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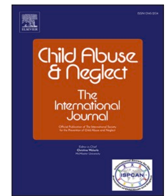

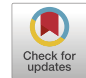

A tangled start: The link between childhood maltreatment, psychopathology, and relationships in adulthood

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A R T I C L E I N F O

Keywords:
Childhood maltreatment
Intimate relationships
Psychopathology
Anxious attachment
Avoidant attachment
Mediation

A B S T R A C T

Background: Adults with a history of childhood maltreatment are more likely to experience distrust, feel distant from others, and develop an insecure attachment style which may also affect relationship quality. Furthermore, childhood maltreatment has been linked to several mental health problems; including, depression, anxiety, and alcohol dependance severity, that are also known to relationship quality.
Objective: The current study was designed to investigate to what extent childhood maltreatment is associated with adult insecure attachment and intimate relationships and whether this association is mediated by psychopathology.
Participants and Method: In a study comprised of 2035 adults aged 18–65, we investigated whether childhood maltreatment was associated with insecure adult attachment styles and the quality of intimate relationships and whether this was mediated by depression, anxiety, and alcohol dependence severity (based on repeated assessments of the Inventory of Depressive Symptomatology-Self Report, Beck Anxiety Index, and Alcohol Use Disorders Identification Test respectively).
Results: The path model showed an acceptable fit, RMSEA = 0.05, and suggested full mediation of the association of childhood maltreatment with quality of intimate relationships by depression severity and a) anxious attachment ($\beta = -4.0 * 10^{-2}$; 95% CI = $-5.5 * 10^{-2}$, $-2.7 * 10^{-2}$) and b) avoidant attachment ($\beta = -7.2 * 10^{-2}$; 95% CI = $-9.6 * 10^{-2}$, $-4.9 * 10^{-2}$). Anxiety and alcohol dependence severity were not significant mediators. Conclusions: Childhood maltreatment is associated with a lower quality of intimate relationships, which is fully mediated by depression severity and insecure attachment styles.

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1. Introduction

Childhood maltreatment is an important public health concern that impacts both the individual and the relation with others (Gilbert, Kemp, et al., 2009). It involves all acts of a parent, caregiver or outsider that leads to potential harm or threat to a child up to 18 years of age, even if harm is unintended. Four categories of childhood maltreatment are often distinguished: physical abuse, sexual abuse, psychological (or emotional) abuse, and neglect (Bernstein et al., 2003; Bernstein & Fink, 1998; Leeb et al., 2008).

Childhood maltreatment can have a multitude of negative consequences. Adults with a history of childhood maltreatment are more likely to experience interpersonal relationship difficulties (e.g., distrust, feeling distant from their partner, self-sacrificing) (Paradis & Boucher, 2010). Results of a prospective study of Colman and Widom (2004) indicate that adult intimate relationships with a history of childhood maltreatment are less stable (higher rates of relation disruptions) and of lower quality, compared to the general population. Both men and women who were maltreated or neglected in childhood experienced significantly higher rates of relationship break ups and divorces. Furthermore, abused and/or neglected women were less likely to describe their current partner as supportive, caring, and communicative. These women were also less likely to be sexually faithful to their partners. These relationship patterns were found for different types of maltreatment and not influenced by family background variables (Colman & Widom, 2004).

The fact that some, but not all, people who experienced childhood maltreatment have difficulties in adult intimate relationships highlights the complexity of the association between childhood maltreatment and interpersonal relationships in adulthood and indicates that other variables moderate and/or mediate this association (Fagan, 2001). One of the potential mediators of the relationship between childhood maltreatment and quality of adult intimate relationships is adult attachment style (Shaver & Hazan, 1993). A secure attachment style is associated with a keenness for close intimate relationships. Within the relationship, secure attached adults try to achieve a balance between closeness and autonomy. Individuals with an anxious-ambivalent attachment style also have a desire for intimate relationships, but the fear of rejection may lead to long for extreme levels of intimacy and low levels of autonomy. Adults with an avoidant attachment style report a need to maintain their autonomy and distance themselves from their partner and feel uncomfortable with feelings of intimacy and dependency (Shaver & Hazan, 1993).

Furthermore, studies found that the connection between childhood maltreatment and difficulties in intimate relationships in adulthood is mediated in part by avoidant and anxious-ambivalent attachment styles in adulthood (Bakermans-Kranenburg & van Ijzendoorn, 2009; McCarthy & Taylor, 1999; Riggs & Kaminski, 2010). Riggs and Kaminski's (2010) conducted a study on 285 college students in dating relationships and indicated that childhood emotional maltreatment affects insecure attachment styles in adulthood, which affects the quality of initiate relationships. Additionally, McCarthy and Taylor (1999) found that respondents who had been maltreated during childhood were six times more likely to experience poor intimate relationships in adulthood, in comparison to those who did not. Unger and De Luca (2014) found that childhood physical abuse was associated with avoidant attachment and to a lesser extent, anxious attachment styles in adulthood.

Moreover, negative emotions are more frequent in adults with both anxious and avoidant attachment styles than in securely attached adults, and these negative emotions may lead to additional problems in relationships (Riggs, 2010). Several studies suggest that mental health problems may also mediate the relationship between childhood maltreatment and the quality of intimate relationships (Brown et al., 2015; DiLillo et al., 2009). The relationship between childhood maltreatment and mental health problems is well established (Gilbert, Widom, et al., 2009; Kessler et al., 2010; Mikulincer & Shaver, 2012; Spinhoven et al., 2010). Of all adult-onset psychopathology, 30% can be related to childhood adversities (including childhood maltreatment) (Green et al., 2010). Specifically, childhood maltreatment has been associated with increased risk of developing symptoms of depression and anxiety in adulthood (Hamilton et al., 2013; Li et al., 2016; Lindert et al., 2014). Furthermore, people who are physically, sexually or emotionally abused or neglected as a child are also at risk of developing alcohol use disorders in adulthood (Brems et al., 2004; Dube et al., 2006; Widom et al., 2007). Moreover, mental health problems in adulthood increase the chances of troubled intimate relationships (Kessler et al., 1998; Uebelacker & Whisman, 2006).

Altogether, these studies suggest that symptoms of depression, anxiety, alcohol abuse, and insecure attachment in adulthood may (partially) play a role in the diminished quality of intimate relationships in adulthood among individuals with a history of childhood maltreatment. One of the questions is how depression, anxiety, and alcohol dependence severity and insecure attachment styles are linked together (when fitted into one model) and mediate the association between childhood maltreatment and the quality of intimate relationships. Previous studies have shown a relationship between internalizing and externalizing psychiatric disorders and attachment insecurity (Bifulco et al., 2006; Muller et al., 2012; van IJzendoorn & Bakermans-Kranenburg, 2008; Widom et al., 2017). In a prospective cohort study, 650 participants were followed over time. Widom et al. (2017) reported that individuals with histories of childhood neglect and physical abuse had higher levels of anxious attachment in adulthood, whereas neglect predicted avoidant attachment, and that both adult attachment styles; anxious and avoidant, predicted increased levels of depression and anxiety and lower levels of self-esteem. Additionally, they found that anxious attachment partially mediated the relationship between childhood neglect and physical abuse to depression, anxiety, and self-esteem.

Furthermore, adult anxious and avoidant attachment styles predict psychopathology, among which depression, anxiety and alcohol abuse are only a few to mention (Mikulincer & Shaver, 2007; Widom et al., 2017). However, to date, research is scarce on how depression, anxiety, and alcohol dependence severity are associated with insecure attachment styles and how this is linked to the quality of intimate relationships. Some studies that have been conducted in this field have a smaller ($n = 285$; Riggs & Kaminski, 2010) and/or specific sample size (i.e., college students; Unger & De Luca, 2014).

In order to better understand the association between childhood maltreatment, psychopathology, insecure attachments styles, and the quality of intimate relationships in adulthood, we aimed to investigate the link between childhood maltreatment, insecure attachment patterns, and the quality of intimate relationships, and to what extent depression, anxiety, and alcohol dependence severity

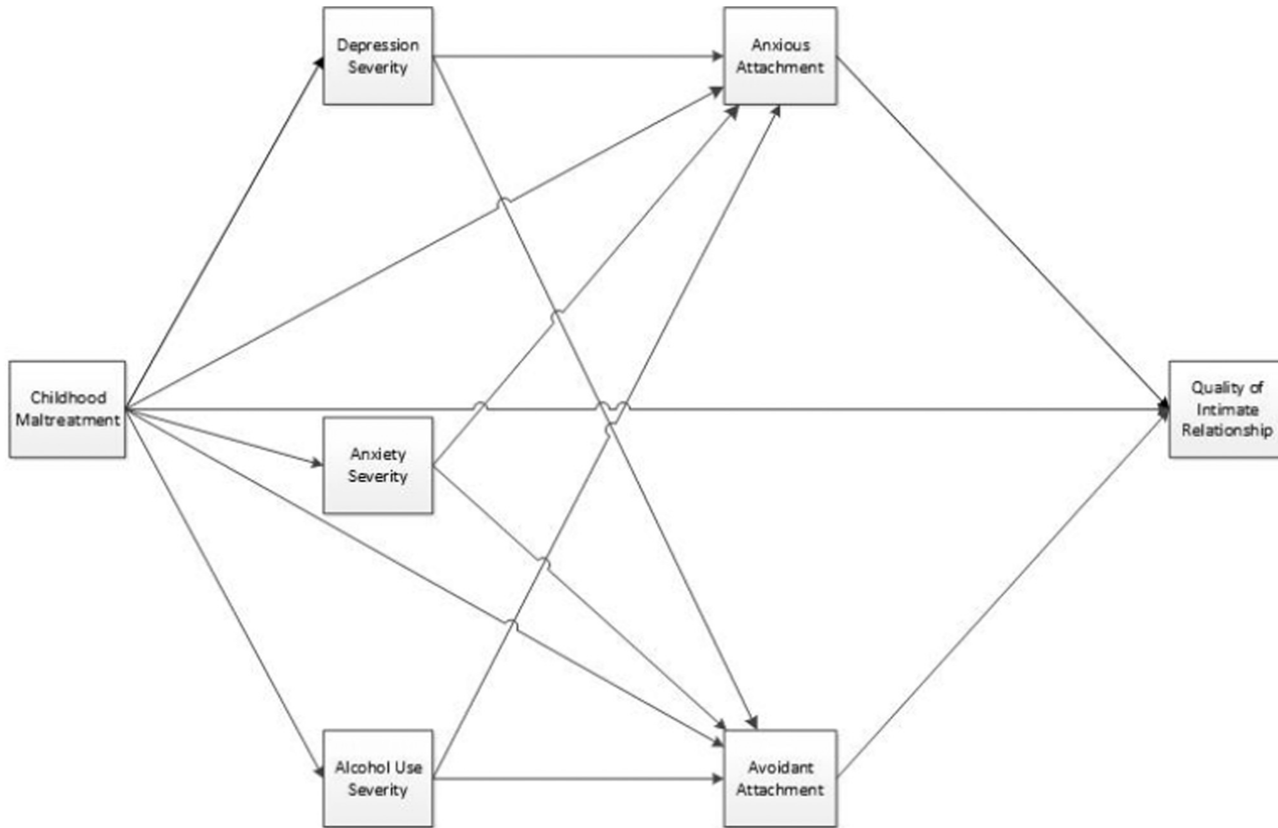

Fig. 1. A flowchart that shows the association between childhood maltreatment, psychopathology, insecure attachment and the quality of intimate relationships.

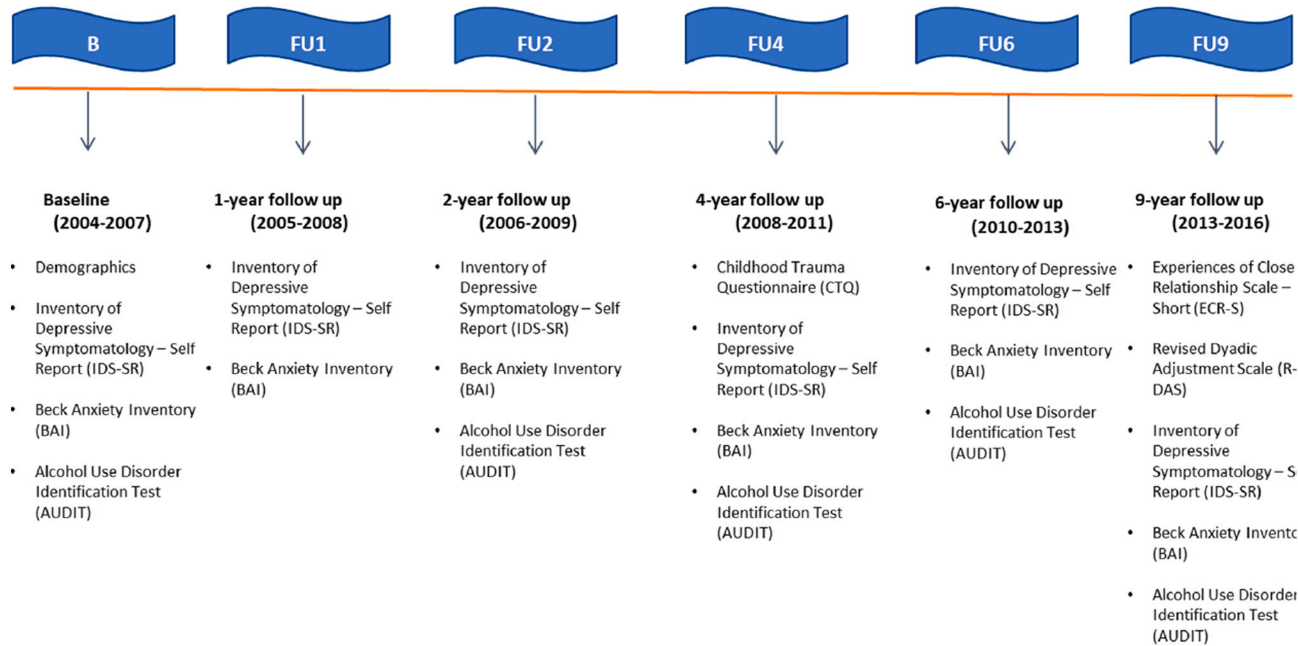

Fig. 2. The six different wavelengths in the Netherlands Study of Depression and Anxiety and measurements per wavelength.

and insecure attachment styles mediate the association between childhood maltreatment and the quality of intimate relationships (Fig. 1).

We aim to investigate these associations in the Netherlands Study of Depression and Anxiety (NESDA), a longitudinal epidemiological study designed to investigate the course and consequences of depressive and anxiety disorders. Due to the nature of the study, the large sample size, comprehensive data collection that includes structural interviews for psychopathology, and repeated measures throughout the different waves, there is a unique opportunity to investigate these questions in one model.

2. Methods

2.1. Sample

The Netherlands Study of Depression and Anxiety (NESDA) is an on-going longitudinal cohort study in depression and anxiety (Penninx et al., 2008). At baseline it included 2981 respondents between the ages of 18–65 years, including healthy controls (22%) and individuals with a prior history of a lifetime depressive or anxiety disorder (78%) Respondents were recruited from three different settings: the general population (from two cohorts: the Netherlands Mental Health Survey and Incidence Study (NEMESIS) (Bijl et al., 1998) and the Adolescents Risk for Anxiety and Depression (ARIADNE) study (Landman-Peeters et al., 2005), primary care - respondents were recruited from 65 general practitioners (GPs) who use an electronic patient database that helps facilitate the extraction of data for research purposes, and mental health outpatient clinics. A mental health professional conducted a standardized interview to newly enrolled patients in the outpatient clinics. Information about NESDA was given to patients who received a primary depression or anxiety diagnosis. The general exclusion criteria included 1) not being fluent in Dutch and 2) a diagnosis of other psychiatric conditions such as psychosis, obsessive compulsive, bipolar, or severe addiction disorder. A detailed description of the study design and sample has been previously published (Penninx et al., 2008). The Ethical Committees of the various participating universities approved the research and all participants provided written informed consent.

At baseline (B) all 2981 respondents underwent an assessment consisting of demographics, a standardized psychiatric interview (Composite International Diagnostic Interview – CIDI) to assess current and lifetime psychopathology, a structured interview on childhood maltreatment (NEMESIS), and assessment of personality characteristics. Post baseline, NESDA respondents were invited for five follow up waves FU1 (1-year follow-up, $n = 2445$), FU2 (2-year follow-up, $n = 2596$), FU4 (4-year follow-up, $n = 2402$), FU6 (6-year follow-up, $n = 2256$), and FU9 (9-year follow-up, $n = 2069$) (Fig. 2), to assess the severity of psychopathology, health consequences, personality characteristics, demographics, and psychosocial functioning.

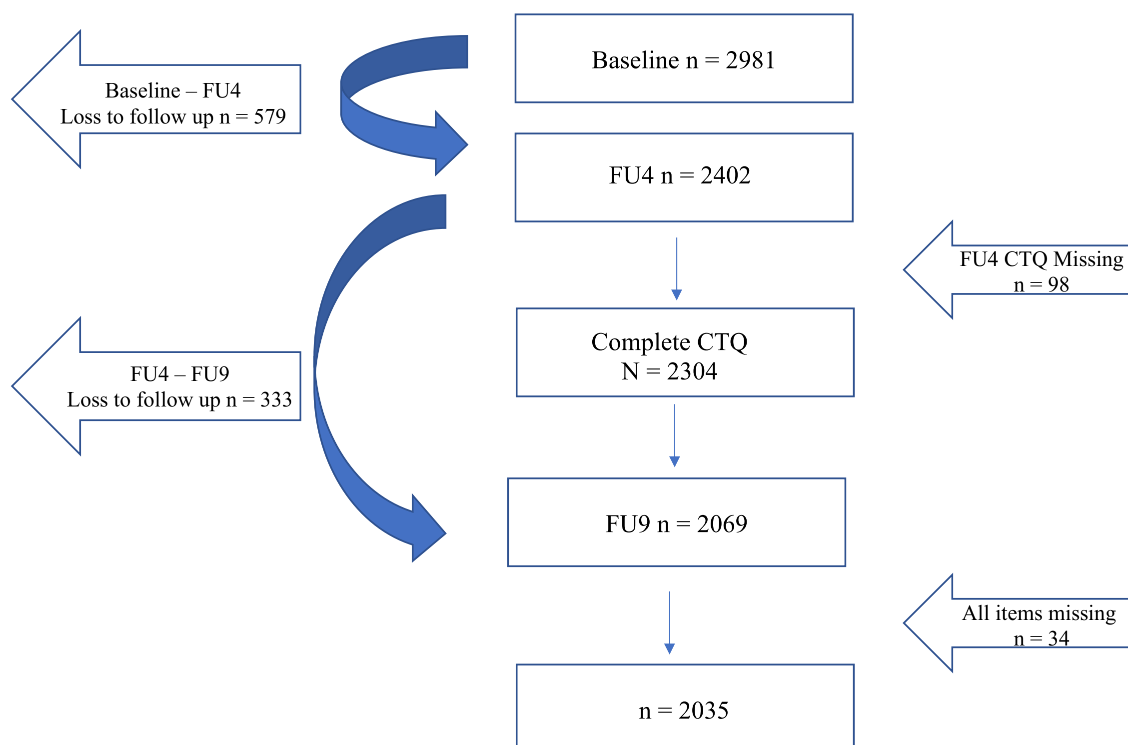

Fig. 3. Participant selection.

2.2. Current study

For the present study, a total of 2035 respondents who had a current or previous relationship were selected at FU9 (Fig. 3). Analyses were based on data from different waves throughout the study; childhood maltreatment was assessed at FU4, depression severity and anxiety severity were assessed at B, FU1, FU2, FU4, & FU6, alcohol dependence severity was assessed at B, FU2, FU4, & FU6, and insecure attachment styles and quality of intimate relationships at FU9. Eighty-three respondents (4.1%) stated that they had never been in a relationship before. Those respondents did not fill in questions on insecure attachment styles and the quality of intimate relationships in adulthood and were therefore left out of the analyses.

2.3. Measures

2.3.1. Childhood maltreatment

At FU4, childhood maltreatment was assessed using the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003), a validated, 28-item self-report questionnaire that assesses emotional and physical neglect, psychological, physical, and sexual abuse. The CTQ contains five subscales: three that assess abuse (emotional, physical, and sexual, consisting each of 5 items) and two that assess neglect (emotional and physical, also consisting each of 5 items). The CTQ uses a five-point Likert scale: '1' never true, '2' rarely true, '3' sometimes true, '4' often true, '5' very often true and hence each subscale is scored from 5 (no history of abuse or neglect) to 25 (extreme history of abuse and neglect). Emotional neglect was defined as not feeling loved and lack of parental support and attention. Physical neglect was defined as not having enough to eat at home, no doctor visits, and poor hygiene. The definition of psychological abuse included verbal abuse, blackmail, and discriminated upon. Physical abuse was defined as being kicked, hit, or beaten up by hand (s) or an object, or any other form of physical abuse that left a bruise. Sexual abuse was defined as being sexually touched against one's will or forced to touch someone in a sexual way. In the current sample, Cronbach's Alpha computed for CTQ total score was 0.92.

2.4. Psychopathology

2.4.1. Depression severity

The 30-item Inventory of Depressive Symptomatology self-report (IDS-SR; Rush et al., 1986) assessed psychological distress (or severity of depression). The IDS-SR uses a four-point Likert scale (i.e., Feeling Sad): '0' I do not feel sad, '1' I feel sad less than half the time, '2' I feel sad more than half the time, '3' I feel sad nearly all the time. The questionnaire uses a 7-day timeframe for assessing symptom severity. For the purpose of this study, we computed the mean IDS total score based on five waves (B, FU1, FU2, FU4, & FU6). The total IDS score measured in FU9 was used to control for current depression severity. Cronbach's Alpha in the current sample is 0.93.

2.4.2. Anxiety severity

Anxiety severity was assessed using the Beck Anxiety Inventory (BAI; Beck et al., 1988). The BAI is a self-report instrument consisting of 21 items. Respondents were asked to indicate how much he/she had been bothered by each symptom (i.e. Numbness or tingling, feeling hot, unable to relax…etc.) over the past week on a four-point scale; '0' (Not at all), '1' (Mildly, but it didn't bother me much), '2' (Moderately – it wasn't pleasant at times), '3' three (Severely – it bothered me a lot). For the present study, the mean total BAI scale score over five waves was computed (B, FU1, FU2, FU4, FU6). The total BAI scale score in FU9 was used to control for current anxiety severity. The reliability and validity of the BAI are well established (Beck et al., 1988; Beck & Streer, 1993). Cronbach's Alpha in the current sample is 0.94.

2.4.3. Alcohol dependence symptom severity

The 10-item Alcohol Use Disorder Identification Test (AUDIT; Saunders et al., 1993) self-report questionnaire assessed alcohol dependence symptom severity. Respondents rated how often they had consumed alcohol in the past year, the amount they consumed on average, and how often they experienced negative consequences of alcohol use (i.e. How often during the last year have you found that you were not able to stop drinking once you had started? on a scale ranging from zero to four ('0' Never, '1' Less than monthly, '2' Monthly, '3' Weekly, '4' Daily or almost daily)). The mean total AUDIT scale score over four waves was computed (B, FU2, FU4, FU6) for the current study. The total AUDIT scale score in FU9 was used to control for current alcohol dependence severity. The AUDIT has established internal consistency, test-retest reliability; construct validity and criterion validity (Reinert & Allen, 2007). Cronbach's Alpha in the current sample is 0.92.

2.5. Insecure attachment styles in adulthood

Insecure attachment styles were measured with the Experiences of Close Relationship Scale – Short Version (ECR-S; Wei et al., 2007) at FU9. The ECR-S was developed in 1998 to provide a short self-report measure of the Experiences of Close Relationships Scale (Brennan et al., 1998) in partner relationships. The revised version (ECR-S) consists of 12 items (i.e. I try to avoid getting too close to my partner) that are designed to assess individual differences with respect to avoidance (i.e. I try to avoid getting too close to my partner) and anxiety (i.e. I need a lot of reassurance that I am loved by my partner) attachment styles. The ECR-S uses a 7-point Likert scale that ranges from '1' (Strongly Disagree), '2' (Disagree), '3' (Slightly Disagree), '4' (Neutral), '5' (Slightly Agree), '6' (Agree), '7' (Strongly Agree). The anxiety and avoidance subscales consist of six items each (Cronbach's Alpha's: 0.69 and 0.74 respectively). In the

current study, Cronbach's Alpha for ECR-S total scale is 0.75.

2.6. Quality of intimate relationship

The Revised Dyadic Adjustment Scale (R-DAS; Busby et al., 1995) measured in FU9, is a self-report questionnaire that assesses partner relationships in three categories: Consensus (i.e. Religions matters, making major decisions), Satisfaction (i.e. How often do you and your partner quarrel? or Do you ever regret that you were married (or lived together?)), and Cohesion (i.e. work together on a project, calmly discuss something). The R-DAS includes 14 items, respondents are asked to rate their relationships on a 6-point scale ('0' All the time, '1' Most of the time, '2' More often than not, '3' Occasionally, '4' Rarely, '5' Never) except for question 11 (5-point scale: '4' Every day, '3' Almost Every day, '2' Occasionally, '1' Rarely, '0' Never). Scoring ranges from 0 to 69 with a cut-off score of 48. A score of 48 and above indicates no distress in a relationship in an intimate relationship. The consensus subscale includes six items (Cronbach's Alpha 0.80). The satisfaction and cohesion subscales have four items each and have Cronbach's Alphas of 0.82 and 0.79 respectively. Cronbach's Alpha for R-DAS total scale is 0.89.

2.7. Statistical analysis

The missing values (see Table 1) in the CTQ, ECR-S, R-DAS, IDS (B – FU6), BAI (B – FU6), AUDIT (B, FU2 – FU6) in the structural equation model (SEM) were estimated using an advanced method; full information maximum likelihood (FIML; Enders, 2001). The data is handled within the analysis model. This model is estimated by a full information maximum likelihood method where all available information is used to estimate the model. Descriptive statistics were used to describe demographic data (i.e., age, gender, educational background, partner relationship), childhood maltreatment, psychopathology, insecure attachment styles, and the quality

Table 1
Demographic characteristics, trauma and relationship indices ($n = 2035$).

Participant characteristics	
Female gender (n, %)	1348 (66.20)
Age (years, SD)	41.79 (13.14)
Educational level (n, %)	
Basic	98 (4.80)
Intermediate	1159 (57.0)
High	778 (38.20)
Relationship status (n, %)	
Current partner	1396 (68.60)
Ex-partner	327 (16.10)
Deceased	71 (3.50)
Mean duration of relationship	4.13 (3.59)
Psychopathology (n, %)	
Lifetime depression	1282 (63.00%)
Current depression	474 (23.30)
Lifetime anxiety disorder	1129 (55.50)
Current anxiety disorder	302 (18.90)
Trauma indices	
Childhood Trauma Questionnaire total score (mean score, SD)	39.09 (14.39)
Emotional neglect	11.89 (5.31)
Physical neglect	7.16 (2.89)
Psychological abuse	8.31 (4.44)
Physical abuse	5.78 (2.65)
Sexual abuse	5.88 (2.99)
Mediators	
IDS –SR (mean score B, FU1, FU2, FU4, FU6, SD)	15.80 (10.64)
BAI (mean score B, FU1, FU2, FU4, FU6, SD)	6.93 (6.06)
AUDIT (mean, B, FU2, FU4, FU6, SD)	4.62 (4.17)
Relationship indices	
Experiences of Close Relationship Scale-Short (mean score, SD)	
ECR-S total score	34.84 (10.06)
Avoidant attachment	15.50 (6.15)
Anxious attachment	19.37 (6.29)
Revised-Dyadic Adjustment Scale (mean score, SD)	
RDAS total score	62.83 (9.55)
Consensus	29.61 (4.62)
Satisfaction	18.98 (3.27)
Cohesion	14.09 (3.61)

Of the total group, data were missing on relationship ($n = 241$), mean duration of relationship ($n = 422$), emotional neglect ($n = 54$), physical neglect ($n = 54$), psychological abuse ($n = 54$), physical abuse ($n = 54$), sexual abuse ($n = 54$), IDS-SR ($n = 389$), BAI ($n = 313$), AUDIT ($n = 262$), ECR-S total score ($n = 216$), avoidant attachment ($n = 199$), anxious attachment ($n = 199$), RDAS total score ($n = 150$).

of intimate relationships.

Firstly, to examine 1) the relationship between childhood maltreatment severity (CTQ total scale) and anxious and avoidant attachment styles (ECR-S), and 2) childhood maltreatment severity and quality of intimate relationships (R-DAS), linear regression analyses were conducted. In the crude model (Model 1), we investigated the association between childhood maltreatment (CTQ total scale) and a) insecure attachment styles (ECR-S avoidant attachment score, anxious attachment score), and b) the quality of intimate relationships (R-DAS total score) without adjustments for any covariates. In the second model (Model 2) we adjusted for age, gender, and educational background (as assessed during baseline). In the third model (Model 3), we included partner status (current partner or previous partner) and mean duration of the relationship as additional covariates since duration of relationship is associated with more secure attachment. Partner status and duration of relation were based on the R-DAS and ECR-S in FU9.

Secondly, we investigated to what extent psychopathology (depression, anxiety, and alcohol dependence severity) and insecure attachment styles mediate the relationship between childhood maltreatment and the quality of intimate relationships. More specifically, we fitted a mediation model to determine the significance of the indirect effect of childhood maltreatment on the quality of intimate relationships through the following pathways while controlling for age, gender, and educational level (Fig. 1):

Childhood maltreatment → depression severity → anxious attachment → quality of intimate relationship
Childhood maltreatment → anxiety severity → anxious attachment → quality of intimate relationship
Childhood maltreatment → alcohol dependence severity → anxious attachment → quality of intimate relationship
Childhood maltreatment → depression severity → avoidant attachment → quality of intimate relationship
Childhood maltreatment → anxiety severity → avoidant attachment → quality of intimate relationship
Childhood maltreatment → alcohol dependence severity → avoidant attachment → quality of intimate relationship

The significance of the indirect effects was determined using a bootstrap approximation with 5000 iterations to obtain biased-controlled confidence intervals. In this path model we used a maximum likelihood estimator. Model fit was evaluated using the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). For the TLI and CFI, values between 0.90 and 0.95 are considered acceptable, and >0.95 as good. For the RMSEA, acceptable models have values of <0.10, and good models of <0.05. As for models with more than 400 cases the χ^2 is almost always statistically significant, we did not consider χ^2 as an indicator of an unsatisfactory model fit. A significance level of $p < 0.01$ was used for all analyses to protect for Type 1 error. Descriptive statistics and preliminary analyses were run using SPSS v. 25 (IBM Corp, 2019) and structural equation modeling (SEM) in MPlus v. 8.2 (Muthen & Muthen, 1998–2012).

3. Results

In our sample of 2035 respondents, 66.2% were female and 33.8% male. Sixty-eight percent of the respondents were currently in a relationship, 16.1% had previously been in a relationship but separated, and 3.5% reported that the partner had deceased. In terms of reported abuse and neglect, 33.1% of the included respondents reported emotional neglect at least once, 20.0% experienced psychological abuse at least once, 4.3% experienced physical abuse at least once, and 4.7% experienced sexual abuse at least once (Bernstein & Fink, 1998). Demographic characteristics, childhood maltreatment, psychopathology, attachment styles, and relationship indices are summarized in Table 1.

3.1. Childhood maltreatment, insecure attachment styles, and quality of relationship

Table 2 summarizes the association between childhood maltreatment and a) avoidant and anxious attachment styles, and b) the quality of intimate relationships based on linear regression analyses in three models (model 1 – crude, model 2 – including demographics, model 3 – including partner status and mean duration of relationship). The linear regression analyses between childhood maltreatment and anxious/avoidant attachment styles showed a positive association in model 1 between childhood maltreatment and

Table 2
The adjusted and unadjusted associations between childhood maltreatment (CTQ) and insecure attachment (ECR-S), and between childhood maltreatment (CTQ) and the quality of intimate relationship (R-DAS).

	Insecure attachment (ECR-S)		Quality of relationship (R-DAS)
	Coefficient (95% CI lower/upper bound), p-value		Coefficient (95% CI lower/upper bound), p-value
	Anxious attachment	Avoidant attachment	
Childhood maltreatment CTQ			
Model 1	0.27 (0.22, 0.31), $p < 0.001$	0.31 (0.27, 0.36), p < 0.001	−0.25 (−0.30, −0.20), $p < 0.001$
Model 2	0.26 (0.21, 0.30), $p < 0.001$	0.30 (0.25, 0.34), p < 0.001	−0.23 (−0.28, −0.18), $p < 0.001$
Model 3	0.25 (0.21, 0.29), $p < 0.001$	0.29 (0.25, 0.34), p < 0.001	−0.22 (−0.27, −0.17), $p < 0.001$

Model 1: Crude.
Model 2: Demographics (age, gender, educational level) added as covariates.
Model 3: Age, gender, educational level, relationship status, mean duration of relationship added as covariates.
CTQ: Childhood Trauma Questionnaire; ECR-S: Experiences of Close Relationship Scale – Short; R-DAS: Revised Dyadic Adjustment Scale. For every increase in childhood maltreatment total score, insecure attachment styles increase as per coefficients in table. Similarly, for every increase in childhood maltreatment total score, the quality of intimate relationships decreases as per coefficients in the table.

anxious attachment (β = 0.27; 95% CI = 0.22, 0.31) as well as avoidant attachment (β = 0.31; 95% CI = 0.27, 0.36). Model 2 also showed a positive and significant association for anxious attachment (β = 0.26; 95% CI = 0.21, 0.30) and avoidant attachment (β = 0.30; 95% CI = 0.25, 0.34). This association remained significant in model 3 for anxious (β = 0.25; 95% CI = 0.21, 0.29) and avoidant attachment (β = 0.29; 95% CI = 0.25, 0.34). Childhood maltreatment was also negatively associated with the quality of intimate relationships in model 1 (β = −0.25; 95% CI = −0.30, −0.20), model 2 (β = −0.23; 95% CI = −0.28, −0.18), and model 3 (β = −0.22; 95% CI = −0.27, −0.17) (Table 2).

3.2. *Childhood maltreatment, psychopathology, and interpersonal relationship pathways*

The path in the final model showed an acceptable fit to the data RMSEA = 0.05 (90% CI = 0.03, 0.08), CFI = 0.96, TLI = 0.97 (the path model showed a good fit to the data when alcohol dependence severity was left out RMSEA = 0.06 (90% CI = 0.04, 0.09), CFI = 0.996, TLI = 0.968) while controlling for age, gender, and educational level. When looking at the direct effects, childhood maltreatment was positively related to depression severity (β = 0.42, 95% CI = 0.38, 0.47) and anxiety severity (β = 0.33, 95% CI = 0.28, −0.38), but not related to alcohol dependence severity (β = −0.03, 95% CI = −0.08, 0.03). In line with the regression analyses, significant associations were found between childhood maltreatment and a) anxious attachment (β = 0.12, 95% CI = 0.07, 0.18), and b) avoidant attachment (β = 0.19, 95% CI = 0.13, 0.24). While the regression showed a significant association between childhood maltreatment and quality of relationship, in the mediated model, childhood maltreatment was unrelated to the quality of intimate relationships (β = −0.03, 95% CI = −0.07, 0.02), indicating full mediation by depression severity and insecure attachment styles. Furthermore, depression severity was positively associated with anxious attachment (β = 0.42, 95% CI = 0.32, 0.51) and avoidant attachment (β = 0.33, 95% CI = 0.23, 0.42). Anxiety severity on the other hand, was not associated with anxious attachment (β = −0.09 95% CI = −0.19, 0.00) and not associated with avoidant attachment (β = −0.04, 95% CI = −0.13, 0.05). Alcohol dependence severity was positively related to anxious attachment (β = 0.05; 95% CI = −0.01, 0.11) but not to avoidant attachment (β = 0.04 * 10^{-2}; 95% CI = −0.00 * 10^{-2}, 9.0 * 10^{-2}) (see Table 3 & Fig. 4).

Table 3 shows the direct and indirect effects in the final model. The indirect effects were multiplied by 10^{-2} since the estimates and confidence intervals were very small and, in some cases, difficult to interpret. Two out of six indirect pathways fully mediated the relationship between childhood maltreatment and the quality of intimate relationships. The strongest pathway was through depression

Table 3
Standardized effects β in the final sequential mediation model in MPlus while controlling for age, gender, and educational level.

Type of effect	β*	SE	BC 95% CI
Direct effects			
CM → DEP SEV	**0.42**	0.02	**(0.38, 0.47)**
CM → ANX SEV	**0.33**	0.03	**(0.28, 0.38)**
CM → ALCO SEV	−0.03	0.03	(−0.08, 0.03)
CM → QREL	−0.03	0.02	(−0.07, 0.02)
CM → ANX	**0.13**	0.03	**(0.08, 0.18)**
CM → AVOI	**0.19**	0.03	**(0.13, 0.24)**
DEP SEV → ANX	**0.42**	0.05	**(0.32, 0.50)**
DEP SEV → AVOI	**0.33**	0.05	**(0.23, 0.42)**
ANX SEV → ANX	−0.09	0.05	(−0.19, 0.00)
ANX SEV → AVOI	−0.04	0.05	(−0.13, 0.05)
ALCO SEV → ANX	**0.05**	0.03	**(0.01, 0.11)**
ALCO SEV → AVOI	0.04	0.03	(−0.00, 0.09)
ANX → QREL	**−0.23**	0.02	**(−0.27, −0.18)**
AVOI → QREL	**−0.53**	0.02	**(−0.57, −0.48)**
Specific indirect effects**			
CM → ANX → QREL	**−2.8 * 10^{-2}**	0.06 * 10^{-2}	**(−4.2 * 10^{-2}, −1.6 * 10^{-2})**
CM → AVOI → QREL	**−9.8 * 10^{-2}**	1.5 * 10^{-2}	**(−12.8 * 10^{-2}, −6.8 * 10^{-2})**
CM → DEP SEV → ANX → QREL	**−4.0 * 10^{-2}**	0.7 * 10^{-2}	**(−5.5 * 10^{-2}, −2.7 * 10^{-2})**
CM → ANX SEV → ANX → QREL	**0.7 * 10^{-2}**	0.4 * 10^{-2}	**(0.00 * 10^{-2}, 1.4 * 10^{-2})**
CM → ALCO SEV → ANX → QREL	0.00 * 10^{-2}	0.00 * 10^{-2}	(0.00 * 10^{-2}, 0.1 * 10^{-2})
CM → DEP SEV → AVOI → QREL	**−7.2 * 10^{-2}**	1.2 * 10^{-2}	**(−9.6 * 10^{-2}, −4.9 * 10^{-2})**
CM → ANX SEV → AVOI → QREL	0.6 * 10^{-2}	0.8 * 10^{-2}	(−0.09 * 10^{-2}, 2.2 * 10^{-2})
CM → ALCO SEV → AVOI → QREL	0.01 * 10^{-2}	0.1 * 10^{-2}	(−0.1 * 10^{-2}, 0.3 * 10^{-2})

Note: β*: Standardized coefficients, SE: standard error, BC 95% CI: lower and upper bound of bias-corrected 95% confidence interval with 5000 bootstrap samples; CM = Childhood Maltreatment; DEP SEV=Depression Severity; ANX SEV = Anxiety Severity; ALCO SEV = Alcohol Dependence Severity; QREL = Quality of Intimate Relationships; ANX = Anxious Attachment; AVOI = Avoidant Attachment. Specific indirect effects**: β, SE, and BC 95% CI multiplied by 10^{-2}. Mediating effects were considered significant when the bias corrected and confidence interval did not include zero (indicated in bold).

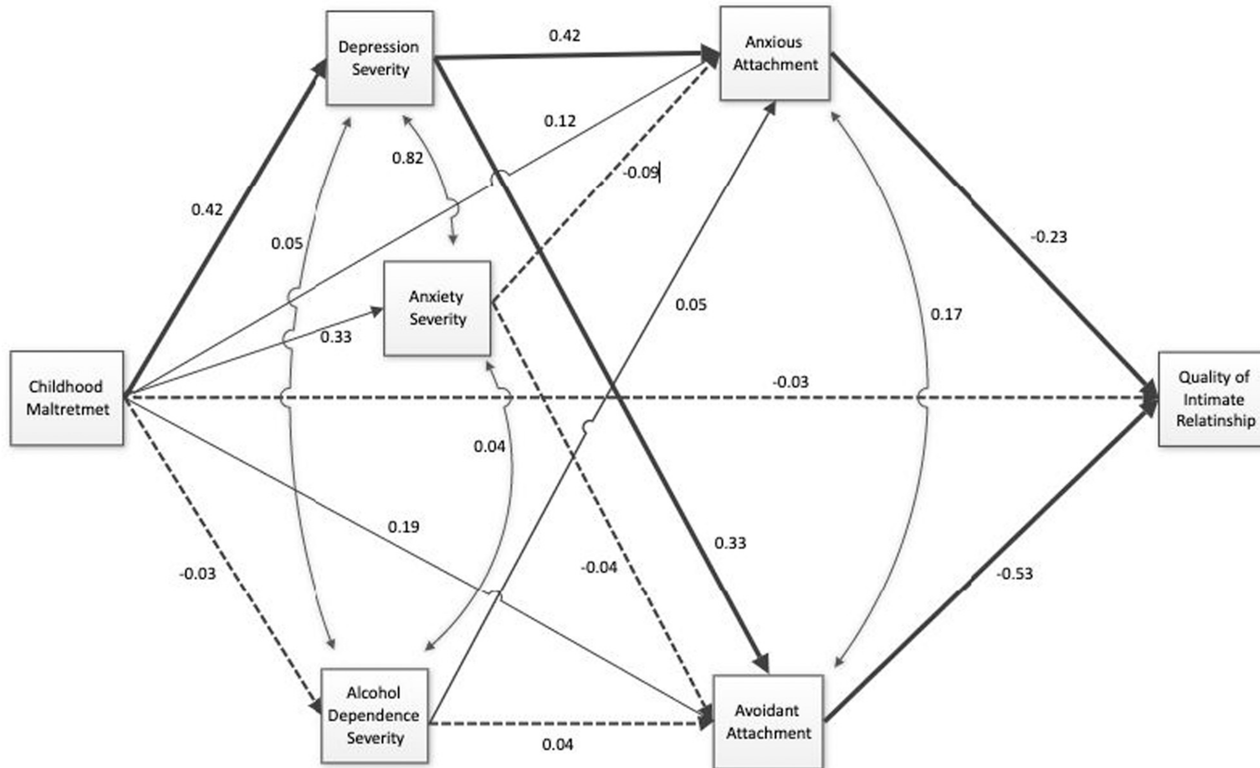

Fig. 4. Standardized parameter estimates for the sequential mediation model that shows the effect of depression severity, anxiety severity, anxious attachment, and avoidant attachment on childhood maltreatment and the quality of intimate relationships. Straight bold arrows represent regression coefficients. Thick straight bold arrows represent the main strong pathway in the model. Two headed curvy bold arrows represent correlation coefficients. Dashed arrows represent no significance (ns).

severity and anxious attachment ($\beta = -4.0 * 10^{-2}$; 95% CI = $-5.5 * 10^{-2}$, $-2.7 * 10^{-2}$). To a lesser extent, depression severity and avoidant attachment ($\beta = -7.2 * 10^{-2}$; 95% CI = $-9.6 * 10^{-2}$, $-4.9 * 10^{-2}$) mediated the relationship between childhood maltreatment and the quality of intimate relationships. Anxiety severity and a) anxious attachment ($\beta = 0.7 * 10^{-2}$; 95% CI = $0.00 * 10^{-2}$, $1.4 * 10^{-2}$) and b) avoidant attachment ($\beta = 0.6 * 10^{-2}$; 95% CI = $-0.9 * 10^{-2}$, $2.2 * 10^{-2}$) did not mediate the relationship between childhood maltreatment and the quality of intimate relationships. Similarly, alcohol dependence severity and a) anxious attachment ($\beta = 0.00 * 10^{-2}$; 95% CI = $0.00 * 10^{-2}$, $0.00 * 10^{-2}$) and b) avoidant attachment ($\beta = 0.1 * 10^{-2}$; 95% CI = $-0.1 * 10^{-2}$, $0.3 * 10^{-2}$) did not mediate the relationship.

To help bolster confidence in the results, we tested two competing models in which the quality of intimate relationship mediated the association between childhood maltreatment and anxious/avoidant attachment styles with depression, anxiety, and alcohol dependence severity as preceding mediators. In both models, only depression severity and the quality of intimate relationship mediated the association between childhood maltreatment and anxious ($\beta = 0.04$, 95% CI = 0.02, 0.05) and avoidant ($\beta = 0.07$, 95% CI = 0.05, 0.10) attachment styles in adulthood. Alcohol dependence severity had a direct effect on the quality of intimate relationships ($\beta = -0.06$, 95% CI = -0.11, -0.01); however, anxiety severity did not ($\beta = -0.01$, 95% CI = -0.11, 0.09). The competing and hypothesized models have similar outcomes in relation to the link between depression/anxiety severity and insecure attachment styles and the link between depression/anxiety severity and the quality of intimate relationship (see Tables S1 & S2 and Figs. S1 & S2 in the supplemental material).

4. Discussion

In this study, we found an association between childhood maltreatment and the quality of intimate relationships in adulthood and gained a better understanding on how exactly childhood maltreatment and psychopathology are associated with relationship quality in adulthood. Our findings indicate a link between childhood experiences, depression severity but not anxiety and alcohol dependence severity, and anxious and avoidant attachment through different pathways.

The path analysis model (Fig. 4) gives a bird's eye view of the different pathways and the direct and indirect effects. Childhood maltreatment was associated with depression severity and anxiety severity, which is in line with numerous other studies (Hamilton et al., 2013; Li et al., 2016; Lindert et al., 2014). Individuals who report more childhood maltreatment also manifest more insecure attachment patterns and their intimate relationships in adulthood are generally of lower quality. This is in line with other studies (Noftle & Shaver, 2006). Our findings also indicate that there may be two typical pathways. The strongest pathway links childhood maltreatment to increased depression severity, anxious attachment, and lower quality of intimate relationships. This pathway indicates that some individuals, who reported being maltreated during childhood, may develop low mood and other depressive symptoms, become more dependent and unconfident, which may be perceived as clingier and experience more distress in the relationship, which might subsequently affect the relationship quality. The second pathway links childhood maltreatment to depression severity and avoidant attachment, which is quite strongly associated with lower quality of intimate relationships, by partners tending to turn away from intimacy, be less trustworthy of their partners, and having difficulties relying on them or confide in them.

It should be noted that the correlation between avoidant and anxious attachment styles is low ($r = 0.17$), indicating that these may be rather independent pathways leading to distressed or poor intimate relationships in adulthood. Our findings also indicate that depression and to a much lesser extent, alcohol dependence severity are mostly linked to anxious attachment, potentially due to feeling unloved and unwanted. The link with avoidant attachment is less strong for depression severity and non-existent for anxiety and alcohol dependence severity. In other words, individuals who reported childhood maltreatment and are more depressive and/or are more dependent on alcohol use tend to be in particular more dependent on their partner rather than keeping their distance. However, some individuals with high depression severity report more avoidant attachment styles.

Remarkably, in our sample, alcohol dependence severity was only associated with anxious but not avoidant attachment. While childhood maltreatment has been identified as an important risk factor for excessive alcohol use and alcohol use problems in some studies (Brems et al., 2004; Dube et al., 2006; Moran et al., 2004; Rosenkranz et al., 2012), not all studies found these associations (Widom et al., 1999). This could indicate that (moderate) alcohol use is not a key risk factor for relationship problems in individuals with a history of maltreatment. Alternatively, this may also have to do with the fact that only participants with moderate alcohol use were included in the study, since respondents with a primary diagnosis of an addiction disorder were initially excluded from the NESDA study. Another factor that may have influenced the results is social desirability, which has been shown to be rather pervasive on self-report measures of alcohol and drug use, leading to an underestimation of the impact of alcohol use (Kazdin, 2016).

While attachment styles may play a role on the quality of intimate relationships, the reverse may also be the case: a solid and loving relationship may also play a role on attachment styles and longer lasting relationships may yield a stronger sense of secure attachment. We therefore controlled for duration of relationship in our study. In line with previous studies (Duemmler & Kobak, 2001) we found an association between duration of the relationship and secure attachment style ($r = 0.44$), indicating that individuals in longer lasting relationships tend to report more secure attachment styles. This may go both ways, in the sense that commitment, mutual trust, and satisfaction, may result in a more secure attachment style, whereas individuals with more secure attachment styles generally will also end up in longer lasting relationships.

These findings, based on the richness of the NESDA longitudinal prospective study, with a large sample of respondents including both healthy participants and individuals with psychological problems (mainly depression and/or anxiety symptoms), adds clinically relevant new insights to the literature. Moreover, the indicators of depression and anxiety severity were based on assessments in five different waves (B, FU1, FU2, FU4, &FU6), and alcohol dependence severity in four different waves (B, FU2, FU4, & FU6), which make them strong and reliable indicators. In addition to these strengths, some methodological limitations also need to be considered. The

respondents with symptoms of depression and anxiety may not be a reliable representation of the entire population of individuals with depressive disorders, since individuals with severe symptoms dropped out of the study (Lamers et al., 2012). Childhood maltreatment was assessed retrospectively. Furthermore, recall bias, which may lead to an overestimation or an underestimation of the amount and type of childhood maltreatment, may worsen under the influence of depressive symptoms. However, it has been shown that recall of childhood maltreatment does not seem to be critically affected by current mood state (Brewin et al., 1993; Spinhoven et al., 2010; Spinhoven et al., 2014). Additionally, attachment style was measured with a self-report questionnaire and hence the outcome may have been different if we would have based our analyses on the Adult Attachment Interview (de Haas et al., 1994). Moreover, insecure attachment styles as a mediator were measured concurrently with the outcome; quality of intimate relationship, and hence no strong conclusions can be drawn regarding the temporality of these associations; obviously a low quality of a relationship may also induce more anxiety and avoidance in terms of attachment styles.

Given that these findings are based in part on respondents with a history of depression and anxiety, results from the current study may also have clinical implications. Informing parents, teachers, general practitioners, and the general public about the possible destructive impact of childhood maltreatment on mental wellbeing and intimate relations, may lead to better recognition and earlier detection. The school system can create a safe environment for children and specifically those who have been traumatized. Educators play a vital role, and it is important for them to realize that a child's perception drives his/her behaviour irrespective of the reality. In clinical practice, routine assessment of a history of childhood maltreatment is warranted in individuals with symptoms of depression and anxiety and/or individuals with insecure attachment styles and/or troublesome intimate relationships. Moreover, focusing on new parents and women with perinatal mental illness coming into the mental health system could help prevent adverse effects on the mother, her child, and family (Howard et al., 2014). Furthermore, in case early experiences with caregivers or other important individuals still have an impact in the context of intimate relationships, this should be addressed in terms of interventions (DiLillo et al., 2009). Nanni et al. (2012) conducted a meta-analysis based on 16 epidemiological studies and concluded that a history of childhood maltreatment was associated with a lack of response to treatment for depression. Clinicians may consider more intensive and alternative treatment options for individuals with a history of childhood maltreatment suffering from an emotional disorder, for example treatment that is focused more strongly on their insecure attachment styles (Nanni et al., 2012). Emotional defence mechanisms are likely to form and affect intimate relationships in adulthood if a partner's attachment relationship with a primary caregiver during childhood is unhealthy (Solomon, 2009). It is suggested that in couples therapy these early and current attachment styles are discussed as potential building blocks to healthier and more stable intimate relationships.

In conclusion, the current study suggests that 1) intimate relationships are generally of lower quality in individuals with a history of childhood maltreatment and that 2) depression and insecure attachment styles (anxious and avoidant) fully mediate the relationship between childhood maltreatment and the quality of intimate relationships in adulthood. Future studies may consider looking more closely at respondents with severe alcohol (ab)use in order to better understand the impact it may have on intimate relationships in adulthood. Furthermore, since the literature states that there are large gaps in the understanding of psychometric properties of attachment measures, and that some self-report measures of attachment are correlated with attachment interviews, yet do not rate the same construct, focusing on narrowing the gap is crucial to the growing field of attachment (Jewell et al., 2019). Future long-term longitudinal studies that focus on different types of childhood maltreatment are imperative to the literature to further elucidate the impact effects of different types of childhood maltreatment (i.e., sexual abuse versus physical abuse for example) on adult attachment styles and quality of relationship (Gibb et al., 2003; Hamilton et al., 2013; Taillieum et al., 2016).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.chiabu.2021.105228.

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