent or person in a relationship of responsibility, trust or power” (World Health Organization, 1999, p.15), including behaviors such as scapegoating, scaring, threatening, denigrating, ridiculing, discriminating and any other behaviors of rejecting or hostile treatment towards the child. Several authors conclude that emotional abuse may represent the underlying feature of any other form of childhood maltreatment, therefore leading to more adverse psychological, social, and developmental harm (e.g. Taillieu, Brownridge, Sareen, & Afifi, 2016; Chamberland, Fallon, Black, & Trocmé, 2011).

Experiences of emotional abuse in childhood are a common global problem, as results from a meta-analysis by Stoltenborgh, Bakermans-Kranenburg, Alink, and van IJzendoorn (2012) suggest. Using data from 29 studies, the authors reported a prevalence of self-reported emotional abuse among children and adolescents of approximately 36%. Relational experiences of emotional abuse in childhood with close caregivers, in turn, are associated with a variety of negative outcome variables, such as affective disorders in adulthood (e.g. Nelson, Klumpp, Doebler, & Ehring, 2017; Infurna, Reichl, Parzer, Schimmenti, Bifulco, & Kaess, 2016), non-suicidal self-injury (Liu, Scopelliti, Pittman, & Zamora, 2018), delinquency (Duke, Pettingell, McMorris, & Borowsky, 2010), sexualized behavior (Frederico, Jackson, & Black, 2008), insecure attachment style (Riggs & Kaminski, 2010) or cognitive disadvantage (Hart & Rubia, 2012). In particular, as empirical data suggest, experiences of emotional abuse in childhood can lead to increased aggressive behavior in

adolescence and adulthood (e.g. Afifi et al., 2011; Anda et al., 2006; Berzenski & Yates, 2010; Chen, Coccaro, Lee, & Jacobson, 2011; Shackman & Pollak, 2014).

Aggressive behavior such as physical violence against other people, rule-breaking or bullying violates general social norms and undermines the rights of other people (Burt, 2012). It can be described as a continuum ranging from weak to stronger forms of aggressive behavior, which also tends to change over the lifespan (Tremblay, Vitaro, & Côté, 2018): aggressive behavior is more pronounced in childhood and adolescence and decreases in adulthood, as data from Moffitt, Caspi, Harrington, and Milne (2002) indicate. Moreover, aggressive behavior can be conceptualized as a multidimensional construct that integrates various aspects, such as impulsivity and proactive and reactive aggression (Burt, 2012). Impulsivity is defined as uncontrolled and explosive behavior that is often associated with undesirable consequences (see McCown, Johnson, & Shure, 1993). Proactive (instrumental/“cold-blooded”) aggression is understood as aggressive behavior that is focused on reaching a goal, whereas reactive aggression is a type of behavior that is expressed as a consequence of rejection or frustration (Card & Little, 2006).

Various etiological aspects, such as genetic or environmental factors, have been considered as antecedents for excessive aggressive behavior, for example, in conduct disorder or antisocial personality disorder (Jaffee et al., 2005). A history of emotional abuse, including experiences of scapegoating, scaring, silent treatment, threatening, denigrating, ridiculing, and discriminating within families is often highlighted as environmental factor that contributes to increased aggressiveness in adolescence and adulthood (e.g. Afifi, MacMillan, Boyle, Taillieu, Cheung, & Sareen, 2011; Anda et al., 2006; Heck & Walsh, 2000) indicating the need to address and evaluate mediating factors that could form a framework for protective psychosocial interventions in order to help victims to cope with these adverse experiences – such as mentalization-informed treatments.

Mentalizing

Mentalizing is an imaginative ability defined as the capacity to perceive and understand one's own behavior as well as that of other people in terms of intentionally motivated mental states, such as feelings, wishes or desires (Fonagy, Gergely, Jurist, & Target, 2002). Mentalizing is conceptualized as a multifaceted umbrella concept (Choi-Kain & Gunderson, 2008) with a wide range of intrapsychic processes, encompassing second-order processes such as self-monitoring (cognitive awareness of the self), mindfulness (emotional awareness of the self), empathy (awareness of emotional states in other people), theory of mind (understanding of beliefs of other people) and the capacity to interpret interpersonal experiences. Critically, mentalizing allows behavior to become predictable and to be perceived as meaningful if it can be viewed as being underpinned by intentional mental states (Fonagy & Allison, 2014). Traditionally, in empirical studies mentalizing is operationalized as reflective functioning. In particular, the Reflective Functioning Scale (RFS) (Fonagy, Target, Steele, & Steele, 1998) uses narratives of attachment interviews such as the Adult Attachment Interview (AAI) (George, Kaplan, & Main, 1985) which can be considered as the "golden standard" of assessing mentalizing capacities. Due to the need for investigations in larger samples and the time-consuming evaluations of interviews that are associated with the RFS-coding, the Reflective Functioning Questionnaire (RFQ) (Fonagy et al., 2016) was developed, representing an economic measure assessing aspects such as the certainty or uncertainty about mental states (Fonagy et al., 2016). Even though the RFQ initially intends to assess two different aspects of compromised mentalizing (too much certainty about mental states and a high degree of uncertainty, respectively) (Fonagy et al., 2016), a range of empirical studies indicate that in particular the certainty subscale of the RFQ may reflect an adaptive facet of genuine mentalizing. In contrast, the uncertainty subscale seems to represent a hallmark of psychological maladjustment and impaired mentalizing (e.g. Euler et al., 2019;

De Meulemeester et al., 2018; Kristiansen et al., 2020; Morosan, Ghisletta, Badoud, Toffel, Eliez, & Debanné, 2020).

Compromised mentalizing has gained prominence as a risk factor associated with a number of mental disorders and is potentially implicated with etiological pathways (Luyten, Campbell, Allison, & Fonagy, 2020). For example, empirical studies confirmed that mentalizing is impaired in various personality disorders, such as borderline (Németh et al., 2018) and antisocial personality disorder (e.g. Newbury-Helps, Feigenbaum, & Fonagy, 2017; Levinson & Fonagy, 2004), and in affective disorders (e.g. Fischer-Kern et al., 2013). Moreover, mentalizing in patients with severe mental problems can be promoted using psychotherapeutic treatments such as mentalization-based treatment (MBT) (Bateman & Fonagy, 2004) and other approaches, leading to enhanced mentalizing capacity (e.g. Levy et al., 2006; Fischer-Kern et al., 2015) and a decrease in psychological symptoms (e.g. Bateman & Fonagy, 1999, 2008, 2009; Bateman, O'Connell, Lorenzini, Gardner, & Fonagy, 2016; Jørgensen et al., 2013; Rossouw & Fonagy, 2012; De Meulemeester et al., 2018). Concerning the multidimensionality of the concept, several critiques must be noted. Given the diverse facets of mentalizing, the operationalization of the capacity proves to be challenging (Fonagy et al., 2016). Moreover, several authors criticized the mentalizing concept as a mainly midwestern approach with an extensive focus on dyadic interactions (e.g. Keller, 2019).

A mentalizing framework of violence and emotional abuse

The initial explorations of a mentalization-based approach to violence (e.g. Fonagy, 1999, 2003a) followed closely with the theoretical accounts of the criminologists Laub and Sampson (e.g. Laub, Nagin, & Sampson, 1998; Laub & Sampson, 2001). The focus of the account suggested by Samson and Laub was social control and the gradual buildup of social investments following increasingly strong bonds of attachment and steady employment was the motivator of any movement away from a criminal lifestyle. This conceptualization has,

until recently guided several clinical contributions (e.g. Fonagy, Target, Steele, & Steele, 1997; Twemlow, Fonagy, & Sacco, 2001; Twemlow, Fonagy, Sacco, Otoole, & Vernberg, 2002) and research (e.g. Fonagy et al., 2009; Hill-Smith, Hugo, Hughes, Fonagy, & Hartman, 2002; McGlauley, Ferris, Marin-Avellan, & Fonagy, 2013), because the mentalizing approach conceptualizes the attachment relationship between caregiver and child as an important “learning environment” in which the child can acquire the capacity to perceive and interpret their behavior and the behavior of other people in terms of mental states (Fonagy et al., 2002). In these interactions, the child experiences reliable and adaptive co-regulation by the caregiver through contingent affective mirroring (Luyten, Nijssens, Fonagy, & Mayes, 2017). In contrast, experiences of being emotionally abused by close caregivers in childhood impair the development of a balanced mentalizing capacity. More precisely, children who grow up in an emotionally hostile environment (e.g. Badoud et al., 2018; Borelli, Palmer, Vanwoerden, & Sharp, 2018b) are associated with a higher level of insecure attachment styles (Riggs & Kaminski, 2010), but also with greater uncertainty about mental states, and therefore can lead to increased aggression in adolescence and adulthood (e.g. Berzenski & Yates, 2010; Chen et al., 2011; Shackman & Pollak, 2014; Afifi et al., 2011; Anda et al., 2006). Not surprisingly, persons with a high potential for violence, such as patients with antisocial personality disorder (Marsh & Blair, 2008) or offenders (Newbury-Helps et al., 2017; Levinson & Fonagy, 2004), have a more limited capacity to mentalize than non-clinical individuals.

With regard to the relationship between emotional abuse in childhood and the tendency to engage in externalizing behavior in adolescence, mentalizing has also been shown to be a protective mediating factor. Findings suggest that mentalizing can reduce the impact of traumatic experiences in childhood on adolescents’ potential for aggression. In detail, studies indicate that the relationship between maltreatment in childhood and aggressive behavior in later life is mediated by mentalizing (e.g. Ensink, Bégin, Normandin, & Fonagy, 2016; Taubner & Curth, 2013; Taubner et al., 2013, 2016; Twemlow et al., 2001), highlighting the

potential that a mentalizing understanding that takes into account the (prospective) victim's mental states is not compatible with aggressive behavior (Taubner et al., 2013; 2016). Instead, empathic mentalizing undermines disruptive behaviors, such as proactive aggression or reactive aggression, that may harm or injure other people (Fonagy, 2003; Fonagy & Luyten, 2018; Twemlow, Fonagy, Sacco, Gies, Evans, & Ewbank, 2001).

Moreover, theoretical approaches have considered the resilience-enhancing mechanism of mentalizing in non-clinical samples and its mediating function in the processing and reappraisal of adverse circumstances such as emotional abuse (e.g. Fonagy, Luyten, Allison, & Campbell, 2017; Luyten et al., 2020; Ballespi et al., 2019; Schwarzer, 2019). This goes hand in hand with a shift in focus of the mentalization-based mechanisms of change in psychotherapy, rooted not only in attachment processes but critically in learning theory, focusing on the optimal conditions required for social learning from peers as well as other socializing agents such as therapists and the wider relational network (e.g. Bateman, Campbell, Luyten, & Fonagy, 2018; Luyten et al., 2020; Fonagy et al., 2017). The authors adopted the concept of epistemic trust to describe the minimal conditions necessary for the adequate transfer of knowledge from one individual with pertinent information available to another for whom that information is essential (Fonagy & Allison, 2014; Fonagy, Luyten, & Allison, 2015; Fonagy, Luyten, Allison, & Campbell, 2019). Within this approach, it is hypothesized that mentalizing capacity and learning under epistemic trust protects individuals from distress-affected arousal through the development of an integrated view of the self (Fonagy et al., 2017) with the calibration of the mind through others and improved reappraisal of past distressing events (e.g. Huang et al., 2020). Drawing on this, several authors argue that a mentalizing view of the self allows the maintenance of adaptive and regulated processing of distress-related affective arousal (e.g. Borelli et al., 2018a; Nolte, Bolling, Hudac, Fonagy, Mayes, & Pelfrey, 2013; Schwarzer, Nolte, Fonagy, & Gingelmaier, 2021). To sum up, it is postulated that mentalizing may exert its generic salutogenic effects via the improvement of

emotion regulation, the facilitating of epistemic trust and social learning, and a resulting distress-buffering reappraisal capacity, which, in turn, is thought to help persons cope with adverse experiences such as emotional abuse and therefore leads to an improvement in mental health.

The present study

Regarding the summarized research, it remains unclear whether the ability to mentalize reduces aggressive action in adults who have experienced emotional abuse during childhood. Such observations may help guide relatively brief and rather preventive mentalizing-informed treatments to promote mentalizing in non-clinical samples (Adkins, Luyten, & Fonagy, 2018; Welstead et al., 2018; Valle et al., 2016), in order to help participants to cope with past distressing experiences, such as a history of emotional abuse. Therefore, the first aim of the present study was to replicate the associations between experiences of emotional abuse in childhood and participants' capacity to mentalize in adulthood, given the hypothesis that hostile relationships between child and caregiver compromise the development of the child's mentalizing capacity (Fonagy et al., 2002; Fonagy & Allison, 2014). Considering the clinical focus of mentalizing theory, non-clinical samples have been insufficiently studied and relatively little is known about the link between emotional abuse in childhood and mentalizing in adulthood. To this end, we employed the Reflective Functioning Questionnaire, a self-report measure that operationalizes certainty and uncertainty about mental states (Fonagy et al., 2016). We hypothesized that experiences of emotional abuse in childhood will have a direct impact on the expression of proactive aggression, reactive aggression, and impulsiveness, as has been previously observed in several studies (e.g. Berzenski & Yates, 2010; Chen et al, 2011; Shackman & Pollak, 2014; Afifi et al., 2011; Anda et al., 2006), with better mentalizing leading to a decreased potential for violence, since empathic mentalizing is incompatible with harming others (Taubner et al., 2013, 2016) and associated with a more

adaptive processing of past distressing experiences (e.g. Euler et al., 2019; Huang et al., 2020). Secondly, we hypothesized that mentalizing capacities would mediate the direct effect of emotional abuse in childhood on the expression of violence even in adulthood, thereby exerting a protective and inhibitory influence. Even though there is strong evidence for this hypothesis based on research on children (e.g. Ensink et al., 2016; Ha, Sharp, & Goodyer, 2011) and adolescents (e.g. Taubner & Curth, 2013; Taubner et al., 2013, 2016; Morosan et al., 2020), the phenomenon in non-clinical adults to date is still insufficiently studied. Therefore, a replication of these findings in non-clinical adults is required. This is of particular interest since mentalizing may represent a robust, protective capacity that might help to process adverse experiences such as experiences of emotional abuse across the whole lifespan. To summarize, in the current study the following hypotheses were investigated:

Hypothesis 1. Retrospectively rated emotional abuse in childhood is associated with impaired mentalizing capacities in adulthood.

Hypothesis 2. While emotional abuse in childhood is associated with an increase in proactive aggression, reactive aggression and impulsivity in adulthood, adult mentalizing capacity is associated with a decrease in proactive aggression, reactive aggression and impulsivity.

Hypothesis 3. Mentalizing capacities mediate the direct relationship between emotional abuse in childhood and the potential for violence, exerting a protective and inhibitory influence.

Methods

Participants and procedure

The study employed a cross-sectional design. Data was collected from a randomly selected sample of students at a university in Baden-Württemberg, southern Germany.

Participation in the study was voluntary (response rate > 99 percent), and participants gave their written and informed consent to participate. The anonymity of the study was emphasized before the data collection. Furthermore, all participants were informed of support resources in case of any distress after or during the data collection. All questionnaires were administered by two of the authors (N.H.S. & S.G.), who both hold a PhD-degree in psychology. The study was approved by the Ethics Committee of the Ludwigsburg University of Education. The sample consisted of a total of 214 participants (170 female), who were on average 23.01 ($SD = 4.98$; $Min = 18$; $Max = 52$) years old. The gender distribution in the studied sample reflects the gender distribution in the university population. Owing to the significant age difference between male and female participants ($F = 8.77$; $p \leq .01$) and the high proportion of female participants, age and gender were entered as covariates in all further analyses.

Measures

Emotional abuse in childhood. Emotional abuse in childhood was assessed with the Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 2003), using the German version (Wingenfeld et al., 2010). The CTQ is a reliable and valid self-report measure that consists of 28 items measuring different aspects of abuse during childhood (physical abuse, sexual abuse, and emotional abuse, physical and emotional neglect). In the current study, only the “emotional abuse” subscale was entered into all further analyses, for several reasons: first, emotional abuse represents as a significant marker of emotionally hostile relationships in childhood (Glaser, 2002; World Health Organization, 1999), leading to a reduced mentalizing capacity (e.g. Taubner et al., 2016) as well as an enhanced aggressive behavior in adulthood (e.g. Afifi et al., 2011); second, almost none of the studied sample reported physical or sexual abuse during childhood. Third, given the low internal consistencies in both the “emotional neglect” subscale and the “physical neglect” subscale, these were excluded from the analyses to yield non-skewed, robust evidence. The “emotional abuse” subscale consists of five statements (example item: “People in my family said hurtful and insulting things to me”) and

respondents are asked to answer on a five-point Likert scale (1 = *never true* to 5 = *very often true*). In the current study, high scores reflect a history of severe emotional abuse in childhood. The internal consistency of the “emotional abuse” subscale can be considered good given the length of the scale ($\alpha = .68$). The data obtained using the scale was not normally distributed (Kolmogorov–Smirnov test: $p < .05$). Concerning the significant Kolmogorov–Smirnov test, in a second step skewness and kurtosis values were investigated with critical values of skewness $|\leq 2|$ respectively kurtosis $|\leq 7|$, as suggested by West, Finch, and Curran (1995). Descriptives reveal only minor discrepancies (skewness = $|1.80|$; kurtosis = $|3.33|$), therefore, a sufficient normal distribution is to be expected.

Mentalizing. The short version of the Reflective Functioning Questionnaire (RFQ) (Fonagy et al., 2016) was used to measure participants’ mentalizing. The RFQ assesses individuals’ self-reported tendencies to consider mental states as relevant to the understanding of one’s own and others’ behavior. The RFQ is considered to be a reliable and valid instrument that can be used economically and is suitable for use in larger samples, and in recent years has been used in an increasing number of investigations (e.g. Adkins et al., 2018; De Meulemeester et al., 2018; Euler et al., 2019; Morosan et al., 2020; Kristiansen et al., 2020). Moreover, a German validation study was recently published by Spitzer, Zimmermann, Brähler, Euler, Wendt and Müller (2020). RFQ comprises eight statements that the subject is asked to rate on a seven-point Likert scale (1 = *completely disagree* to 7 = *completely agree*). Using these items, two subscales can be derived that represent certainty about mental states (RFQc) and uncertainty about mental states (RFQu). A high level of certainty about mental states is associated with a low rating for items such as “People's thoughts are a mystery to me”, and a high level of uncertainty about mental states is characterized by a high rating for items such as “I don't always know why I do what I do”. High scores on the two subscales reflect high levels of certainty (RFQc) or uncertainty (RFQu) regarding mental states, respectively. With reference to the instructions both the RFCu subscale and the RFQc

subscale initially were intended to assess maladaptive features of mentalizing (Fonagy et al., 2016). Despite this theoretical framework empirical data from community samples suggests divergent results – in particular, the RFQc certainty subscale seems to reflect an adaptive facet of genuine mentalizing, whereas the RFQu uncertainty subscale appears to tap into significant clinical impairments in mentalizing assessing a lack of using mental states as reliable information (e.g. Euler et al., 2019; De Meulemeester et al., 2018; Kristiansen et al., 2020; Morosan et al., 2020). Therefore, in the current study high RFQc-scores indicate effective mentalizing, whereas high RFQu-scores reflect a specific pattern of impaired mentalizing. The internal consistency of both RFQc and RFQu subscales was good at $\alpha = .73$ and $\alpha = .68$, given their length. The data obtained using both subscales were not normally distributed (Kolmogorov–Smirnov test: $p < .05$). Concerning the significant Kolmogorov–Smirnov tests, in a second step skewness and kurtosis values of both subscales were investigated with critical values of skewness $|\leq 2|$ respectively kurtosis $|\leq 7|$ (West, Finch, & Curran, 1995). Descriptives reveal only minor discrepancies in both subscales (RFQc: skewness = $|0.35|$; kurtosis = $|0.56|$; RFQu: skewness = $|1.29|$; kurtosis = $|1.48|$), therefore, a sufficient normal distribution in both subscales is to be expected.

Aggressive behavior. Aggressive behavior was measured with a short version of the German Questionnaire to assess Factors of Aggressiveness (K-FAF) (Heubrock & Petermann, 2008). The K-FAF is a self-report instrument that is suitable for use in larger samples and is considered reliable and valid to assess various aspects of aggressive behavior (e.g. Otte et al., 2017; Heubrock & Petermann, 2008). Participants are asked to indicate their agreement with 49 statements, using a 6-point Likert scale (0 = *not correct at all* to 5 = *that is completely right*). High scores reflect more severe forms of aggression. In the present study, the subscales “proactive aggression” (example item: “Sometimes I like to torture others”), “reactive aggression” (example item: “If someone provokes one of my friends, we avenge it together”) and “impulsivity” (example item: “When someone provokes me, my blood boils”) were

entered in all further analyses. The internal consistency of the three subscales can be considered good to acceptable ($\alpha = .72$ to $\alpha = .87$). The data collected on the subscales “reactive aggression” and “impulsivity” were normally distributed (Kolmogorov–Smirnov test: $p > .05$), but the subscale “proactive aggression” was not (Kolmogorov–Smirnov test: $p < .05$). Concerning the significant Kolmogorov–Smirnov test of the “proactive aggression” – subscale, in a second step skewness and kurtosis values were investigated with critical values of skewness $|\leq 2|$ respectively kurtosis $|\leq 7|$, as suggested by West, Finch, and Curran (1995). Descriptives reveal only minor discrepancies (skewness = $|1.11|$; kurtosis = $|1.04|$), therefore, a sufficient normal distribution is to be expected.

Covariates. Participants’ age and sex were recorded during data collection and entered in all further analyses to control for their potentially confounding influences.

Data analytic plan

Less than 1% of the data was missing. Missing values occurred at random (Little’s test: $p > .05$) and were imputed using the expectation-maximization algorithm, as suggested by Tabachnick and Fidell (2012). The dataset contained nine multivariate outliers, which were identified using the Mahalanobis distance and subsequently eliminated due to a likelihood of occurrence of $p < .001$ (Tabachnick & Fidell, 2012). Pearson’s correlations were used to measure the associations between emotional maltreatment in childhood, mentalizing and different aspects of aggression. Separate multiple linear regression analyses entering demographic information, experiences of emotional abuse in childhood, and certainty and uncertainty about mental states simultaneously were conducted in order to predict impulsivity (model 1), proactive aggression (model 2) and reactive aggression (model 3). In all models, residuals were analyzed using a scatter plot and independence of residuals was tested using the Durbin–Watson statistic (Tabachnick & Fidell, 2012). Multicollinearity was tested using the tolerance (<0.01) and the variance inflation factor (<10) criteria. The mediation effect was

tested using structural equation modeling (maximum likelihood estimator) with “emotional abuse in childhood” as the exogenous variable and “aggression” as the dependent variable, both estimated as latent variables. Both aspects of mentalizing—certainty about mental states and uncertainty about mental states—were simultaneously entered as manifest mediator variables. Indices of fit were analyzed to test model fit ($\chi^2/df \leq 2.5$; GFI ≥ 0.95 ; RMSEA ≤ 0.06 ; CFI and TFI ≥ 0.95) (Weiber & Mülhhaus, 2014). Mediation effects were further examined using the bootstrap confidence interval (CI) method with 2000 bootstrap samples, and 95% CIs were analyzed. All analyses were carried out using SPSS 21 and AMOS 23.

Results

Table 1 shows the descriptive statistics of all study variables across all participants as well as bivariate correlations between scales. In the current sample, emotional abuse in childhood was positively associated with uncertainty about mental states ($r = .23, p \leq .01$) in adulthood, as well as with proactive aggression and impulsivity ($r = .28, p \leq .001$; $r = .31, p \leq .001$). No correlations were found between a history of emotional abuse and either certainty about mental states or reactive aggression. Significant positive correlations were found between uncertainty about mental states and proactive aggression ($r = .25, p \leq .001$), reactive aggression ($r = .30, p \leq .001$) and impulsivity ($r = .38, p \leq .001$). Certainty about mental states was negatively associated with proactive aggression ($r = -.29, p \leq .001$), reactive aggression ($r = -.32, p \leq .001$) and impulsivity ($r = -.41, p \leq .001$). Finally, certainty about mental states was positively correlated with age ($r = .29, p \leq .001$).

Please place Table 1 here

Table 2 shows three regression models that predict different aspects of aggressive behavior. For all models, statistical assumptions were met (i.e., normally distributed and independent residuals, homoscedasticity). There was no evidence of multicollinearity. Model 1, predicting proactive aggression, explained 19% of the variance (adjusted $r^2 = .19$, $F = 11.21$, $p \leq .001$). While emotional abuse in childhood had a positive influence on proactive aggression in adulthood ($\beta = .23$, $p \leq .001$), certainty about mental states and gender had significant negative effects ($\beta = -.29$, $p \leq .01$, and $\beta = -.24$, $p \leq .001$, respectively). Neither age nor uncertainty about mental states predicted proactive aggression. Furthermore, the regression model for reactive aggression was significant ($F = 6.78$; $p < .001$), with an adjusted r^2 of .12 indicating less power than model 1. Both gender ($\beta = -.14$; $p \leq .05$) and certainty about mental states ($\beta = -.21$; $p \leq .05$) were significant predictors, whereas age, emotional abuse in childhood, and uncertainty about mental states did not account for any variance when predicting reactive aggression in adulthood. Model 3, predicting impulsivity, was much more powerful (adjusted $r^2 = .23$, $F = 15.01$, $p \leq .001$). Impulsivity in adulthood was exclusively predicted by emotional abuse in childhood ($\beta = .25$, $p \leq .001$) and certainty about mental states ($\beta = -.30$, $p \leq .001$). Participants' age and gender, and uncertainty about mental states, were not predictors in this model.

Please place Table 2 here

Figure 1 shows a structural equation model testing the mediating effect of emotional abuse in childhood on aggressive behavior in adulthood via certainty about mental states and via uncertainty about mental states. The data fits well with the suggested model, as indicated by fit indices ($\chi^2/df = 1.87$; GFI = 0.96; RMSEA = 0.06 with 90% CI [.04, .09]; CFI = 0.96;

TFI = 0.93). In the final model, covariates were excluded because both gender and age were no longer significantly associated with the dependent variable. Based on 2000 bootstrap samples, we found significant direct effects of emotional abuse on certainty about mental states ($\beta = -.18$ with 95% CI $[-.30, -.04]$, $p = .013$) and uncertainty about mental states ($\beta = .31$ with 95% CI $[.12, .48]$, $p = .001$). Furthermore, emotional abuse in childhood had a significantly positive effect on aggressive behavior ($\beta = .27$ with 95% CI $[.02, .53]$, $p = .036$). Certainty about mental states ($\beta = -.32$ with 95% CI $[-.51, -.15]$, $p = .001$), but not uncertainty about mental states ($\beta = .12$ with 95% CI $[-.11, -.36]$, $p = .291$), predicted aggressive behavior. Finally, only certainty about mental states mediated the relationship between emotional abuse in childhood and aggressive behavior in adulthood ($\beta = .10$ with 95% CI $[.03, .18]$, $p = .010$). In summary, the direct and indirect effects accounted for a total contribution of $\beta = .36$ with 95% CI $[.11, .61]$, explaining 29% of the variance in aggressive behavior.

Please place Figure 1 here

Discussion

The present study aimed to examine associations between a history of emotional abuse, aggressive behavior and mentalizing in a sample of non-clinical adults. Based on data from 214 typical young, mainly female adults, the study explored whether the capacity to mentalize inhibits aggressive behavior and alleviates the detrimental impact of traumatic childhood experiences. Data showed associations between a history of emotional abuse in childhood and the adults' ability to mentalize. Therefore, the data is consistent with expectations based on hypothesis 1. Even though no relationship between certainty about mental states and

emotional abuse was found, increasing experiences of emotional abuse were associated with participants' uncertainty in using mental states as reliable models to understand their behavior or the behavior of other people. This finding is consistent with a number of clinical findings (e.g. Taubner et al., 2016; Badoud et al., 2018; Borelli et al., 2018b) and suggests that the capacity to mentalize develops at least partially in sensitive dyadic interactions with the caregiver and the wider social network, whereas hostile relationships with caregivers, characterized by experiences of emotional abuse, may impair the development of mentalizing capacities (Fonagy et al., 2002; Fonagy, 2003). At the same time, it should be noted that the overall low level of association seems to indicate that relationships with other people (e.g. peers, siblings, grandparents, therapists, teachers), which were not included in this study, might also contribute to the development of mentalizing. This is in line with the recent theoretical development of the mentalizing approach, which expanded the mainly dyadic model with a more systemic conceptualization (Fonagy & Allison, 2014; Fonagy et al., 2017; Luyten et al., 2020). Furthermore, this proves to be important in the light of mentalizing-informed interventions, which focus on the promotion of mentalizing capacities in order to help cope with adverse experiences.

Building on these correlational results, in a second step we investigated to what extent different aspects of aggression can be predicted by experiences of emotional abuse, mentalizing and demographic information. The regression analyses verified the expected association between a history of emotional abuse and both proactive aggression and impulsiveness, in line with our second hypothesis. Emotional abuse in childhood did not account for the variance in predicting reactive aggression. Uncertainty about mental states as a specific pattern of impaired mentalizing was not a significant predictor in any of the regression models, which was somewhat surprising because, first, in the studied sample uncertainty about mental states was associated with emotional abuse, and secondly, uncertainty about mental states has been shown to be a crucial predictor in clinical

populations (e.g. Fonagy et al., 2016; Huang et al., 2020). Instead, certainty about mental states was found to be a significant predictor accounting for variance in all aspects of aggressive behavior. This finding suggests that increasing certainty about mental states as meaningful indicators in interpreting one's behavior and the behavior of other people might have significant negative effects on proactive aggression, reactive aggression, and impulsiveness in adulthood. This means that a mentalizing understanding of behavior seemed to have an inhibiting influence on aggressive behavior in the studied sample and therefore appears to be an adaptive characteristic. Again, this is consistent with findings from clinical studies (e.g. Euler et al., 2019; De Meulemeester et al., 2018; Kristiansen et al., 2020) and supports the assumption that empathic mentalizing of other people's minds can be incompatible with inflicting violence and aggression on others (Taubner et al., 2013, 2016; Fonagy, 2003; Fonagy & Luyten, 2018; Twemlow et al., 2001). Furthermore, it is interesting to note that certainty about mental states in particular negatively affected impulsivity in the studied sample. This finding fits with results from other studies (e.g. Borelli et al., 2018a; Schwarzer et al, 2021) and suggests that a mentalizing understanding of violent emotions such as anger may allow for a symbolizing externalization of these mental states instead of impulsive acting out.

Finally, Hypothesis 3 suggests a mediating function of mentalizing, which can be verified given the structural equation model. Consistent with findings from other studies (e.g. Badoud et al., 2018; Borelli et al., 2018b) and the results reported here from the regression models, a history of emotional abuse as an antecedent may lead to greater uncertainty about mental states, as the data indicates. However, greater uncertainty about mental states characterized by a poor use of mental state as reliable information was not associated with aggressive behavior in the studied sample. This might be first explained by the mainly female sample and the measures used in the study, indicating a need to replicate these results both in exclusively male and female populations. Moreover, uncertainty in the use of mental states

seems to represent a characteristic of clinical samples, as empirical data suggests (e.g. Euler et al., 2019; De Meulemeester et al., 2018). Bearing in mind the non-clinical constitution of the studied sample, this might explain the missing association between uncertainty about mental states and aggressive behavior in the current study.

Furthermore, in the current study experiences of emotional abuse in childhood had a direct positive influence on the sample's aggressive behavior in adulthood. This finding is consistent with results from other studies (e.g. Berzenski & Yates, 2010; Chen et al, 2011; Shackman & Pollak, 2014; Afifi et al., 2011; Anda et al., 2006). Additionally, the direct effect was partially mediated by certainty about mental states, which exerted an inhibitory effect on the adults' aggressive behavior. These findings can be linked to results from other studies in children (Ensink et al., 2016; Ha et al., 2011) and adolescents (Taubner et al., 2013, 2016) and may indicate a protective function of mentalizing capacities in non-clinical adults, counteracting the negative consequences of a history of emotional abuse on aggressive behavior in adulthood, which previous research has suggested. More precisely, in the current study increasing certainty in the use of mental states as reliable information seems to lead to a decrease in aggressive behavior, which ties in well with a mentalizing framework of violence. Based on a mentalizing stance towards other people their behavior may become predictable and somewhat controllable. Consequently, certainty about mental states as an adaptive facet of genuine mentalizing may guide through social interactions without a hypervigilant inner state (epistemic hypervigilance) but instead leading to a decrease in the probability to attribute skewed or even hostile mental states, based on a more accurate capacity to attribute mental states to other persons. Consequently, defensive behavior such as aggression is not needed.

Based on a framework that conceptualizes severe aggressive behavior as multifactorial in etiology, including genetic and environmental factors (Jaffee et al., 2005), broad evidence confirms that, in terms of early adversity, experiences of abuse and maltreatment from close

caregivers in particular lead to serious psychological maladjustment (e.g. Nelson et al., 2017; Infurna et al., 2016; Hart & Rubia, 2012) and are associated with an increased potential for aggression in adulthood (e.g. Berzenski & Yates, 2010; Chen et al 2011; Shackman & Pollak, 2014; Afifi et al., 2011; Anda et al., 2006). Therefore, processes and mechanisms need to be addressed that mediate this relationship and partially inhibit the negative influence of maltreatment in childhood, leading to reduced aggression.

In this study, we hypothesized that mentalizing may partially alleviate the impact of childhood maltreatment and inhibit aggressive behavior, which has been confirmed by several studies using data from children (e.g. Ensink et al., 2016; Ha et al., 2011) or adolescents (Taubner & Curth, 2013; Taubner et al., 2013, 2016; Morosan et al., 2020). The underlying hypothesis of such studies is that empathic mentalizing of other people's minds is incompatible with violence, insulting, bullying, or aggression. In addition, reflecting serious emotions such as anger, fear or anxiety becomes possible with a well-established mentalizing capacity (e.g. Euler et al., 2019; Schwarzer et al, 2021), leading to the ability to represent or symbolize these mental states instead of acting on them, so that extensive impulsivity is at least partially inhibited. Moreover, high rates of certainty in using mental states as reliable information as an adaptive pattern of mentalizing capacity may adequately help to navigate social interactions, reducing the need for aggressive behavior to protect oneself. Finally, even in adulthood mentalizing seems to mediate the link between a history of emotional abuse and harmful consequences such as aggressive behavior, indicating a kind of robust, protective function of mentalizing that might help to process these severe experiences across the whole lifespan. Most recently Adler and colleagues (2020) demonstrated that challenges in mentalizing – so that socializing of aggression is hindered – may increase the likelihood of individuals with histories of abuse and maltreatment developing self-serving beliefs about the legitimacy of aggression. It is probable that in the presence of mentalizing these beliefs would

not emerge or would have limited prominence, with more affective awareness instead of purely cognitive functioning a likely mechanism.

Limitations

Some limitations must be taken into account when considering the results. The findings are based on a cross-sectional study design and therefore do not allow causal relationships to be inferred. A replication of the findings in a longitudinal design is needed to replicate the reported results and to gain insight into the hypothesized causal relationships between the variables. Additionally, childhood emotional abuse was assessed retrospectively based on self-reports with the possibility of biases. Furthermore, the current sample is highly homogeneous, predominantly consisting of female participants from pedagogical fields who, in general, are likely to have a higher-than-average mentalizing capacity and therefore could possibly bias the results. Moreover, it has to be noted, that the sample on average included low levels of emotional abuse. Finally, the sample was randomly selected, therefore understanding the extent to which the findings can be generalized and applied to other populations including those of high risk remains a task for future empirical work. In view of the complex and diverse manifestations of mentalizing, a replication study should use alternative means of assessing mentalizing, for instance in an experimental setting. In detail, further work on the psychometric properties of the RFQ is required. In particular, future research should investigate the validity of the RFQc subscale, which seems to assess adaptive aspects of mentalizing in a community sample at least. In addition, the question arises to what extent complex phenomena such as aggressive behavior, emotional abuse in childhood or mentalizing can be measured retrospectively via self-report instruments. Alternative forms of operationalization, as well as the replication of findings in longitudinal designs, could provide further insight, as well as avoiding shared method variance, which may have skewed the results. Finally, factors such as socioeconomic status, parents' marital status or other aspects regarding the personal life situation of the participants (e.g. supportive relationships) could

covary with aggression in adulthood, too. The current analysis did not account for these multiple aspects; however, this could be incorporated into a larger, longitudinal analysis.

Conclusions and practical implications

In summary, the present study extends current research and sheds further light on associations between emotional abuse in childhood, the salutogenic capacity of mentalizing and aggressive behavior in adulthood. Using data from 214 non-clinical, mainly female adults, the present study suggests that adverse childhood experiences of emotional abuse seem to be partially compensated by a mentalizing understanding of one's own behavior and the behavior of other people and that this, in turn, might inhibit aggressive behavior. With reference to the high prevalence of emotional abuse during childhood and the severe consequences in adulthood, psychological interventions are needed to help those affected cope with these traumatic experiences to reduce the risk of extensive use of aggressive behavior. Mentalizing-informed treatments both in clinical and non-clinical settings, focusing on an improvement in mentalizing capacities in children, adolescents or adults suffering from experiences of emotional abuse, might represent a promising framework. In detail, the strengthening of the balanced use of mental state understanding in self and other persons might help to process adverse experiences, counteracting the impact of emotional abuse and leading to a decrease in aggressive behavior in adulthood, as our data suggests. Therefore, promoting mentalizing using mentalization based therapy (Bateman & Fonagy, 2004), but even in preventive settings such as in school programs or during psychological counseling might be important to interrupt the severe consequences of a history of emotional abuse at least partially, consequently reducing aggressive behavior in adulthood.

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Table 1: Descriptive statistics and correlations

	<i>N</i>	Mean	<i>SD</i>	1	2	3	4	5	6
1 Age	214	23.01	4.98						
2	214	6.58	2.09	.08					
emoAb									
3 RFQc	214	1.03	0.68	.29***	-.12				
4 RFQu	214	0.57	0.52	-.08	.23**	–			
						.64***			
5	214	19.15	5.82	.07	.28***	–	.25***		
proAgg						.29***			
6	214	28.47	7.82	-.08	.13	–	.30***	.61***	
reaAgg						.32***			
7 Impul	214	22.31	8.38	-.04	.31***	–	.38***	.55***	.54***
						.41***			

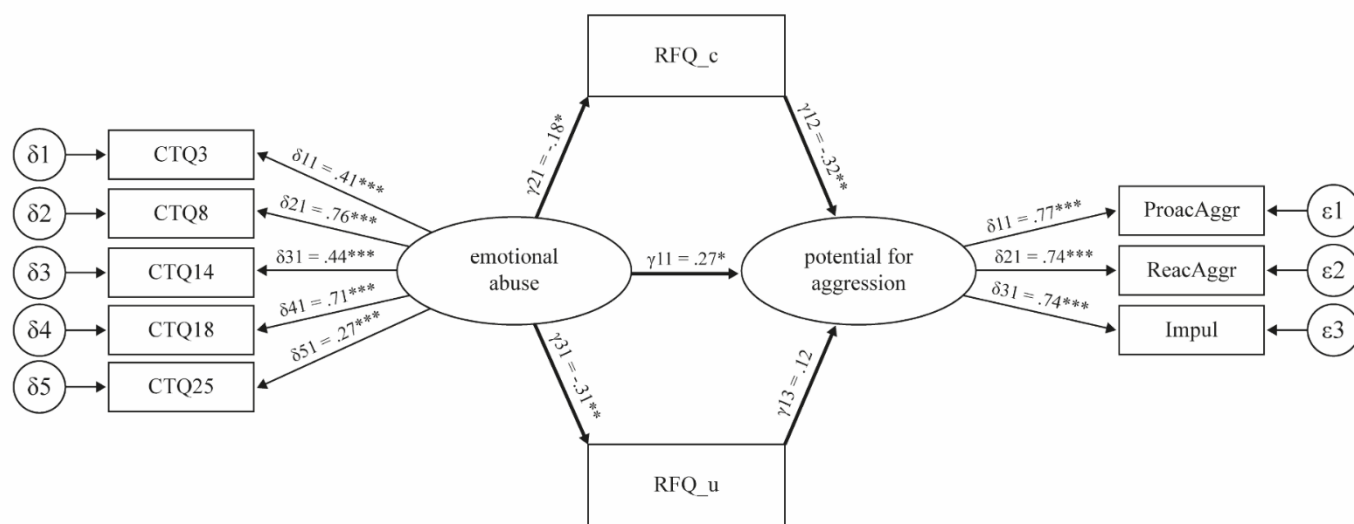
Note: emoAb = experiences of emotional abuse in childhood; RFQc = certainty about mental states; RFQu = uncertainty about mental states; proAgg = proactive aggression; reaAgg = reactive aggression; Impul = impulsivity. *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 2: Results of the linear regression analyses to predict proactive aggression, reactive aggression, and impulsivity

	Model 1			Model 2			Model 3		
	proactive aggression			reactive aggression			impulsivity		
	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β
Sex	- 3.34	0.91	-.24***	- 2.64	1.27	-.14*	0.70	1.27	.03
Age	0.10	0.08	.09	- 0.07	0.11	-.04	0.07	0.11	.04
emoAb	0.64	0.18	.23***	0.28	0.25	.07	0.98	0.25	.25***
RFQc	- 2.52	0.72	-.29**	- 2.45	1.01	-.21*	- 3.75	1.01	-.30***
RFQu	0.42	0.92	.04	2.39	1.30	.16	2.08	1.29	.13
R^2	.19***			.12***			.23***		

Note: emoAb = experiences of emotional abuse in childhood; RFQc = certainty about mental states; RFQu = uncertainty about mental states; proAgg = proactive aggression; reaAgg = reactive aggression; Impul = impulsivity. *** $p < .001$, ** $p < .01$, * $p < .05$.

Figure 1: Structural equation model of emotional abuse in childhood, mentalizing and potential for aggression



Note: CTQ = Childhood Trauma Questionnaire; RFQc = certainty about mental states; RFQu = uncertainty about mental states; ProAgg = proactive Aggression; ReaAgg = reactive Aggression; Impul = Impulsivity. *** $p < .001$, ** $p < .01$, * $p < .05$.