Psychologie
Faculteit der Sociale Wetenschappen

The mediating role of the Resilient, Undercontrolled, and Overcontrolled personality type on the link between childhood maltreatment and anxiety

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21-10-2018

"Our greatest glory is not in never falling, but in rising every time we fall"

Confucius

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Abstract

Background. Childhood maltreatment has been linked to the development of anxiety disorder, but the mechanisms through which this occurs remains unclear. This study explored if the maltreatment - anxiety relationship is mediated by the membership of a resilient, undercontrolled or overcontrolled personality type (RUO). The secondary aim was to examine the differential relations of RUO personality types on the clinical outcome variables.

Method. Data were collected from the Netherlands Study of Depression and Anxiety (NESDA), consisting of adults with depression and/or an anxiety disorder, and healthy controls. Participants were asked to complete measures of childhood maltreatment, anxiety symptoms and the Five Factor personality traits. The dimensional scores on the Five Factor were used to classify participants as resilient (n = 137), undercontrolled (n = 176), or overcontrolled (n = 227).

Results. Overcontrollers reported more childhood maltreatment and anxiety than undercontrollers or resilients. Results from regression analyses revealed the membership of a resilient or overcontrolled personality type, mediated the relationship between maltreatment and anxiety. No evidence was found for the undercontrolled personality type as mediator or predictor.

Conclusions. An overcontrolled personality type might serve as a factor of vulnerability. Patients who have this personality type might need more individualized treatment. However, more prospective research is needed in order to draw firm conclusions about clinical relevance.

Introduction

Childhood maltreatment encompasses all forms of parental neglect, as well as emotional, physical or sexual abuse that results in potential or actual harm. Self-report studies indicate that the lifetime prevalence among the general population is substantial, and range between 27% and 32% (Alink, 2011; Stoltenborgh, Bakermans-Kranenburg, Alink, & Van IJzendoorn, 2015). In the Netherlands approximately 70,000 cases of childhood maltreatment are reported each year (Jeugdzorg Nederland, 2014). A large body of evidence has shown that exposure to childhood maltreatment is a risk factor for the development of a number of mental health issues (Gilbert, Browne, Webb, & Janson, 2009). Regardless of the gender of the victim, maltreatment is associated with heightened stress responsiveness (Heim & Nemeroff, 2001), anxiety disorders (Cohen, Brown, & Smailes, 2001), depressive disorders (Miron & Orcutt, 2014), eating disorders (McCarthy-Jones & McCarthy-Jones, 2014) and substance abuse (Miller, Watts, & Jones, 2011). A significant relationship has been found between childhood maltreatment and the development of anxiety disorders, the most prominent of which being post-traumatic stress disorders (Heim & Nemeroff, 2011; Stein et al. 1996). Moreover, studies have shown that childhood maltreatment influences the clinical course of patients, as a history of child abuse predicts an earlier onset and a lower recovery rate of major depression and/or anxiety disorder among adults (Docter, Zeeck, Von Wietersheim, & Weiss, 2018; Hovens, Giltay, Hemert, & Penninx, 2016; Zlotnick, Matia, & Zimmerman, 2001).

Given the alarming rates of negative outcomes later in life, childhood maltreatment is a serious and prevalent public health issue. Therefore effective and specific treatment should be provided to victims. This requires a better understanding of the underlying psychological mechanism by which childhood maltreatment can coalesce in adult psychopathology. Barlow's (2000) 'triple vulnerability' theory postulates that maltreated children experience a pervasive sense of uncontrollability and unpredictability, adversely affecting the body's stress response systems. This contributes to the formation of maladaptive personality traits, which in turn, increase a person's vulnerability to anxiety disorder. This perspective is supported by recent findings of Spinhoven, Elzinga, Van Hemert, De Rooij, & Penninx (2015) in the Netherlands Study of Depression and Anxiety (NESDA). In this study, the authors examined the influence of childhood maltreatment and maladaptive personality types in the developmental paths of almost 3,000 adults. Childhood maltreatment severity was assessed as the number of experienced maltreatment types. Persons with maladaptive personalities were

identified as displaying a high level of neuroticism in combination with a low level of conscientiousness. As expected, participants who reported the most severe maltreatment also showed more pronounced maladaptive personality types in adulthood. In particular, emotional neglect and emotional abuse correlated with severely maladaptive personality types. Moreover, a strong correlation was found between childhood maltreatment severity and adult anxiety symptoms, and that this effect was mediated by maladaptive personality types.

This study expands upon previous NESDA research by exploring the potential mediating role of personality type on the link between childhood maltreatment, and adult anxiety symptoms. Three personality types are examined as possible mediators: the Resilient, Undercontrolled and Overcontrolled types (RUO). These three types are frequently revisited and employed as a model in personality research, however, were not investigated in the NESDA sample (Asendorpf, Borkenau, Ostendorpf, & Van Aken, 2001). Typologies such as the RUO place explicit focus on the within-person organization of personality traits. Many researchers believe this approach has more utility than examining personality traits separately (Daljeet, Bremner, Giammarco, Meyer, & Paunonen, 2017; Asendorpf, 2015; Cervone, 2005; Bennett & Hacker, 2003). For example, typological thinking can enhance more complex models about what kind of persons are at risk for particular problems and which are more likely to be adaptive (Magnusson, 1999). From a practical perspective, information about such individuality can lead to more individually designed treatment programs.

Block (2002) defined personality as an "affect processing system in which ego-resiliency is coupled with ego-control" (p. 33). Ego control refers to the individual's capacity to control impulses, emotions and desires (Block & Block 1980, Block, 2002). This capacity is crucial for achieving personal goals, such as forming meaningful relationships and performing well in employment. Ego resiliency is the ability to adapt to changing environmental demands and shift between different degrees of control. In general, individuals of the resilient personality type have a moderate level of ego-control and a high level of ego resiliency. Of the three personality types, the resilient is the most psychologically well-adjusted. (Isler, Fletcher, Liu, & Sibley, 2017). The overcontrolled personality type is characterized by low levels of ego-resiliency and high levels of ego control. Persons who are overcontrolled are prone to internalization, making them vulnerable to somatic complaints, anxiety and/or depression (Hale, Raaijmakers, Muris, Van Hoof, & Meeuws, 2009). A hallmark of undercontrollers is low levels of both ego-resiliency and ego control. They often

experience problems with self-regulation, and act on their impulses. The undercontrolled type has been linked to conduct problems, addiction and sensation seeking behavior (Asendorpf, Van Aken, & Diener, 1999; Block & Kremen, 1996; Oshri, Rogosch, & Cicchetti, 2013).

The RUO types showed to have a coherent relationship with the Five Factor model, the most widely accepted taxonomy of personality traits (Asendorph et al., 2001). The Five Factor measures personality in five scales: agreeableness, conscientiousness, neuroticism, extraversion and openness (McCrea & Costa, 1996). Results of Q-factor analyses revealed individuals of the resilient personality type have 'socially desirable' scores in all Five Factor trait scales, while overcontrolled types are introverted and neurotic, and undercontrolled types are unconscientious and disagreeable. Later research has been able to produce similar results in different populations (Akse et al., 2007; Schabel et al., 2002; Oshiri, Rogosch and Cicchetti, 2013). These results confirm previous notions of Block and Block (1980) that ego control and ego resiliency have a predictive and replicative power, and are linked to certain adaptive or maladaptive personality traits.

Few studies have examined RUO typology in the context of childhood maltreatment. Oshri and Rogosch (2013) repeatedly assessed maltreated and non-maltreated individuals from childhood into late adolescence. The authors concluded that maltreated children were more likely to develop overcontrolled or undercontrolled personality types than resilient types. More specifically, at the age of 20, the maltreated overcontrolled group showed the highest levels of internalized symptomatology, demonstrating symptoms of stress and anxiety. The undercontrolled individuals reported more anxiety symptoms than resilients, but less severe than overcontrollers. Another study on children of a much younger age (6-10 years), reached similar conclusions (Kim, Cicchetti, Rogosch, & Manly, 2009). Research data over 15 years, indicated that childhood maltreatment was a strong predictor for low ego resiliency. Moreover, a lower age of maltreatment exposure was related to more internalizing behavior. Taken together, the results suggest that there is a high risk of maltreated children developing compromised self-regulatory capacities, as is indicated by their personality profile.

Multiple studies have demonstrated that RUO types are differentially related to anxiety severity (Akse et al., 2007; De Fruyt, 2014). Meeus et al., (2011) studied the personality development of a large sample of adolescents, covering the ages 12 to 20 years. At baseline, participants who were labelled as overcontrolled reported higher scores of anxiety symptoms, than the participants of the resilient or undercontrolled type. At the 5 year

follow up 73,5% of the adolescents had the same personality profile (53,7 resilient, 3,4% undercontrolled, and 43,9% overcontrolled). Of the participants who changed profiles, most changed in direction of resiliency, thereby implying that a resilient personality type serves more often at the end of personality development than the other types. The authors also examined if the changes in personality type corresponded to changes in anxiety level. The transition towards a resilient personality was generally accompanied with a decrease of anxiety, whereas the opposite was true for the participants who became more overcontrolled[1]. These findings suggest, that the 'ego-control' aspect of personality is a significant factor in determining an individual's propensity for anxiety.

In summary, previous research has suggested that childhood maltreatment is a risk factor for later adult psychological maladjustment, causing deficits in the development of personality, including low ego resiliency and tendencies towards over- or undercontrol. Studies on adolescents have revealed that the overcontrolled type and transitions to overcontrolled type membership are positively related to anxiety. The undercontrolled personality is more frequently linked to externalizing problem behavior. Individuals with the resilient personality types are more likely to be psychologically well adapted in comparison to the other personality types.

The primary aim of the present research is to examine the potential mediating role of the RUO personality types as developmental precursors of adult anxiety symptoms in relation to childhood maltreatment. A secondary aim is to examine the differential relations of RUO personality types on clinical outcome variables. The focus is on anxiety severity since, as shown above, this is the key aspect in the different RUO personality type trajectories. Supporting research will be conducted on a large sample of Dutch adults with a baseline diagnosis of depressive and/or anxiety disorder, as well as a control sample of healthy individuals (NESDA). Results drawn from this study will contribute to the understanding of how childhood maltreatment manifests in adult personality organization and anxious symptomology. More importantly, studies of this nature can help to improve the treatment of maltreatment victims, as early interventions can focus on certain characteristics of personality that promote targeted mental health outcomes.

[1]The results of the overcontrolled-undercontrolled transition were inconclusive, since this group was too small (Meeus et al., 2001).

In the first part of the study the RUO personality types (resilient, undercontrolled, and overcontrolled) are compared on clinical outcomes variables. Therefore three groups are examined. Based on literature results, the following hypotheses are proposed:

(I) Participants assigned to the resilient group will report significantly less childhood maltreatment and will have a lower level of anxiety compared to participants in the other two groups.

(II) Participants assigned to the overcontrolled group will demonstrate significantly higher levels of anxiety compared to the undercontrolled group.

The second part of the study explores the mediating effects for each RUO personality type. The research question is:

> 'Is the link between maltreatment and anxiety mediated by the membership of a resilient, undercontrolled or overcontrolled personality type?'

Three mediation models are examined (conceptualized in Figure 1). Each model includes one personality type as mediator.

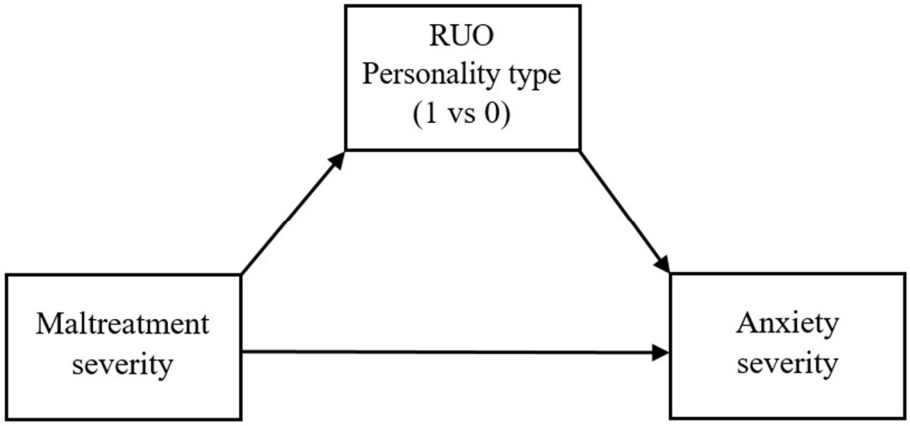

Figure 1. Conceptual mediation model. The effect of childhood maltreatment on anxiety severity, and the indirect effect through either a resilient, undercontrolled or overcontrolled personality type. Each personality type is tested as dichtomous outcome and will be dummy coded for being present (1) or not present (0).

Method

Design

The Netherlands Study of Depression and Anxiety (NESDA), is an ongoing eight-year multi-cohort design. NESDA investigates the long-term course and determinants of depressive and anxiety disorders in adults. The study is regarded as an overarching research base, and several projects use NESDA for data sampling. Currently, data taken over six years of research is available. More details of the NESDA study can be found in the first publication of the study's results (Penninx et al., 2008).

Sample

This study makes use of NESDA data from the two-year and four-year follow-up assessments. The participant flow is illustrated in Figure 2. The original sample consisted 2974 persons, of which 1,701 persons had a contemporary diagnosis of depression and/or anxiety disorder, 907 persons had a prior history of depression and/or anxiety disorder, as well as 373 healthy controls. Inclusion criteria for the first screening was (1) being aged between 20 and 65 years; and (2) being able to speak or read Dutch. Exclusion criteria were: (1) a primary clinical diagnosis of any other psychiatric disorder other than anxiety and/or depression, (2) missing data on any of the outcome variables. In total, 2136 participants matched these criteria.

In the second screening, the inclusion criteria for the identification of the RUO personality types were applied. Participants who did not fit any of the types were excluded (n = 1596). The final sample therefore consisted of 540 participants who were classified into one of the three RUO personality types, as shown in Table 4 and 5. A sample fit of 25.2% was found in the initial sample, corresponding with other RUO personality studies results where a sample fit of 23.5% to 43.3% was found (Rammstedt et al., 2004; Isler et al., 2017).

Procedure

The NESDA participants were recruited from the general population and from mental health organizations. The four-hour baseline assessment included written self-assessment questionnaires, a standardized diagnostic psychiatric interview, a medical examination and a cognitive computer task. Trained staff members of the clinical research department assessed the diagnostic interview. All interviews were taped and around 10% were randomly selected to monitor the behavior of the interviewers for any discrepancies in method. The assessments were repeated in two, four and six-year follow-ups (Penninx et al., 2008). NESDA was

approved by the Ethical Review Board of the VU University Medical Center and the Ethical Committee of the participating universities. Each participants was given a unique ID number, to be identified without using names. Only the principal investigator and the data manager had access to the identifiable information. All participants signed a written informed consent.

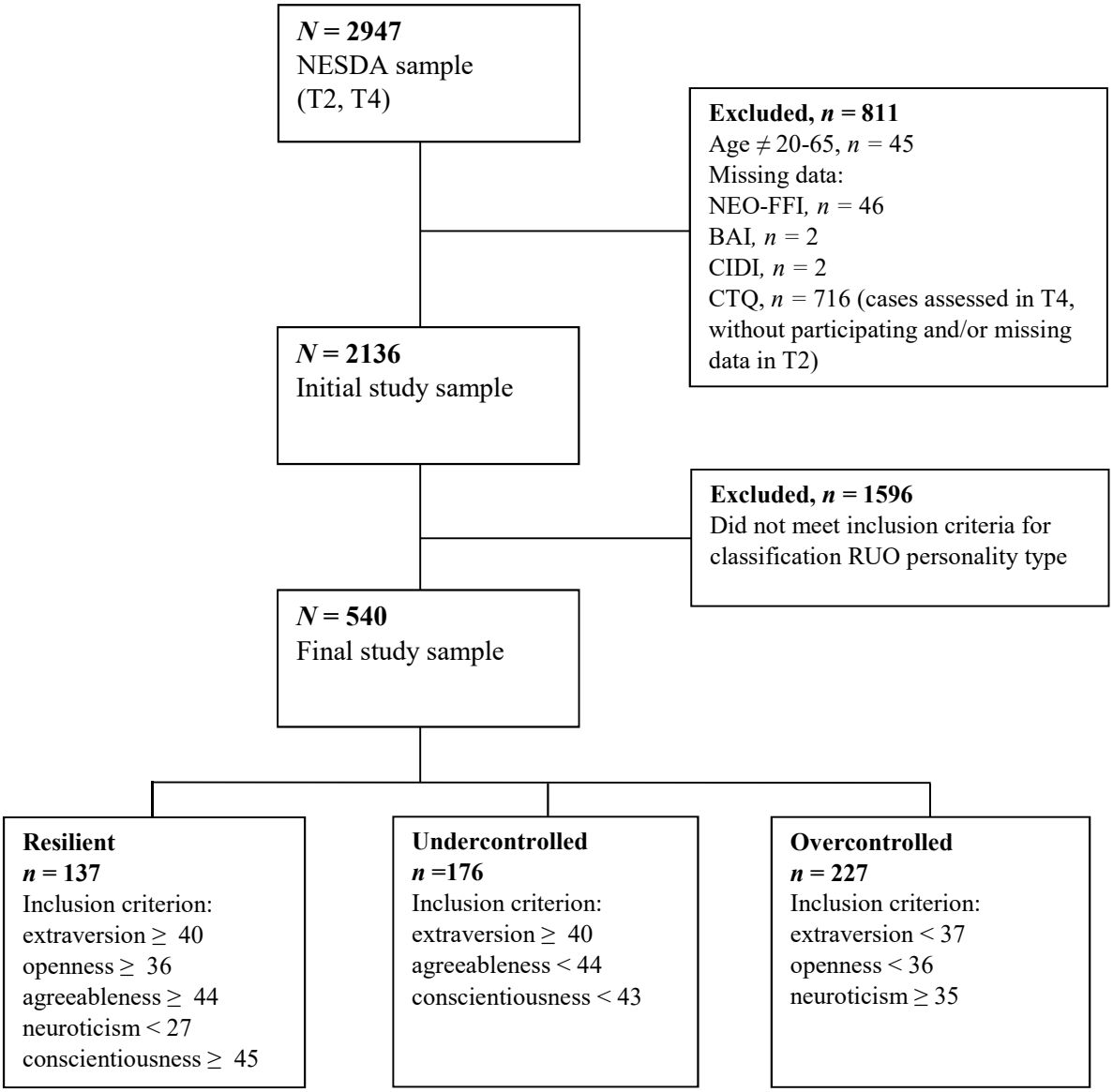

Figure 2. Participant flow chart, selection and reasons for exclusion. NESDA = Netherlands Study of Depression and Anxiety, RUO = Resilient, undercontrolled, overcontrolled personality type.
NEO-FFI = NEO Five-Factor Inventory, CTQ = Childhood Trauma Questionnaire, BAI = Beck Anxiety Inventory, CIDI = Composite International Diagnostic Interview.

Measures

The measures employed in the current study were assessed at T2 and T4 of the NESDA research.

Childhood maltreatment. Childhood maltreatment is retrospectively assessed by the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1997). The CTQ has been shown to possess a good test-retest validity (r =.80), and acceptable to very high (α = .43 to α =.93) internal consistency (Spinhoven et al., 2014). The convergent validity is sufficient, as it corresponds moderately with the scales of the Childhood Trauma Interview: Short Form (CTI-CF; Fink, Bernstein, Handelsman, Foote, & Lovejoy, 1995). The CTQ measures five categories of childhood maltreatment: physical abuse, physical neglect, emotional abuse, emotional neglect and sexual abuse. Physical abuse refers to bodily assault on a child by an older person that subsequently poses a risk to the child's wellbeing or sense or worth. Physical neglect is characterized as the failure of parents or caretakers to provide basic physical needs to the child, such as food, housing and safety. Emotional abuse refers to verbal assault or humiliating, threatening or demeaning behavior directed toward a child. Emotional neglect is the failure of caretakers to provide basic psychological and emotional needs, such as support, love, and encouragement. Sexual abuse refers to sexual contact or conduct between a child and an older person, including explicit coercion (Bernstein & Fink, 1997).

Each maltreatment type is measured by five items on a five-point Likert scale ranging from 1 (never true) to 5 (very often true). The total CTQ score is the sum of the five subscales (range 5 to 125). This score takes into account the severity of multiple forms of abuse and neglect. The higher the score is, the greater the severity of maltreatment. For descriptive statistics of the sample, each maltreatment type was also scored dichotomously as 'absent = 0' or 'present = 1'. To maximize the chances of detecting any maltreatment, the cut-off scores of the category "low to moderate" were used to score each type as present (Table 1, Bernstein & Fink, 1997). The low severity thresholds ranged a specificity of 79% to 89% cases correctly classified, whereas the moderate severity ranges from 49% -72% of correctly classified cases (Fink et al., 1995).

Table 1

Classification CTQ subscales scores and total severity scores

	None to minimal	Low to moderate	Moderate to severe	Severe to extreme
CM severity (total score)	< = 36	37 - 51	52 - 68	> = 69
Physical abuse	< = 7	8 - 9	10 - 12	> = 13
Physical neglect	< = 7	8 - 9	10 - 12	> = 13
Emotional abuse	< = 8	9 - 12	13 - 15	> = 16
Emotional neglect	< = 9	10 - 14	15 - 17	> = 18
Sexual abuse	< = 5	6 - 7	8 - 12	> = 13

Note. CM = childhood maltreatment, CTQ = Childhood Trauma Questionnaire (Bernstein & Fink, 1997).

Psychiatric diagnosis. The mental health status of participants was assessed with the Composite International Diagnostic Interview (CIDI) – life time version 2.1. The CIDI is a fully structured diagnostic interview for assessing psychiatric disorders according to DSM-IV and ICD-10 criteria. The test-retest reliability has been demonstrated to be good (reliability coefficient of .41), and the inter-rater reliability has been shown to be excellent (*kappa* = .90) (Wittchen, 1994). The classification accuracy of the clinical diagnoses ranges between 94% and 99% depending on the diagnosis (Andrews & Peters, 1998). The full CIDI takes over an hour to assess. All the interviews were done by trained mental health care professionals. The CIDI classifies diagnoses that were present in the past month, in the past six months and at any given moment in the participant's life. This study limits the window to diagnoses obtained in the previous six months to assure present symptomatology. The results were drawn in one nominal variable with three categories: diagnosis for anxiety disorder, depressive disorder or co-morbid anxiety-depression.

Anxiety symptoms. The Beck Anxiety Inventory was used to measure the occurrence and the severity of anxiety symptoms (BAI; Beck, Epstein, Brown, & Steer, 1988). The BAI has strong internal consistency ($\alpha = .91$, $k = 61$, $N = 18{,}015$) and a test–retest reliability coefficient of .75 (Beck et al., 1988). The BAI questionnaire is generally used to measure anxiety while minimizing overlap with depression. Previous NESDA research has shown that this instrument is suitable as a severity indicator of anxiety in patients with different anxiety disorders (Muntingh et al., 2011). The BAI is a self-report measurement

consisting of 21-items. Participants rated how much they were bothered by each symptom during the past week (e.g. inability to relax, nervousness, dizziness). Answers are scored on a four-point Likert scale: ranging from 0 (not at all) to 3 (severely). Scoring is accomplished by totaling the scores for all items. Norms for the interpretation of scores are: 0–9: normal or no anxiety; 10–18: mild to moderate anxiety; 19–29: moderate to severe anxiety; and 30–63: severe anxiety. The total score ranges from 0–63, and is executed as one continuous variable in the statistical analyses.

Five Factor personality traits. The Five-Factor personality traits were measured with the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992). The NEO-FFI consists of 60 items measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Each personality trait is covered by 12-items, offering a subscale score (Körner et al., 2015). The original NESDA sample scored high for internal consistency in Cronbach's alphas: neuroticism (.75), extraversion (.75), agreeableness (.83), conscientiousness (.78) and openness to experience (.72) (Spinhoven et al., 2016). The dimension sum score of each subscale was used for the statistical analyses, as operated as one continuous variable for each trait.

Derivation of the RUO personality types. On basis of their Five Factor trait scores, participants were classified into one of the three personality types: resilient, undercontrolled and overcontrolled. Previous studies identified these means on Five Factor trait scales for each of the personality types, making replication possible (Isler et al., 2017; Rammstedt, Riemann, Angleitner, & Borkenau, 2004; Block & Block, 1980). Resilients were found to have low scores in neuroticism and above average scores on the other traits. Overcontrollers have low scores in extraversion, high scores in neuroticism and average scores on the other traits. Undercontrollers are characterized by low scores on agreeableness and consciousness and average scores on the other traits (see Figure 3). The normal distribution of the Five-factor traits have been based on the values provided by the NEO-FFI measurement manual (Hoekstra, Ormel, & De Fruyt, 2014, Table 2). Z-scores ranging from 0.5 to 0.5 are identified as average, and z-scores lower than -0.5 or higher than 0.5 are classified as low or high scores respectively. In addition, the classification raw scores are calculated for each trait (Table 3). As the three personality types are mutually exclusive, double classifications did not occur.

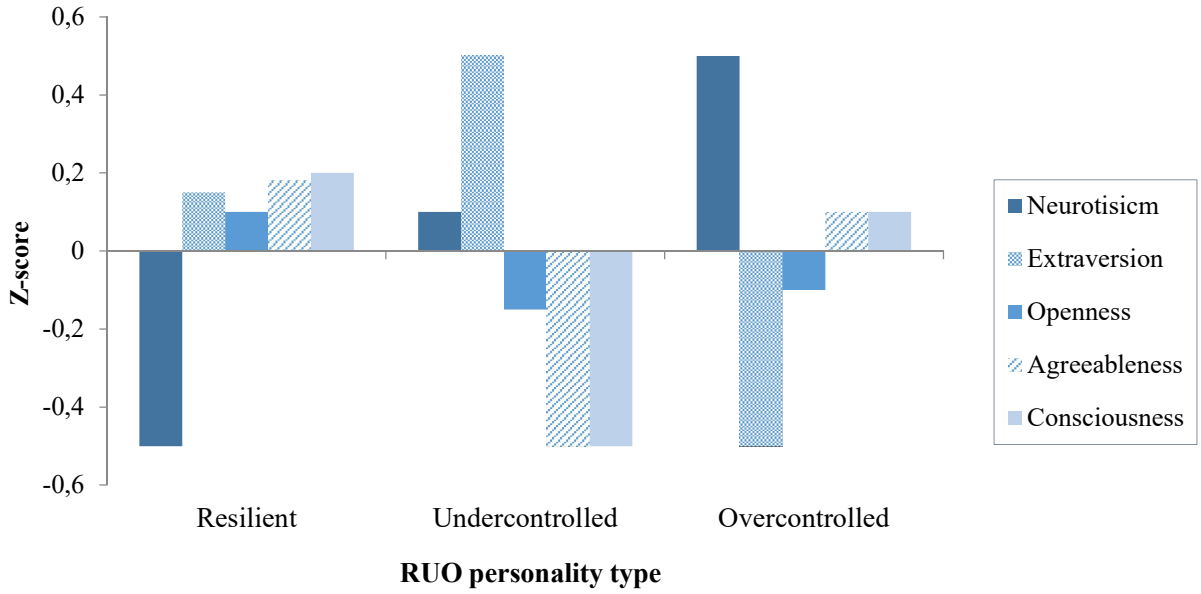

Figure 3. Prototypes of the resilient, undercontrolled and overcontrolled personality. The types are expressed in *z* scores on the Five-factor personality traits (NEO-FFI). Based on ten studies (e.g. cluster analyses, Q-factor analyses). Adapted from "Resilients, Overcontrollers, and Undercontrollers: The replicability of the three personality prototypes across informants," by B. Rammstedt, R., Riemann, A., Angleitner, and P. Borkenau, 2004, *European Journal of Personality, 18*, p. 3).

Table 2

NEO-FFI Five-factor personality traits, norms and normal-distribution

Personality trait	*M* (*SD*)	Low score $z < -0.5$	Normal score $-0.5 \leq z < 0.5$	High score $z \geq 0.5$
Extraversion	40.1 (6.6)	12.0 – 36.8	36.8 – 43.4	43.4 – 60
Openness	35.9 (6.4)	12.0 – 32.7	32.7 – 39.2	39.2 – 60
Agreeableness	44.1 (5.2)	12.0 – 41.5	41.5 – 46.7	46.7 – 60
Neuroticism	31.1 (8.2)	12.0 – 27.0	27.0 – 35.2	35.2 – 60
Conscientiousness	45.3 (5.6)	12.0 – 42.7	42.7 – 48.1	48.1 – 60

Note. M = mean, *SD* = standard deviation. Standardization and absolute score classification based on norms of the general population (Hoekstra, Ormen, & De Fruyt, 2014).

Table 3

Classification of the RUO personality types in absolute scores

Personality trait	Resilient	Undercontrolled	Overcontrolled
Extraversion	≥ 40	≥ 40	< 37
Openness	≥ 36	-	< 36
Agreeableness	≥ 44	< 44	-
Neuroticism	< 27	-	≥ 35
Conscientiousness	≥ 45	< 43	-

Note. The RUO personality prototypes expressed in absolute scores on the Five Factor personality traits (NEO-FFI), based on the *z* scores of Table 1.

Statistical analysis

The analyses were run in IBM SPSS Statistics version 23.0 (SPSS Inc., Chicago, IL). A significance level of $p < .05$ was applied to all tests. First, the assumptions and distribution of the variables were examined. A scatter plot was used to visually inspect if the residuals were equal across the regression line. The normality of distribution was examined with a histogram and Q-Q-plot. Skewed or kurtotic distributions were addressed. Multicollinearity was assessed using tolerance and the Variance Inflation Factor (VIF). The linearity assumption was also tested with scatterplots. In addition, the data were screened for outliers and erroneous values.

The RUO types were constructed of the Five Factor traits by using the SPSS function 'Recode into different variables' and 'Include if case satisfies condition'. The types were computed as one categorical variable with three levels: resilients, undercontrolled, and overcontrolled. For the mediation analyses, the categorical RUO variable has been recoded into three binary variables. Each personality type was represented by its own dummy variable with the values: 1 = present, 0 = not present.

Hypothesis I and II are tested by a series of ANOVAs and pairwise comparisons. Welch ANOVA is run instead of the classic one-way ANOVA, and a Games-Howell test instead of a Tukey post hoc test. The mediating effects of the RUO types are examined in multiple mediation models, each model testing one personality type as mediator. The predictor

maltreatment and outcome variable *anxiety severity*, are both continuous, whereas *personality type* is a categorical variable. Since SPSS does not accept categorical or nominal mediators, an elegant solution needed to be found. By using a combination of regression (c-path and b-path) and logistic regression analyses (a-path) all the components for mediation were derived (Iabucci, 2012). Evidently the RUO types needed to be binary coded to fit the logistic regression analyses. After the SPSS regression analyses the coefficients of the logistic and linear regression were weighted according the procedure of MacKinnon and Dwyer (1993). These calculations were executed in a Microsoft Excel spreadsheet. The 'weighting' made it possible to compare the coefficients across the regression line, and compute the (in)direct effects according the product of coefficients method of Baron and Kenny (1986). Finally, the significance of the indirect effect was tested by Aroian test. Sobel test assumes very small standard errors, which are not present in the current dataset (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). A similar approach of dummy coded mediators (i.e., personality type membership) has been demonstrated before in a study of Chapman and Goldberg (2011).

Power analysis. The statistical power of mediation is dependent on the effect size of the indirect effect (a x b), the standard deviation of the error terms and the sample size (Schoemann, Boulton, & Short, 2017). An *a priori* power calculation of mediation is not made, since too many specific speculations were needed. However, a meta-analysis of mediation studies indicated that approximately 400 participants would have been sufficient to obtain power at the recommended .80 level (Fritz & MacKinnon, 2007). After the final analyses a *post-hoc* power analysis was run by 'PowerMediation' (Qiu, 2018; R, R-Development Core Team; 2000).

Results

Assumptions

The outcome scores for the Big Five personality traits were normally distributed, as was assessed by the visual inspection of scatterplots. The childhood maltreatment and anxiety variables were slightly skewed to the right. This implies that there are more participants with extreme low scores than there are with extreme high scores. Skewness was between .45 and 1.77, and kurtosis between 1.7 and 4.3, which is acceptable (Hair, Black, Babin, & Anderson, 2010). There was no multicollinearity in the main outcome variables. The VIF for each outcome variable varied from 1.00 to 2.31 and was below the cut-off criterion of 2.5. The homogeneity of variances was violated: Levene's test for equality of variance was significant for all main outcome variables. A Welch's ANOVA was therefore run to correct for unequal group variances, as well as a Games-Howell test instead of a Tukey post hoc test (Kulinskaya, Staudte, & Gao, 2003). Effect size was measured by Hedges' *g*, as Hedges uses pooled 'weighted' standard deviations, in contrary to Cohen's *d* (Hedges, 1981).

The data was also screened for measurement errors and extreme scores. Several outliers beyond the 3.29 standard deviations from the mean were detected. There were 27 outliers for all CMQ variables and 6 outliers for the BAI measurement. After close examination it was decided that the values were in the normal range, and that there was no compelling reason to remove them. Instead, post-hoc analyses were run excluding the cases that were labeled as outliers.

Classification final sample

The final sample comprised 540 participants: 25% had resilient personality profiles, 33% had undercontrolled profiles, and 42% had overcontrolled profiles (Table 4). Via a meta-analysis of a number of studies, Asendorpf and colleagues (2001) finds the average distribution of each profile to be: 49% resilient, 28% undercontrolled and 23% overcontrolled. A chi-square 'goodness of fit' test indicates that the distribution of the current NESDA sample significantly differed with the results of aforementioned research, χ^2 ($df = 2$, $N = 540$) = 150, $p < .001$, Cramer's V= 0.53. The overcontrolled personality type is overrepresented (observed $n = 227$, expected $n = 103$) and the resilient personality is underrepresented (observed $n = 137$, expected $n = 264$).

Table 4

Sociodemographic characteristics according to RUO personality profile status

Variable	Total *N* = 540	Resilient *n* = 137	Undercontrolled *n* = 176	Overcontrolled *n* = 227
Age in years, *mean* (SD)	43.49 (12.9)	44.2 (12.7)	43.31 (13.8)	44.76 (12.0)
Sex, *n* (%)				
Female	356 (65.9)	97 (70.8)	107 (60.8)	152 (67.0)
Male	184 (34.1)	40 (29.2)	69 (39.2)	75 (33.0)
Education level, *n* (%)				
High school or less	174 (32.2)	16 (11.7)	61 (34.7)	97 (42.7)
General secondary education	175 (32.4)	37 (27.0)	56 (31.8)	82 (36.1)
Higher vocational education	117 (21.7)	47 (34.3)	40 (22.7)	30 (13.2)
College or university	74 (13.7)	37 (27.0)	19 (10.8)	18 (17.9)
Big Five traits (NEO-FFI), *mean* (SD)				
Neuroticism	35.0 (10.4)	20.7 (3.8)	35.6 (6.7)	43.2 (4.8)
Extraversion	37.5 (8.0)	46.6 (3.4)	40.5 (3.2)	29.6 (4.3)
Openness	35.7 (5.4)	40.8 (3.6)	37.2 (4.9)	31.6 (3.1)
Agreeableness	43.4 (5.3)	49.3 (3.1)	40.6 (3.1)	41.9 (5.0)
Conscientiousness	41.2 (6.8)	49.5 (3.1)	38.1 (3.5)	38.5 (6.1)

Note. NEO-FFI = NEO Five Factor Inventory, RUO = Resilient, overcontrolled and undercontrolled personality type, education level = highest completed education. All values represent, raw, unstandardized scores.

Sample characteristics

The sociodemographic characteristics shown in Table 3 and are categorized according to personality type. Most participants of the sample were women (65.9%), and the mean age was 43.49 years (*SD* = 12.9). Among women, 27.2% were resilient, 30.1% overcontrolled and 42.7% undercontrolled. Among men the percentages respectively were, 21.7%, 37.5% and 40.8%. Participants assigned to the resilient group reported the highest level of education: more than half (63.3%) reported a higher education or university degree, in contrast to the overcontrollers where only one third (31.1%) had finished college or university.

Table 5

Clinical outcome variables, frequencies psychiatric diagnosis and childhood maltreatment status

Variable	Total *N* = 540	Resilient *n* = 137	Undercontrolled *n* = 176	Overcontrolled *n* = 227
Psychiatric diagnosis (CIDI)				
Depressive disorder, *n* (%)	164 (30.4)	6 (4.4)	40 (22.7)	118 (52.0)
Anxiety disorder, *n* (%)	178 (32.9)	2 (1.5)	61 (34.7)	115 (50.7)
Comorbid dep./anx., *n* (%)	104 (19.3)	2 (1.5)	26 (14.8)	76 (33.5)
Childhood maltreatment status (CTQ)				
Physical abuse, *n* (%)	68 (12.6)	11 (8.0)	23 (13.1)	34 (15.0)
Physical neglect, *n* (%)	216 (40.0)	43 (31.4)	70 (39.8)	103 (45.4)
Emotional neglect, *n* (%)	362 (67.0)	56 (40.9)	119 (67.6)	187 (82.4)
Emotional abuse, *n* (%)	219 (40.6)	27 (29.7)	76 (43.2)	116 (51.1)
Sexual abuse, *n* (%)	114 (21.1)	23 (16.8)	39 (22.2)	52 (22.9)
Any form of maltreatment, *n* (%)	434 (80.4)	87 (63.5)	141 (80.1)	206 (90.7)

Note. CIDI = Composite International Diagnostic Interview, CTQ = Childhood Trauma Questionnaire, Comorbid dep.anx. = reported depressive and anxiety disorder. Norms for maltreatment severity classes are summarized in Table 1. All values represent, raw, unstandardized scores.

Table 5 constitutes the clinical outcome variables of the total sample and the three groups. The outcome measurements show pronounced differences between the participants when grouped to personality type. Of the total sample, 32.9% have been diagnosed with anxiety disorder, with the highest prevalence in the overcontrolled group (50.7%), the lowest prevalence in the resilient group (1.5%) and 34.7% in the undercontrolled group. The majority of the sample (80.4%) reported at least one type of childhood maltreatment. Emotional neglect was most frequently reported (n = 362, 76%) followed by emotional abuse (40.6%) and physical neglect (40.0%).

Table 6 reports the mean scores of the clinical outcome variables of the sample. The average childhood maltreatment severity score was M = 41.20 (SD = 14.43), classified by the CTQ norms as low to moderate maltreatment severity. Resilient personality types reported the lowest severity, M = 35.15 (SD = 13.36) (none to low range), while overcontrollers reported

the highest severity, *M* = 44.97 (SD = 14.69) (low to moderate range). Undercontrollers were also classified in the category of low to moderate severity, but at the low end of the scale, *M* = 41.04 (*SD* =13.29). On the BAI, the sample has a mean score of *M* = 9.68 (mild anxiety). According to the BAI norms, the resilient group scores are normal (non-clinical range *M* = 2.12), the undercontrolled group reported mild anxiety (*M* = 8.85) and the overcontrolled reported moderate anxiety (*M* = 14.89). Whether these results represent a significant difference, will be analyzed with a series of ANOVAs.

Table 6

Outcome variables anxiety severity level and childhood maltreatment score (mean and SD)

Variable	Total *M (SD)*	Resilient *M (SD)*	Undercontrolled *M (SD)*	Overcontrolled *M (SD)*
Anxiety (BAI)	9.68 (9.48)	2.12 (2.61)	8.85 (8.57)	14.89 (9.52)
Childhood maltreatment (CTQ)				
Maltreatment severity (total score)	41.20 (14.43)	35.15 (13.36)	41.04 (13.29)	44.97 (14.69)
Physical abuse	6.08 (2.94)	5.79 (3.02)	6.08 (2.69)	6.26 (3.07)
Physical neglect	7.59 (2.83)	6.79 (2.58)	7.68 (2.81)	8.01 (2.89)
Emotional neglect	12.57 (5.30)	9.52 (4.46)	12.39 (5.13)	14.56 (5.01)
Emotional abuse	8.78 (4.46)	7.22 (3.86)	8.84 (4.32)	9.68 (4.66)
Sexual abuse	6.18 (3.41)	5.83 (2.76)	6.05 (2.89)	6.48 (4.05)

Note. BAI = Beck Anxiety Inventory, CTQ = Childhood Trauma Questionnaire, Comorbid dep.anx. = Diagnosed depressive and anxiety disorder. All values represent, raw, unstandardized scores.

Outcome differences across the three RUO personality types

A series of ANOVAs were performed in order to determine whether the RUO personality groups differed in mean anxiety level. Additionally, pairwise comparisons were made with planned contrasts that did not assume equal variances between groups. The mean scores are addressed in Table 6, while Table 7 summarizes between-profile differences and the probability of each outcome. For clinical meaningfulness of these differences, effect size is also reported.

According to RUO personality type, the participants differed significantly on almost

all of the outcome measurements, except on the subscales sexual abuse and physical abuse. The most significant differences were found in the comparison of the overcontrolled and resilient group.

Hypothesis (I) Participants assigned to the resilient group will report significantly less childhood maltreatment, and have a lower outcome in anxiety severity

Consistent with the hypothesis stated earlier, planned contrast tests showed that resilient personalities reported a significantly lower level of childhood maltreatment severity (M = 35.15, SD = 13.36) compared to both overcontrollers (M = 44.97, SD = 14.69), $t(291) = 3.880$, $p < .001$ and undercontrollers (M = 41.04, SD = 13.29), $t(308) = 6.547$, $p < .001$. The differences between the resilient and overcontrolled individuals reflected a medium effect size (g = .69), whereas the mean differences between resilient and undercontrolled reflected a small effect size (.44). Concerning specific types of childhood maltreatment, resilients reported significantly less physical neglect (M = 6.79, SD = 2.58), emotional neglect (M = 9.52, SD = 4.46) and emotional abuse (M = 7.22, SD = 3.86). Furthermore the level of anxiety was significantly lower in the resilient group (M = 2.12, SD = 2.61), compared to the overcontrolled (M = 14.89, SD = 9.52), $t(278) = 19.057$, $p < .001$) and undercontrolled group (M = 8.85, SD = 8.57), $t(215) = 9.857$, $p < .001$). The effect size was very large for anxiety differences between the resilient and overcontrolled (g = 1.66), and large for the comparison of resilient and undercontrolled (g = 1.01).

Hypothesis (II) Participants of the overcontrolled personality type will demonstrate significantly higher levels of anxiety compared to the undercontrolled participants.

As predicted, planned contrast tests showed that participants of the overcontrolled profile reported significantly more anxiety (M = 14.89, SD = 9.52) than those of the undercontrolled profile (M = 8.85, SD = 8.57), $t(392) = 6.668$, $p < .001$, g = .66). It is worth noting that overcontrolled personality types also had significantly higher scores of childhood maltreatment severity (M = 44.97, SD = 14.69) than undercontrollers (M = 41.04, SD = 13.29), $t(391) = 2.814$, p = .005, g = .28). Concerning the specific type of maltreatment, the two groups only differed significantly on emotional neglect: with higher means for overcontrollers (M = 14.56, SD = 5.01), than undercontrollers (M = 12.39, SD = 5.13), $t(371) = 4.245$, $p < .001$, g = .43).

Table 7

Welch's ANOVA contrasting RUO types on outcome measurements.

Outcome variables	M diff.	CI 95%	*T*	*DF*	*P*	Hedges'*g*
		Undercontrolled – Resilient				
Anxiety severity (BAI)	6.74	[4.60, 8.87]	9.856	215	<.001	1.01
Childhood maltreatment (CTQ)						
Maltreatment severity (tot. score)	5.89	[2.32, 9.47]	3.880	291	<.001	.44
Physical abuse	.29	[-.50, 1.08]	.888	275	.376	.10
Physical neglect	.89	[.17, 1.61]	2.920	302	.004	.33
Emotional neglect	2.87	[1.59, 4.15]	5.293	307	<.001	.59
Emotional abuse	1.61	[.53, 2.71]	3.489	305	.001	.39
Sexual abuse	.22	[-.54, .98]	.682	298	.496	.08
		Overcontrolled – Resilient				
Anxiety severity (BAI)	12.77	[10.61, 14.94]	19.057	278	<.001	1.66
Childhood maltreatment (CTQ)						
Maltreatment severity (tot. score)	9.83	[6.75, 12.46]	6.547	308	<.001	.69
Physical abuse	.47	[-.23, 1.07]	1.421	291	.165	.15
Physical neglect	1.21	[.62, 1.74]	4.136	312	<.001	.44
Emotional neglect	5.04	[4.05, 6.00]	9.965	312	<.001	1.05
Emotional abuse	2.46	[1.53, 3.31]	5.451	327	<.001	.56
Sexual abuse	.65	[-.08, 1.34]	1.810	356	.071	.18
		Overcontrolled – Undercontrolled				
Anxiety severity (BAI)	6.04	[4.27, 7.76]	6.668	392	<.001	.66
Childhood maltreatment (CTQ)						
Maltreatment severity (tot. score)	3.93	[1.22, 6.76]	2.814	391	.005	.28
Physical abuse	.18	[-.43, .74]	.611	394	.542	.06
Physical neglect	.32	[-.25. .89]	1.112	381	.267	.12
Emotional neglect	2.16	[1.11, 3.16]	4.245	371	<.001	.43
Emotional abuse	.85	[.00, 1.84]	1.888	388	.060	.19
Sexual abuse	.43	[-.24, 1.10]	1.240	398	.216	.12

Note. The analyses were run with Games-Howell correction. *T* = independent t-test value of planned contrasts, *M diff* = mean difference in raw scores, *P* = significance value of planned contrasts, CI = confidence interval, BAI = Beck Anxiety Inventory, CTQ = Childhood Trauma Questionnaire.

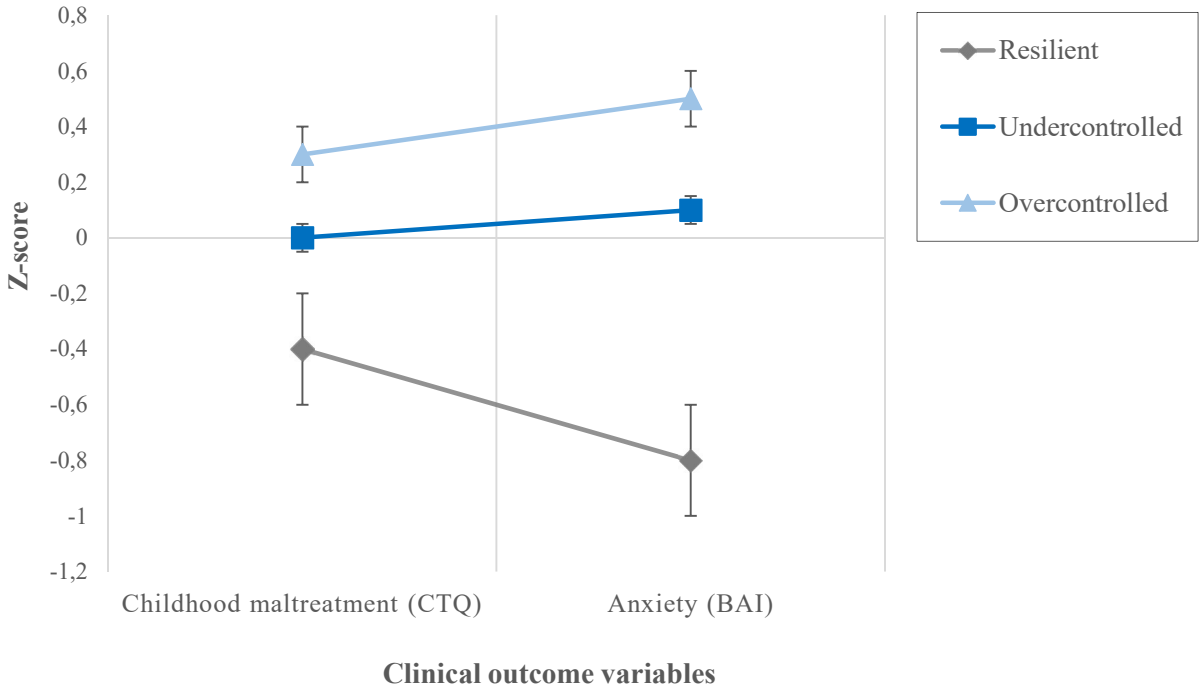

Figure 4. Mean differences of RUO personality groups in standardized scores. Childhood maltreatment is measured retrospectively and indicates the total score on the Childhood Trauma Questionnaire, Anxiety indicates the level of anxiety symptoms measured by the Beck Anxiety Inventory, (NESDA sample, $N = 540$).

Mediation analyses

Multiple mediation analyses were performed, examining the effects of childhood maltreatment on anxiety through the membership of an resilient, undercontrolled or overcontrolled personality type. Personality type membership is represented by a binary dummy variable. Meaning that the presence of each personality type (value 1) is contrasted against all others (value 0). Results are listed in Table 8, Figure 5 and 6. All childhood maltreatment variables had a significant, positive direct effect on anxiety severity (c' path, Tabel 8).

Tabel 8

Results of multiple mediation analyses, examining the effect of childhood maltreatment (IV) on anxiety outcomes (DV) through RUO personality type membership (M)

Childhood Maltreatment	Effect of IV on M (a)	Effect of M on DV (b)	Direct effect (c') of IV on DV	Indirect effect (a x b) of IV on DV	[95% CI]
	Mediator: Resilient (1 vs. 0)				
CM severity (tot. score)	-.437 (.079)**	-.756 (.069)**	.397 (.069)**	.330**	[.185, .475]
Physical abuse	-.087 (.066)	-.851 (.070)**	.338 (.070)**	.074	[-.059, .207]
Physical neglect	-.249 (.067)**	-.859 (.074)**	.241 (.074)*	.214**	[.077, .351]
Emotional neglect	-.474 (.064)**	-.805 (.077)*	.268 (.077)**	.381**	[.244, .581]
Emotional abuse	-.330 (.072)**	-.760 (.068)**	.415 (.068)**	.250**	[.113, .387]
Sexual abuse	-.088 (.065)	-.882 (.073)**	.246 (.073)**	.078	[-.057, .213]
	Mediator: Undercontrolled (1 vs. 0)				
CM severity (tot. score)	-.008 (.048)	-.156 (.109)	.844 (.110)**	.001	[-.153, .155]
Physical abuse	.000 (.050)	-.211 (.146)	.718 (.146)**	.000	[-.192, .192]
Physical neglect	-.027 (.050)	-.231 (.149)	.705 (.149)**	.006	[-.189, .201]
Emotional neglect	-.030 (.052)	-.154 (.119)	.811 (.121)**	.005	[-.163, .173]
Emotional abuse	.010 (.052)	-.170 (.109)	.843 (.110)**	-.002	[-.160, .156]
Sexual abuse	-.032 (.053)	-.225 (.168)	.607 (.168)**	.007	[-.209, .224]
	Mediator: Overcontrolled (1 vs. 0)				
CM severity (tot. score)	.254 (.054)**	.759 (.069)**	.406 (.069)**	.193**	[.073, .314]
Physical abuse	.057 (.047)	.853 (.069)**	.342 (.069)**	.048	[-.066, .162]
Physical neglect	.138 (.048)*	.859 (.072)**	.270 (.072)**	.118**	[-.005, .241]
Emotional neglect	.355 (.049)**	.805 (.076)**	.277 (.076)**	.286**	[.163, 409]
Emotional abuse	.191 (.048)**	.764 (.067)**	.431 (.066)**	.146**	[.033, .259]
Sexual abuse	.084 (.049)	.884 (.073)**	.230 (.073)*	.074	[-.045, .194]

Note. B-coefficients and standard error. IV = independent variable, M = mediator, DV = dependent variable. The logistic and linear regression coefficients have been weighted according the method of MacKinnon and Dwyer (1993). Binary dummy coding was used for the mediating variables (1 = personality type present, 0 = personality type is not present/other types). CM = childhood maltreatment. CTQ = Childhood Trauma questionnaire, BAI = Beck Anxiety Inventory. The significance of the indirect effect (a x b) was tested by an Aroian test.

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

Is the link between maltreatment and anxiety mediated by the membership of a resilient, undercontrolled or overcontrolled personality type?

Figure 5 represents the results for childhood maltreatment severity as mediated by the membership of an resilient personality type. The results showed that a resilient personality type has a significant negative effect on anxiety outcome (B = -.757, p <.001). The effect of childhood maltreatment on anxiety remained significant after accounting for the mediating effect of resilient personality (B = .396, p <.001). This means there is a partial mediating effect, (B =.330, p <.001). The mediator could account for approximately a third of the total effect, P_m = .386. The indirect effects (*a x b path*) through resilient personality type were also significant for the predictors physical neglect (B = .214, p <.001), emotional neglect (B = .381, p <.001) and emotional abuse (B =.250, p <.001), all presented in Table 8.

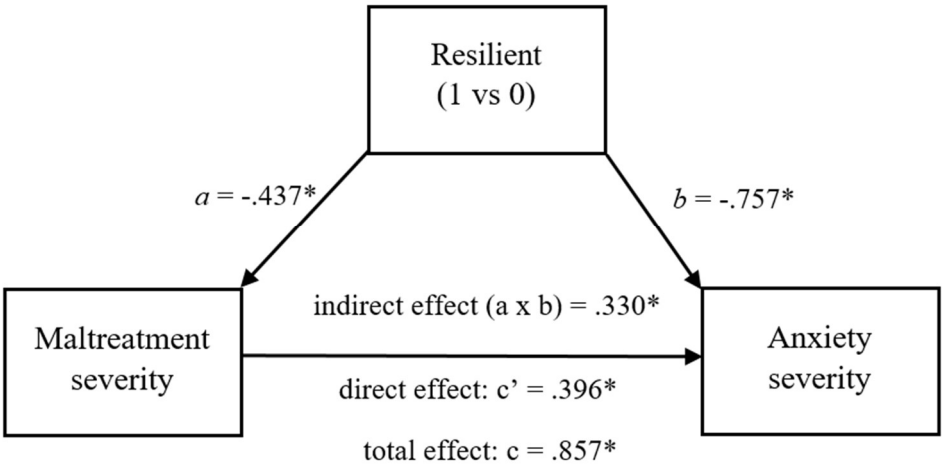

Figure 5. Mediation analysis of the resilient personality type. *B*-coefficients. There was a significant indirect effect of childhood maltreatment severity on anxiety severity through resilient personality, P_m = .386. * p <.001

Figure 6 represents the mediation model for childhood maltreatment severity as mediated by the overcontrolled personality type. The overcontrolled personality has a significant positive effect on anxiety outcome (B = .759 p <.001). The effect of childhood maltreatment on anxiety, both through the pathway of the overcontrolled type and after parceling out that effect, were substantial, suggesting partial mediation. The mediator could account for roughly a quarter of the total effect, P_m = .225. Membership of the overcontrolled type also showed to be a significant, partial mediator for: physical neglect (B = .118, p <.001), emotional neglect (B = .286, p <.001) and emotional abuse (B = .146, p <.001), all depicted in Table 8.

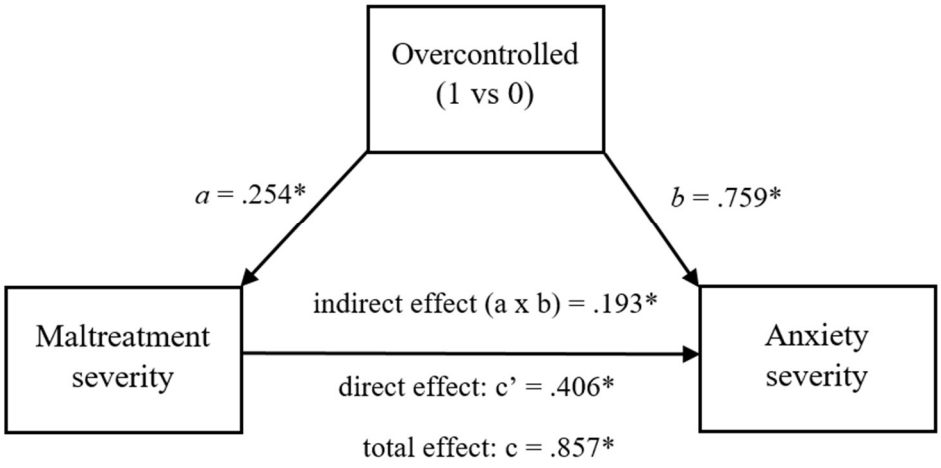

Figure 6. Mediation analysis of the Overcontrolled personality type. *B*-coefficients. There was a significant indirect effect of childhood maltreatment severity on anxiety severity through an overcontrolled personality, P_m = .225. * p <.001

No significant effects were found for the undercontrolled personality type as outcome (*a path*), predictor (*b path*) or mediating variable (*a x b path*). The membership of the overcontrolled and resilient personality type were shown to be partially explaining the effect between childhood maltreatment severity and anxiety.

Post hoc analyses

Additional analyses. First of all, additional analyses were made to examine the effect of the outliers in the current data set. The analyses revealed similar results when outliers were excluded. Second, due to the heterogeneity of the three groups, post-hoc analyses were made to screen for confounding variables. The variables ‘’sex’, ‘age’, and ‘’education level’, were attributed to the regressions model (output not presented). None of the variables significantly contributed to the total effect of the model.

Power analysis. In the current study, a reasonable variance in power levels has been observed for different variables, depending on their standard deviations, and sizes of the relationships with the mediator. The effect of childhood maltreatment severity on anxiety severity as mediated by the resilient personality type, yielding a statistical power of .98. The same pathway, as mediated by the undercontrolled personality type showed a power of .05 and by overcontrolled personality type assessed a power of .81.

Discussion

The aim of this study was twofold. First it was examined if RUO personality types differed in clinical outcomes variables. Three groups (resilient, undercontrolled, and overcontrolled) were compared on the level of childhood maltreatment and adult anxiety. As predicted, participants of the resilient type reported less childhood maltreatment and anxiety compared to the participants of the overcontrolled and undercontrolled type. Furthermore, the overcontrollers demonstrated the worst clinical outcomes as they reported the most maltreatment and anxiety.

The second purpose was to explore if the membership of a resilient, undercontrolled or overcontrolled personality type mediated the relationship between childhood maltreatment and anxiety. Results from regression analyses revealed the overcontrolled and resilient personality type as partial mediators. This indicates that the effect of childhood maltreatment on later anxiety symptoms might be partially explained by the influence of a resilient or overcontrolled personality type. No effects were found for the undercontrolled personality type as mediator or predictor.

Clinical outcomes differences RUO types

Previous research concluded maltreated children are more likely to develop an overcontrolled or undercontrolled personality type (Kim et al., 2009, Oshri & Rogosch, 2013). This was also hypothesized and partially confirmed in the current study. Resilients experienced significantly less physical neglect, emotional neglect and emotional abuse than overcontrollers and undercontrollers. The latter groups only differed significantly on emotional neglect, with the better clinical outcome for undercontrollers.

Noteworthy is that the prevalence of childhood maltreatment in the current sample, is higher than the prevalence among the general Dutch population (Alink, 2011; Stoltenborgh, et al. 2015). The majority of the participants (80%), reported at least one form of maltreatment. One could argue this is due to the clinical sample and the well-established relationship between childhood maltreatment and psychopathology. Another reason might be this study classified the presence of maltreatment with a low threshold (i.e. high sensitivity), thereby increasing the chance for false positives (Fink et al., 1995).

As described in the theoretical framework, the overcontrolled and undercontrolled personality types are generally associated with problematic outcomes (Hale et al., 2009). In general, overcontrollers are sensitive to internalizing problems, consequently

experiencing more anxiety (Hale et al., 2009). This was also supported by the current findings. The overcontrolled participants reported the most anxiety, especially when compared to resilients the effect size was substantial. It is not surprising these two personality types were the most distinctive. Overcontrollers are characterized by high levels of neuroticism whereas resilients have low scores on this trait. High neuroticism has frequently been linked to the development of anxiety symptoms (Asendorph et al., 2001, Hale et al., 2009). As expected, the undercontrollers reported less anxiety than overcontrollers. This can be explained by the fact that undercontrollers are more expressive and comfortable with uncertainty than overcontrollers (Oshri, 2013). Another reason might be that anxiety has a strong internalizing nature, while undercontrollers suffer mostly from externalizing pathology (Akse et al., 2007).

Mediating role RUO personality type membership

Earlier cross-sectional research reported strong associations between childhood maltreatment and anxiety symptomology (Heim & Nemeroff, 2011; Cohen et al., 2013). These results were also replicated in the current study, showing direct positive effects for all subtypes of childhood maltreatment on anxiety severity. Meaning that the participants who reported more sever maltreatment showed higher levels of anxiety. In addition, this study explored the influence of an RUO personality type membership on the maltreatment - anxiety relationship. Each personality type was examined separately as predictor, outcome and mediating variable. Results showed that the membership of either an overcontrolled or resilient personality type has predictive value. The membership of an overcontrolled type is a positive predictor of anxiety severity, and the membership of a resilient type is a negative predictor of anxiety. The undercontrolled personality type was not related to anxiety symptoms. Thereby implying that the membership of undercontrolled personality type does not have any influence on the outcome in anxiety symptoms.

Evidence was found that low maltreatment severity predicts the membership of a resilient type, and higher maltreatment severity predicts the membership of an overcontrolled type. In contradiction to earlier findings (Oshri & Rogosch, 2013, Kim et al., 2009), maltreatment severity was not associated with the membership of an undercontrolled personality type. This means that, in this study population, an undercontrolled personality type is not predictable from self-reports of childhood maltreatment. Although significant differences were found in direct comparison with the other types, the undercontrolled type

seems not to have predictive value on its own.

The membership of an overcontrolled or resilient personality type partially mediated the childhood maltreatment – adult anxiety relationship. This indicates that the effect of childhood maltreatment on later anxiety symptoms could be partially explained by the influence of a resilient or overcontrolled personality type. The mediating effect was shown to be the strongest for emotional neglect, followed by emotional abuse. These results suggest that an emotional form of maltreatment may be more strongly associated with an overcontrolled personality type and the development of anxiety, than other types of maltreatment.

No evidence was found to suggest that an undercontrolled personality type is a significant mediator on the link between maltreatment and anxiety. This could be the result of a number of different factors. First, due to the use of different sampling methods. The personality types were not derived by latent class analysis like in prior RUO typology research, but with fixed sampling. Another explanation might be that there is no such effect for undercontrollers within the current sample, because of the composition of the NESDA sample. The NESDA is largely a clinical population, with a high rate of comorbidity, and prior RUO research was conducted in a more (psychologically) healthy functioning population. Furthermore the sample included exclusively adult participants up to the age of 65 years of age, while the participants of other studies were predominantly adolescents (Asendorpf et al., 1999; Oshri et al., 2013; Meeuws et al., 2011). A third explanation might be that this effect truly does not exist, and the membership of an undercontrolled personality type does not exhibit the same mediating effect as the resilient and undercontrolled personality types.

No direct associations were found between any of the RUO types and sexual or physical abuse. Prior maltreatment studies have shown that sexual and physical abuse are, more than other forms of maltreatment, most commonly associated with feelings of shame or guilt. This could make participants less willing to disclose such experiences, potentially making these experiences underreported in the study results (Negriff, Schneiderman, & Trickett, 2017; Stuewig & McCloskey, 2005).

Strengths of the study

The indirect effects of maltreatment via the RUO types were not examined before in the NESDA sample, and were shown to have a sizeable effect across anxiety severity outcomes. These findings supports the notion that, at least partially, maltreatment can lead to anxiety symptoms through an underlying mechanism of certain personality types. Therefore the current study extends the knowledge in understanding of the role of personality organization in the development of anxiety disorders. In comparison with Spinhoven and colleagues' variable-centred approach (2015), this study demonstrated a more comprehensive perspective of personality at the individual level.

Furthermore, this study employed data from the NESDA research, a large-scale and well-funded study in The Netherlands. An extensive team was responsible for the design and the collection of the data. The diagnostic interviews were done by trained professionals and monitored to assure a consistently good quality of assessment. All the applied research instruments ensured reliability and validity and were previously used in other research.

Another strength is that the study's findings that emotional abuse and neglect are strong predictors of adult anxiety symptoms is consistent with several other NESDA studies (Hovens et al. 2016, Spinhoven et al, 2015). In addition, these results reflect those of Spinhoven and colleagues (2015), where emotional maltreatment was shown to have the strongest association with later maladaptive personality types and psychological distress. Moreover, the results of RUO typology show differential relationships with the measures of anxiety symptoms, therefore supporting their discriminate external validity.

The power of the current study is difficult to interpret, as each effect in the ANOVA and mediating analyses yields their own power level. Rather than reporting all outcomes, this study took a closer look at the results of the mediation analysis, reporting a power level of .80 and .99 for the significant results and .05 for the nonsignificant result. Another approach to interpreted power is to compare the results and sample size with other mediation studies, in that case the current sample size of 540 participants is relatively large, indicating this study achieved sufficient power (.80) to detect small effect sizes (Fritz & MacKinnon, 2007).

Limitations of the study

The study findings should be interpreted within the context of several limitations. The biggest limitation is the heterogeneous final sample. The three RUO groups have unequal demographics on the level of age, sex, psychiatric diagnoses and education, increasing the

error variability due to participant's differences. However, given that some statistical correction did take place, this effect is likely to be negligible. The variables of age, sex, and education were examined as confounders in the post-hoc analyses, and were found to be non-substantial attributors.

Another limitation is that the sampling method was fixed and not randomized. Criterion were used to delineate groups of the RUO typology. The NESDA participants' data were included when they matched specific scores on the Five Factor measurement. For some traits only the extremes of the distribution (high or low scores) were considered. Hence, a large part of the initial NESDA sample was not included in the final sample. This could alter the relations among the variables, and show different results than when the whole sample was used.

Furthermore, the study appears to be unbalanced. The final selection of the sample resulted in three unequal group sizes with unequal variances for the predictors. While statistical adjustments were made in the ANOVAs to correct unequal variances, an increase in Type I Errors could still have influenced the other results. Moreover, the final sample consists predominantly of women (65.9%). This raises the question of external validity, and whether the results can be generalizable to men.

Another significant limitation of this study is reliance on retrospectively assessed childhood maltreatment experiences. Self-reporting methods may be hampered by nondisclosure, nonawareness or memory problems. Overreporting of maltreatment might have also be the case as a function of the psychiatric state of the participants, as 34% reported a depressive disorder. However, recent studies documented that false negative reports are in fact more frequent than false positive ones (Negriff, Schneiderman, Trickett, & Penelope, 2017; Hardt & Rutter, 2004). In this case, the current results probably underestimate the real associations between maltreatment and the outcome variables.

Finally, the mediation model employed is mostly theoretical and results must be approached with some caution. A true causal relationship cannot be confirmed from the current dataset since both the mediator and outcomes have been measured in same time period (Tate, 2014). Bidirectional effects are still possible, therefore it is difficult to say if the personality types developed before anxiety symptomology, or if it the personality developed simultaneously with anxious symptoms. Children can have a genetic predisposition for both anxiety symptoms and for the development of an overcontrolled personality, both being

triggered by the same life events. Prospective assessment over longer time period would help to better understand the causal nature of the relationship. Future research should focus on a longitudinal measurement of the RUO personality organization over longer and different time periods, so that more conclusions about causality can be established to support the model.

Possible implications

This research confirmed previous findings that suggest that maltreatment is a relatively common phenomenon that is related with more anxious symptomology at adulthood. The study results also suggest that an overcontrolled personality type might be a partial mediator through which childhood maltreatment can lead to heightened anxiety symptoms in adulthood. Furthermore, addition variables may play a role. Examining more complex models accounting for multiple individual characteristics might be useful. For example, evidence has been found suggesting that several neurological processes are involved in the development of anxiety symptoms after children experience emotional maltreatment (Fonzo et al., 2016; Van Velzen et al., 2016). Furthermore the victims' feelings of shame or self-blame showed to mediate the association between sexual abuse and the development of anxiety disorder (Maniglio, 2013).

If the results are supported by future research, there may be some relevant implications. The study findings provide preliminary evidence that the overcontrolled personality type might be a promising target for tailored treatment. In clinical practice, interventions can focus on helping them to become more extroverted, more open and less neurotic, traits that are normally associated with the resilient personality type. By developing better self-regulatory abilities, overcontrollers may also be able to become more flexible and adapted.

In conclusion, RUO personality typology shows potential in being a predictor of anxiety symptoms. The study further illustrates that a resilient personality might serve as a protective factor, while an overcontrolled personality type is a factor of vulnerability. More extensive research, might better explain if the membership of an resilient or overcontrolled personality type, really is functioning as an underlying mechanism, or if it is just part of the same pathway.

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