



Validation and cross-cultural comparisons of the German Childhood Attachment and Relational Trauma Screen (CARTS)

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ABSTRACT

Background: Child maltreatment is embedded in a complex system of familial, societal and cultural influences. However, the microsystemic framework in which child maltreatment occurs has not been sufficiently accounted for in previous measures of trauma history. In order to include this relational context, a novel survey method, the Childhood Attachment and Relational Trauma Screen (CARTS), was developed, focusing specifically on the familial environment and childhood attachment relationships. Prior validation studies of the English and Italian versions of the CARTS have tended to support its use.

Objective: The current study aims at evaluating the psychometric properties of the German version of the CARTS as well as conducting cross-cultural comparison analyses. It is part of an international research project of the Global Collaboration on Traumatic Stress which was initiated by the International Society for Traumatic Stress Studies (ISTSS).

Method: The sample consisted of $n = 140$ participants from the German general population aged 18 or older. Further trauma specific measures (GPS, BSI-18, CTQ-SF, ECR-R, PBI) were included for validation. Cross-cultural comparisons were conducted with a German subsample of students in reference to Italian- and English-speaking student samples.

Results: Most CARTS subscales showed acceptable internal consistency. Statistically significant relationships were observed with other measures of childhood trauma exposure and parental bonding, as well as PTSD- and other distress-related outcomes. Comparing the German-speaking sample with Italian- and English-speaking samples indicated significant differences with regard to childhood attachment and child maltreatment.

Conclusion: The present findings are consistent with previous results concerning the CARTS and advance the validation of this novel survey method within German-speaking samples. Further, the CARTS appears to be sensitive to cross-sample differences in childhood attachment and child maltreatment. Further psychometric evaluations of the CARTS in other languages and within further German-speaking samples are needed.

Validación y comparaciones transculturales del Tamizaje de Apego y Trauma Relacional de la Infancia (CARTS) en Alemán

Antecedentes: El maltrato infantil está incrustado en un sistema complejo de influencias familiares, sociales y culturales. Sin embargo, el marco microsystemico en el que el maltrato infantil sucede no se ha tenido suficientemente en cuenta en medidas previas de la historia del trauma. Para incluir este contexto relacional, se desarrolló un método de encuesta novedoso, el Tamizaje de Apego Infantil y Trauma Relacional (CARTS por sus siglas en inglés), que se enfoca específicamente en el ambiente familiar y las relaciones de apego en la infancia. Los estudios de validación previos de las versiones en inglés e italiano del CARTS han tendido a respaldar su uso.

Objetivo: El presente estudio tiene por objetivo evaluar las propiedades psicométricas de la versión alemana del CARTS y también conducir un análisis comparativo transcultural. Esto es parte de un proyecto de investigación internacional de la Colaboración Global en el Estrés Traumático que fue iniciado por la Sociedad Internacional para el Estudio del Estrés Traumático (ISTSS).

Método: La muestra consistió en $n = 140$ participantes de población general alemana mayores de 18 años. Se incluyeron para su validación otras medidas específicas para trauma (GPS, BSI-18, CTQ-SF, ECR-R, PBI). Se condujeron comparaciones transculturales con un submuestra alemana de estudiantes en referencia a muestras de estudiantes ítalo y angloparlantes.

Resultados: La mayoría de las subescalas del CARTS mostraron una consistencia interna aceptable. Se observaron relaciones estadísticamente significativas con las otras medidas de exposición a trauma infantil y vínculo parental, así como también TEPT y otros resultados relacionados con estrés. Al comparar la muestra germanoparlante con las muestras ítalo

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关键词

儿童虐待; 依恋; CARTS; 微系统; 童年期创伤; 验证

HIGHLIGHTS

- The Childhood Attachment and Relational Trauma Screen (CARTS) constitutes a novel survey method for the assessment of child maltreatment and childhood attachment.
- Previous validation studies and present results have tended to support its use.
- Global applicability and further psychometric evaluation will be objectives of future research.

y angloparlantes, se indicaron diferencias significativas en relación al apego infantil y maltrato infantil.

Conclusiones: Los hallazgos presentes son consistentes con resultados previos relacionados al CARTS y avanzan en la validación de este novedoso método de encuesta en muestras germanoparlantes. Además, el CARTS parece ser sensible a las diferencias de muestras cruzadas en el apego infantil y maltrato infantil. Se requieren otras evaluaciones psicométricas del CARTS en otros idiomas y en otras muestras germanoparlantes.

德语版童年期依恋和关系性创伤筛查 (CARTS) 的验证和跨文化比较

背景: 儿童虐待是一个涉及家庭、社会和文化影响的复杂系统。然而，在先前对创伤史的测量中，尚未充分考虑到发生儿童虐待的微系统框架。为了纳入这种关系性背景，开发了一种全新的调查方法，即童年期依恋和关系性创伤筛查 (CARTS)，特别关注家庭环境和童年期依恋关系。对英语和意大利语版CARTS进行的早先验证研究倾向于支持其使用。

目的: 本研究旨在评估德语版CARTS的心理测量学特性，并进行跨文化比较分析。它是国际创伤应激研究学会 (ISTSS) 发起的全球创伤应激合作研究项目的一部分。

方法: 样本由140名来自德国18岁及以上的一般人群的参与者组成。纳入了进一步的创伤特定测量 (GPS, BSI-18, CTQ-SF, ECR-R, PBI) 以进行验证。跨文化比较使用说德语的学生子样本进行，对照说意大利语和英语的学生样本。

结果: 大多数CARTS分量表显示出可接受的内部一致性。观察到了与其他其他测量的童年期创伤暴露和父母教养，以及PTSD和其他精神痛苦相关结果的统计显著相关性。说德语样本与说意大利语和英语样本进行的比较表明在童年期依恋和儿童虐待方面存在显著差异。

结论: 目前的发现与先前关于CARTS的结果一致，并进一步在说德语的样本中验证了这种全新的调查方法。此外，CARTS对童年期依恋和儿童虐待中的跨样本差异似乎很敏感。还需要对其他语言和德语样本中进一步对CARTS进行心理测量学评估。

Child maltreatment has often been determined as a global phenomenon (Cyr, Michel, & Dumais, 2013; Magruder, McLaughlin, & Elmore Borbon, 2017). More than half of all children worldwide experience some form of abuse or neglect (Hillis, Mercy, Amobi, & Kress, 2016), although prevalence rates vary considerably between different countries, regions and cultures (Klevens, Ports, Austin, Ludlow, & Hurd, 2018), indicating that various contextual factors influence the occurrence of child maltreatment. These factors may not only account for the divergence in the reported data, but their investigation is crucial to a more profound understanding of child maltreatment (Frewen et al., 2013).

As defined in Bronfenbrenner's *socioecological framework* (1979), an individual is generally affected by influencing factors deriving from different systemic levels, namely the microsystem, mesosystem, exosystem and macrosystem. Microsystemic influences comprise proximal factors, like family and peers, as opposed to macrosystemic influences which correspond to distal and global factors, like cultural and societal norms. As all these factors are related to each other, an individual also does not serve as a mere recipient of various external influences, but is acting in constant interrelation with the environment (Bronfenbrenner, 1979).

Accordingly, incidents of child abuse and neglect are always embedded in such a complex and reciprocal framework (Cicchetti & Toth, 2016). Risk factors for the occurrence of child maltreatment have been identified in prior research, e.g. domestic violence (Assink et al., 2019), low socioeconomic status, low education and unemployment of caregivers (Freisthler, Merritt,

& LaScala, 2006) or gender inequality and societal acceptance of physical punishment in child-rearing (Klevens et al., 2018; Lansford, Deater-Deckard, Bornstein, Putnick, & Bradley, 2014). As different risk factors often co-occur, child maltreatment can thus be considered a product of dysfunctional interplay of various contextual influences (Cicchetti & Toth, 2016).

The microsystemic environment has the most direct and therefore highest impact on an individual (Bronfenbrenner, 1979). Hence, the primary familial surrounding in terms of attachment and other intra-familial relationships is crucial in the investigation of child maltreatment. For example, the protective role of a secure attachment relationship between child and caregiver has been evidenced in prior research (Cicchetti & Toth, 2016). In this respect, gender differences in attachment were found, with mothers tending to be more emotionally accessible and sensitive (Clay, Coates, Tran, & Phares, 2017; Hallers-Haalboom et al., 2014; Lovas, 2005). In general, secure attachment is promoted by sensitive caretaking, responsiveness and adequate affect regulation (Bowlby, 1969). As a primary need of a child, secure attachment is highly essential for a healthy mental, social and emotional development. It has been repeatedly reported to prevent mental disorders in later adulthood (Mikulincer & Shaver, 2012; Schore, 2001).

As part of a holistic assessment, such protective factors which reduce the likelihood of child maltreatment also need to be taken into account. Above all, they not only impact the occurrence of child maltreatment but offer an explanation for the heterogeneity in

long-term sequelae. Depending on attachment quality, potential impacts of child maltreatment can be mitigated or exacerbated (Afifi & MacMillan, 2011; Jaffee, Takizawa, & Arseneault, 2017).

The protective function of secure attachment is not provided if the caregiver represents the perpetrator. The majority of incidents of child maltreatment occur within the direct familial surrounding (Finkelhor, Vanderminden, Turner, Hamby, & Shattuck, 2014). The concept of *relational trauma* (Schore, 2001) correspondingly characterizes traumatic experiences in childhood in terms of abuse or neglect that are embedded in existing attachment relationships. Not only maltreating experiences per se, but also the lack of a stable, secure attachment create highly pathogenic environments (Kobak, Zajac, & Madsen, 2016; Schore, 2001). Due to difficulties in detection and low rates of disclosure, relational traumata usually occur cumulatively and persistently over long periods of time (Magalhães et al., 2009; Schore, 2001; Ventus, Antfolk, & Salo, 2017). A disruption of the attachment system is most likely to be the outcome of relational trauma which may cause further developmental psychopathology (Kobak et al., 2016).

Existing research tools normally fail to assess microsystemic factors surrounding a maltreated individual. The lack of valid measures that explicitly refer to a person's familial interrelations led to the development of the Childhood Attachment and Relational Trauma Screen (CARTS, Frewen et al., 2013). The CARTS represents an online assessment tool aiming at the retrospective investigation of intrafamilial child maltreatment history. In addition to assessing relational trauma experiences, the CARTS examines attachment relationships and the perceived emotional availability, support and warmth within the family during childhood (Frewen et al., 2013). As it also measures potential domestic or sibling violence, it combines the investigation of microsystemic risk and protective factors in one survey tool.

In response to shortcomings of previous questionnaire formats, the CARTS provides a newly developed response format that responds to the complexity and reciprocity of a microsystemic framework. Hence, item responses are given individually for each family member, including oneself. Thereby, the multidimensional structure of the CARTS is intended to adequately capture the complex interrelationships within a family.

To deepen the understanding of child maltreatment on a global level, one particular objective in the development of the CARTS was its cross-cultural implementation and thereby the assessment of macrosystemic impacts on microsystemic factors (Schnyder et al., 2017). Cross-cultural variations of these factors can result in global differences in the incidence of child maltreatment. Definitions of what is considered as child maltreatment are highly heterogeneous, impeding

an accurate picture of worldwide prevalence rates (Stoltenborgh, Bakermans-Kranenburg, Alink, & Van Ijzendoorn, 2015). Comparisons of attachment experiences and relational trauma experiences, respectively, should be enabled by the CARTS.

To date, three existing studies, which collected samples in Canada and Italy, evidenced generally acceptable psychometric properties for the CARTS, corroborating the CARTS as reliable and valid measure (Frewen, Brown, DePierro, D'Andrea, & Schore, 2015; Frewen et al., 2013; Simonelli, Sacchi, Cantoni, Brown, & Frewen, 2017). With few exceptions the internal consistency was satisfying while concurrent and convergent validity were confirmed. As for the perceived attachment quality and the perpetration of abuse, the results revealed significant gender differences between Mother and Father. Comparing Italian and Canadian samples, significant differences were identified regarding child maltreatment and attachment experiences, respectively, indicating that the CARTS may be sensitive to cross-cultural differences (Simonelli et al., 2017).

Hence, the current study intends to evaluate whether the German version of the CARTS provides comparable psychometric parameters in terms of reliability and convergent as well as concurrent validity as previous CARTS studies. As to promote the further investigation of child maltreatment on a global level, cross-cultural comparisons with a German student subsample are conducted with reference to the original English and the Italian validation study (Frewen et al., 2013; Simonelli et al., 2017). Referring to the presented studies, we expect analogous validity measures for the German CARTS. We further hypothesize significant gender differences with respect to perceived attachment and the perpetration of abuse, as well as cross-sample differences.

1. Method

1.1. Participants and procedure

The present study was conducted within the scope of an international research project of the Global Collaboration on Traumatic Stress (2019). The implementation of the study was approved by decision of the Ethics Committee of the University of Vienna (#00428). Participants were recruited via email of personal contacts by university staff members, as well as through social media appeals. Each form of contact contained the URL leading to the survey, so data collection was also conducted fully online. Participation was anonymous and voluntary and informed consent was provided by all participants.

Since the CARTS aims at retrospectively assessing child maltreatment, a minimum age of 18 years constituted an inclusion criterion. Sufficient knowledge of

the German language was also required to participate in the study.

An initial sample of 380 participants agreed to participation and completed demographic information, while 41% ($n = 157$) finished the study including completing the CARTS as well as all additional surveys. However, as the focus of the present study lay on the validation of the CARTS, all participants that completed the CARTS were included in the study, independent of whether or not they completed all additional surveys, which applied to 201 participants. Of these, 46 participants with more than 10% missing values in the CARTS were excluded from further analyses. Due to intimate and distressing content, participants were able to skip items in case they did not want to answer them. In line with Frewen et al. (2013) and Simonelli et al. (2017), only participants that entered data for both biological parents were included in statistical analyses, thus a further 15 cases were removed from subsequent analyses, resulting in a final sample of 140 participants. The mean age was 30.15 years ($SD = 11.19$, Range 18–73) while Table 1 contains additional description of demographic data. Cross-cultural comparisons involving a German student subsample ($n = 46$) were conducted with reference values from prior publications, comprising 222 Canadian (cf. Frewen et al., 2013) and 79 Italian undergraduate students (cf. Simonelli et al., 2017).

1.2. Measures

1.2.1. CARTS

The CARTS constitutes a computer-based self-report measure to assess incidences of relational trauma in

childhood as well as the attachment and relationship quality within the family. It consists of 69 items which can be assigned to the following 20 subscales (number of items in brackets): *Positive* (13), *Proximity Seeking* (4), *Emotional Availability* (4), *Negative Affect* (3), *Positive Affect* (1), *Negative Feeling Self* (4), *Emotional Abuse Self* (2), *Emotional Abuse Others* (2), *Negative Relate Beliefs From* (5), *Negative Relate Beliefs To* (5), *Physical Abuse Self* (2), *Physical Abuse Others* (2), *Witness Violence by Mother* (1), *Witness Violence by Father* (1), *Witness Violence by Siblings* (2), *Witness Violence to Mother* (1), *Witness Violence to Father* (1), *Witness Violence to Siblings* (2), *Possible Abuse* (3) und *Sexual Abuse* (6). The two scales *Proximity Seeking* and *Emotional Availability* add up to the scale *Secure* (8). For exact item wording, refer to Frewen et al. (2013).

To accurately depict the familial microsystem, the CARTS offers a novel response format. Prior to assessment, respondents are asked to retrospectively portray their family at the time in which they were a child (aged <18). The family members named are then represented by small icons. In this way, family is defined through the subjective perception of every respondent so that, for example, friends or persons belonging to other relationship categories can also be added. The presented items comprise different statements, for which the respondent is asked to determine which family member(s) an item applies to (e.g. 'I liked this person very much.'). As for some statements, the respondent can also select him- or herself as applicable. Besides, respondents are requested to estimate ratings of other family members referring to the respondent him- or herself (e.g. 'This person liked me very much.'). demonstrating the reciprocal structure of the CARTS. If a statement does not apply to any family member listed, it is possible to select 'Not Applicable'.

1.2.2. Global psychotrauma screen (GPS)

The GPS (Olf & Bakker, 2016) is a screening tool to assess posttraumatic stress symptomatology within the last month. It consists of 22 items that are answered in a dichotomous response format (*Yes/No*) and are almost entirely adopted from already validated measures. For the sum score for trauma symptoms 17 items are included, resulting in a range of 0 to 17. In the present study, a good internal consistency of a Cronbach's α of .82 was obtained for the GPS.

1.2.3. Brief symptom inventory-18 (BSI-18)

In order to assess general mental stress, the BSI-18 (Derogatis, 2000) was administered which comprises 18 items divided into the three subscales *Depression*, *Somatization*, and *Anxiety*, containing 6 items each. Responses are given on a 5-point Likert scale from 0 (*Not at all*) to 4 (*Extremely*). The BSI-18 showed good psychometric properties within the scales *Depression* (Cronbach's $\alpha = .87$) and *Anxiety* (Cronbach's $\alpha = .77$) in the current study. The internal consistency in the scale

Table 1. Demographic characteristics of final sample.

	<i>n</i> (%)
Sex	140
Female	112 (80.0)
Male	25 (17.9)
Declined	3 (2.1)
Ethnical Background	140
Caucasian	123 (87.8)
Mixed ethnical background or Other	8 (5.7)
Declined	9 (6.4)
Marital Status	140
Single	95 (67.9)
Married/common-law	39 (27.8)
Widowed/Divorced	2 (1.4)
Other	4 (2.9)
Education level	140
Completed compulsory school	2 (1.4)
Completed high school	17 (12.1)
Completed vocational education	14 (10.0)
Bachelor's degree/Master's degree/dissertation	98 (70.0)
Other	9 (6.4)
Work	140
Part-time/full-time job, self-employed	68 (48.6)
Student	46 (32.9)
Unemployed or Other	26 (18.6)
Diagnosed psychiatric history	140
Current	14 (10.0)
Past	28 (20.0)
No history	96 (68.6)
Declined	2 (1.4)

Somatization was still acceptable with a Cronbach's α of .67.

1.2.4. Experiences in close relationships-revised (ECR-R)

The ECR-R (Fraley, Waller, & Brennan, 2000) measures partnership-related attachment styles. It consists of 36 items, dividing into the two subscales, *Anxiety* and *Avoidance*, each with 18 items to be answered on a 7-point Likert scale from 1 (*Disagree strongly*) to 7 (*Agree strongly*). The attachment style is determined by combining the two scales, so that low overall scores in both scales imply a secure attachment style. Both scales of the ECR-R demonstrated an excellent internal consistency (Cronbach's $\alpha = .93$) in the present study.

1.2.5. Childhood Trauma Questionnaire-Short Form (CTQ-SF)

The CTQ-SF (Bernstein et al., 2003) is a 28-item retrospective self-report questionnaire that assesses different types of childhood maltreatment. Sexual, physical and emotional abuse, as well as emotional and physical neglect each define a scale consisting of five items. Responses are given on a 5-point Likert scale from 1 (*Not true*) to 5 (*Very often true*). The German CTQ-SF has repeatedly demonstrated good psychometric properties in previous research (Karos, Niederstrasser, Abidi, Bernstein, & Bader, 2014). With one exception in the scale *Physical neglect* ($\alpha = .60$), Cronbach's α ranged from .85 (*Physical abuse*) to .95 (*Sexual abuse*) evidencing overall excellent reliability in the current study.

1.2.6. Parental Bonding Instrument (PBI)

The PBI (Parker, Tupling, & Brown, 1979) is a retrospective self-assessment investigating the perception of experienced parental care during the first 16 years of life. It is composed of 50 items, half of which relate to mother or father, respectively. These can be assigned to the two dimensions *Parental care* (12 items) and *Overprotection* (13 items). Answers are given on a 4-point Likert scale (from *Very like* to *Very unlike*). In this study, both scales of the PBI showed excellent internal consistency with regard to mother as well as father (Cronbach's $\alpha \geq .89$).

1.3. Statistical analysis

In accordance with Frewen et al. (2013) and Simonelli et al. (2017), data in four response categories were included in the statistical analysis: Entries referring to the biological mother (Mother), the biological father (Father), the respondent him- or herself (Self), and not relating to any of the specified family members (Not Applicable). The study's primary aim was the preliminary evaluation of the psychometric properties of the German version of the CARTS. Therefore, consistency analyses were conducted for all subscales

of the CARTS among the four response categories. Due to the dichotomous nature of the CARTS items in relation to a particular family member (person was selected vs person was not selected), the reliability was calculated through Kuder-Richardson-20 statistics. Multiple regression analyses were conducted to determine convergent validity. The subscales of the CTQ-SF (*Emotional abuse*, *Physical abuse*, *Sexual abuse*, *Emotional neglect*) and the PBI (*Parental care*, *Overprotection*), respectively, were included in the model as dependent measures. Following Fornell and Larcker (1981) convergent validity was considered to be evident when the shared variance was $R^2 \geq .5$. Concurrent validity was assessed by correlation analyses with general mental stress (BSI-18), posttraumatic stress symptomatology (GPS) and adult attachment (ECR-R), and correlation effect sizes are qualitatively described with reference to Cohen's (1988) conventions. In terms of an evaluation at the content level, paired correlation analyses of the family members included in data analysis (i.e. Self-Mother, Self-Father, Mother-Father) were performed across CARTS subscales. Potential differences in the Mother and Father ratings were examined using paired sample *t*-tests. Cross-cultural comparative analyses between the endorsement rates in the German, Italian and English CARTS were carried out for the four response categories by means of one sample *t*-tests. Reference values were used from prior publications (cf. Frewen et al., 2013; Simonelli et al., 2017).

2. Results

2.1. Internal consistency

Table 2 contains the results of consistency analyses. Overall, most CARTS subscales showed acceptable reliability, with predominantly medium to high scores except for three subscales: *Physical Abuse Self*, *Physical Abuse Others* and *Negative Affect*. In general, the present study showed comparable results in terms of internal consistency to earlier CARTS studies across all subscales.

2.2. Convergent validity

Convergent validity of the German CARTS was evaluated by multiple regression analyses. Predictor variables were included block wise in the model (Block 1: Non Applicable Ratings, Block 2: Mother and/or Father Ratings).

2.2.1. Child maltreatment experiences

In Table 3, the subscales of the CTQ-SF *Emotional abuse*, *Physical abuse*, *Sexual abuse* and *Emotional neglect* were included as dependent variables. Corresponding CARTS-subscales (*Emotional Abuse Self*, *Physical Abuse Self*, *Sexual Abuse*, *Positive/Secure*)

Table 2. Descriptive statistics, internal consistencies and paired correlations of CARTS subscales for Not Applicable, Self, Mother and Father.

subscales (No. of items)	n	Not Applicable ^a			Self ^b			Mother ^c			Father ^d			Correlations		
		α	M	SD	α	M	SD	α	M	SD	α	M	SD	r_{bc}	r_{bd}	r_{cd}
Positive (13)	126	.60	0.25	0.74	.80	0.75	1.62	.93	9.76**	4.04	.91	8.73	4.19	.17*	.14	.56**
ProximitySeek (4)	133	.80	0.29	0.82				.84	2.81**	1.49	.83	1.52	1.57			.42**
EmotAvailability (4)	135	.76	0.30	0.79				.88	2.86**	1.52	.83	1.86	1.59			.37**
Secure (8)	131	.89	0.60	1.56				.91	5.73**	2.82	.91	3.40	3.04			.41**
NegAffect (3)	128	.77	0.99	1.17	.71	0.34	0.76	.61	1.03**	1.06	.55	0.68	0.88	.18*	.24**	.17
PosAffect (1)	138	–	0.06	0.24	–	0.22	0.42	–	0.46	0.50	–	0.49	0.50	.13	.28**	.51**
NegFeelSelf (4)	131	.80	1.49	1.51				.79	1.22	1.42	.79	1.35	1.46			.25**
EmotAbuseSelf (2)	136	.80	1.02	0.92				.72	0.35	0.67	.82	0.28	0.64			.33**
EmotAbuseOthers (2)	138	.89	1.14	0.94	.91	0.09	0.39	.75	0.25	0.59	.94	0.37	0.76	.10	.14	.27**
NegRelateBeliefsFrom (5)	136	.86	3.41	1.81				.92	0.51	1.33	.87	0.48	1.19			.45**
NegRelateBeliefsTo (5)	132	.86	3.56	1.78	.96	0.14	0.76	.74	0.19	0.67	.72	0.31	0.83	–.02	.01	.20*
PhysAbuseSelf (2)	138	.38	1.51	0.68				.46	0.18	0.46	.16	0.14	0.37			.45**
PhysAbuseOthers (2)	136	.76	1.66	0.67	.65	0.06	0.29	.29	0.08	0.30	.60	0.17*	0.46	.37**	.42**	.49**
WitViolencebyMother (1)	140	–	0.91	0.29				–	0.00	0.00	–	0.03*	0.17			–
WitViolencebyFather (1)	140	–	0.85	0.36				–	0.10**	0.30	–	0.01	0.12			–.04
WitViolencebySiblings (2)	139	.56	1.96	0.22				.80	0.02	0.19	–	0.00	0.00			–
WitViolencetoMother (1)	139	–	0.79	0.41				–	0.00	0.00	–	0.13**	0.34			–
WitViolencetoFather (1)	140	–	0.91	0.28				–	0.04	0.19	–	0.01	0.09			–.02
WitViolencetoSiblings (2)	139	.35	1.88	0.36				.49	0.04	0.24	.43	0.05	0.25			.57**
PossibleAbuse (3)	139	.81	2.53	0.92				.75	0.18	0.58	.69	0.18	0.56			.57**
SexAbuse (6)	138	.91	5.58	1.28				–	0.01	0.09	.89	0.12*	0.69			.11

α = Kuder-Richardson-20; M = mean; SD = standard deviation; r = correlation coefficient.

* $p < .05$, one-tailed. ** $p < .01$, one-tailed.

explained between 44% and 89% of the variance in the CTQ-SF subscales which was generally consistent with evidence of convergent validity. Adding the parental ratings to the model significantly predicted additional variance in all CTQ-SF subscales ($p < .01$). As to the CTQ-SF subscale of *Physical abuse*, only the Mother ratings had significant predictive power in step 2 ($b = 2.35$, $t(126) = 5.23$, $p < .01$), while the Non Applicable and the Father ratings were not significant in this context. The same applied for the CTQ-SF subscale of *Emotional neglect*, where in step 2 the outcome was significantly predicted only by the Mother ratings of the CARTS subscales *Positive* ($b = -.36$, $t(107) = -3.20$, $p < .01$) and *Secure* ($b = -.52$, $t(107) = -3.36$, $p < .01$).

2.2.2. Parental attachment relationships

In terms of perceived parental care during childhood, the CARTS subscales *Positive* and *Secure* predicted the subscales of the PBI, individually for Mother or Father. The results are provided in Table 4. In this case, either Mother or Father ratings were considered in Block 2, depending on the subscale of the PBI. The Non Applicable ratings

(Step 1) had a significant explanatory power only with respect to the PBI subscale *Parental care* in relation to the mother ($p < .01$). Adding Mother or Father ratings (Step 2) was highly significant across all PBI subscales ($p < .01$). The explained variance of the PBI subscale *Parental care* was high for both Mother (64%) and Father (58%) ratings, whereby the variance accounted for was consistent with convergent validity. By comparison, the respective values for the PBI subscale *Overprotection* were considerably lower (33% and 18%).

2.3. Concurrent validity

2.3.1. Psychopathology

Correlation analyses were conducted for all CARTS subscales in the response categories Mother and Father with regard to the BSI-18 and the GPS (see Table 5). Most correlations were significant ($p < .01$), with values between .2 and .4, indicating medium correlation strength. Direction and strength of correlation were mostly comparable between Mother and Father ratings.

Table 3. Multiple regression analyses including the subscales of the Childhood Trauma Questionnaire-Short Form (CTQ-SF).

DV	Step 1	Step 2	Step 2		
	Non Applicable Ratings	Mother- & Father-Ratings	Non Applicable Ratings	Mother-Ratings	Father-Ratings
	R^2	ΔR^2	b (SE)	b (SE)	b (SE)
CTQ-EA	.35**	.14**	–1.90 (.47)**	2.80 (.60)**	1.74 (.61)**
CTQ-PA	.28**	.16**	–.49 (.34)	2.35 (.45)**	1.02 (.52)
CTQ-SA	.84**	.05**	–1.66 (.08)**	–2.89 (.95)**	1.15 (.15)**
CTQ-EN	.24**	.42**	Positive: .40 (.46) Secure: .33 (.24)	Positive: –.36 (.11)** Secure: –.52 (.16)**	Positive: –.24 (.10) Secure: –.00 (.12)

DV = dependent variable. CTQ-SF = Childhood Trauma Questionnaire-Short Form (Bernstein et al., 2003); EA = Emotional Abuse (predictor: CARTS subscale Emotional Abuse Self); PA = Physical Abuse (predictor: CARTS subscale Physical Abuse Self); SA = Sexual Abuse (predictor: CARTS subscale Sexual Abuse); EN = Emotional Neglect (predictors: CARTS subscales Positive/Secure).

** $p < .01$, two-tailed.

Table 4. Multiple regression analyses including the subscales of the Parental Bonding Instrument (PBI).

DV	Step 1	Step 2	Step 2			
	Non Applicable Ratings	Mother/Father Ratings	Non Applicable Positive	Non Applicable Secure	Parent (M/F) Positive	Parent (M/F) Secure
	R ²	ΔR ²	b (SE)	b (SE)	b (SE)	b (SE)
PBI-Care (M)	.11**	.53**	-1.35 (.93)	.70 (.52)	.73 (.20)**	1.64 (.31)**
PBI-Care (F)	.08	.50**	-1.73 (1.28)	.08 (.46)	1.10 (.17)**	.64 (.23)**
PBI-Over (M)	.05	.28**	.32 (1.05)	-.16 (.58)	-.75 (.23)**	-.47 (.35)
PBI-Over (F)	.08	.10**	2.05 (1.59)	.99 (.57)	-.65 (.21)**	.28 (.28)

DV = dependent variable; M = Mother/F = Father. PBI = Parental Bonding Instrument (Parker et al., 1979); Care = Parental Care; Over = Overprotection. Predictors are the CARTS subscales Positive and Secure. ***p* < .01, two-tailed.

Table 5. Bivariate correlations between CARTS subscales of mother and father ratings and the GPS, BSI-18 and both subscales of the ECR-R.

CARTS subscale	Mother-Ratings		Father-Ratings	
	GPS	BSI-18	GPS	BSI-18
Positive	-.32**	-.33**	-.30**	-.30**
ProximitySeek	-.26**	-.28**	-.34**	-.30**
EmotAvailability	-.30**	-.29**	-.39**	-.34**
NegAffect	.15	.20*	.12	.17
PosAffect	-.20*	-.13	-.22**	-.20*
NegFeelSelf	.39**	.35**	.32**	.34**
EmotAbuseSelf	.30**	.36**	.28**	.30**
EmotAbuseOthers	.23**	.25**	.32**	.21*
NegRelateBeliefsFrom	.47**	.52**	.35**	.37**
NegRelateBeliefsTo	.29**	.32**	.23**	.16
PhysAbuseSelf	.27**	.33**	.20*	.22*
PhysAbuseOthers	.11	.21*	.31**	.19*
WitViolencebyMother	-	-	.18*	.16
WitViolencebyFather	.40**	.40**	.07	-.04
WitViolencebySiblings	.02	.01	-	-
WitViolencetoMother	-	-	.40**	.26**
WitViolencetoFather	.18*	.16	.02	.04
WitViolencetoSiblings	.20*	.31**	.38**	.29**
PossibleAbuse	.37**	.37**	.35**	.32**
SexAbuse	.26**	.17*	.13	.16

CARTS subscale	ECR-R Avoidance		ECR-R Anxiety	
	ECR-R Avoidance	ECR-R Anxiety	ECR-R Avoidance	ECR-R Anxiety
Positive	-.41**	-.28**	-.28**	-.28**
ProximitySeek	-.35**	-.33**	-.28**	-.35**
EmotAvailability	-.39**	-.28**	-.27**	-.29**
NegAffect	.14	.16	-.12	.07
PosAffect	-.25**	-.17	-.21*	-.15
NegFeelSelf	.35**	.35**	-.01	.28**
EmotAbuseSelf	.41**	.37**	.11	.26**
EmotAbuseOthers	.31**	.24**	.01	.16
NegRelateBeliefsFrom	.45**	.44**	.22*	.35**
NegRelateBeliefsTo	.33**	.42**	.04	.20*
PhysAbuseSelf	.33**	.39**	.11	.10
PhysAbuseOthers	.16	.15	.03	.08
WitViolencebyMother	-	-	.24**	.18*
WitViolencebyFather	.24**	.24**	-.10	.08
WitViolencebySiblings	-.02	.01	-	-
WitViolencetoMother	-	-	.07	.16
WitViolencetoFather	.21*	.28**	-.10	-.02
WitViolencetoSiblings	.11	.19*	.09	.14
PossibleAbuse	.42**	.37**	.28**	.23*
SexAbuse	.08	.12	.11	.17

p* < .05, two-tailed. *p* < .01, two-tailed.

2.3.2. Attachment relationships within adult partnerships

To investigate adult attachment relationships, correlations were calculated with regard to both subscales, *Anxiety* and *Avoidance*, of the ECR-R. In general, Mother ratings reached statistical significance more often than Father ratings particularly in the *Anxiety* subscale. Overall, significant correlations were mainly in the medium range. The results are also reported in Table 5.

2.4. Paired correlation analyses

Paired correlation analyses between the response categories Self, Mother and Father were conducted (see Table 2). Endorsement rates for Mother and Father showed predominantly medium sized correlations. The two subscales *Negative Affect* and *Physical Abuse Others* revealed significant correlations in both pairings Self-Mother and Self-Father, with the highest correlations, Self-Mother ($r_{bc}(134) = .37, p < .01$) and Self-Father ($r_{bd}(134) = .42, p < .01$), in the latter.

2.5. Paired comparisons between Mother and Father ratings

Applying *t*-tests for paired samples (see Table 2), the Mother ratings demonstrated significantly higher values, compared to the Father ratings, for the CARTS subscales *Positive* ($t(125) = 3.01, p < .01$), *Proximity Seeking* ($t(132) = 8.99, p < .01$), *Emotional Availability* ($t(134) = 6.66, p < .01$), *Secure* ($t(130) = 8.37, p < .01$) and *Negative Affect* ($t(127) = 3.18, p < .01$). Conversely,

lower scores in the Mother ratings than in the Father ratings were found in the CARTS subscales *Physical Abuse Others* ($t(135) = -2.50, p < .05$) and *Sexual Abuse* ($t(137) = -1.99, p < .05$).

2.6. Cross-cultural sample comparisons

See Table 6 for the results of one sample *t*-tests for cross-cultural comparisons between the German- and

Table 6. Cross-cultural comparisons of CARTS subscales between German-speaking and Italian- and English-speaking student samples.

CARTS subscale	Sample – G		Sample – I		Sample – E		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>	<i>p</i> ^a	<i>M</i> (<i>SD</i>)	<i>t</i>	<i>p</i> ^a
Not Applicable							
Positive	0.20 (0.97)	0.11 (0.35)	0.59	.948	0.21 (1.08)	-0.07	.948
Secure	0.41 (1.25)	0.90 (0.82)	-2.62	.024	0.41 (1.44)	-0.01	.996
NegAffect	0.73 (1.05)	1.36 (0.82)	-3.83	<.001	1.66 (1.22)	-5.66	<.001
PosAffect	0.00 (0.00)	0.64 (0.48)	-	-	0.08 (0.27)	-	-
NegFeelSelf	1.14 (1.30)	3.43 (1.72)	-11.41	<.001	2.07 (1.61)	-4.63	<.001
EmotAbuseSelf	0.80 (0.91)	1.74 (0.57)	-6.98	<.001	1.32 (0.77)	-3.85	<.001
EmotAbuseOthers	1.00 (0.99)	1.45 (0.66)	-3.09	.006	1.36 (0.83)	-2.47	.017
NegRelateBeliefsFrom	2.98 (1.91)	4.23 (1.32)	-4.39	<.001	3.82 (1.67)	-2.95	.005
NegRelateBeliefsTo	3.30 (1.85)	4.40 (1.22)	-3.96	<.001	3.92 (1.69)	-2.24	.030
PhysAbuseSelf	1.41 (0.72)	1.92 (0.28)	-4.79	<.001	1.43 (0.77)	-0.16	.873
PhysAbuseOthers	1.58 (0.72)	1.92 (0.28)	-3.18	.006	1.58 (0.72)	-0.02	.984
PossibleAbuse	2.41 (0.93)	2.89 (0.46)	-3.47	.002	2.74 (0.75)	-2.38	.022
SexAbuse	5.52 (1.36)	4.85 (0.83)	3.35	.004	5.86 (0.75)	-1.68	.099
Self							
Positive	0.70 (1.47)	1.19 (2.63)	-2.11	.084	0.87 (1.08)	-0.73	.469
Secure	-	-	-	-	-	-	-
NegAffect	0.56 (1.05)	0.24 (0.62)	1.96	.057	0.17 (0.50)	2.38	.044
PosAffect	0.30 (0.47)	0.24 (0.43)	0.94	.509	0.35 (0.48)	-0.67	.509
NegFeelSelf	-	-	-	-	-	-	-
EmotAbuseSelf	-	-	-	-	-	-	-
EmotAbuseOthers	0.20 (0.58)	0.00 (0.00)	2.28	.054	0.06 (0.34)	1.58	.121
NegRelateBeliefsFrom	-	-	-	-	-	-	-
NegRelateBeliefsTo	-	-	-	-	-	-	-
PhysAbuseSelf	-	-	-	-	-	-	-
PhysAbuseOthers	0.04 (0.21)	0.14 (0.12)	-3.08	.008	0.03 (0.24)	0.47	.644
PossibleAbuse	-	-	-	-	-	-	-
SexAbuse	-	-	-	-	-	-	-
Mother							
Positive	10.25 (4.09)	9.40 (3.75)	1.31	.329	10.89 (3.17)	-0.99	.329
Secure	6.02 (2.64)	5.77 (2.54)	0.64	.694	6.18 (2.61)	-0.40	.694
NegAffect	1.22 (1.13)	0.36 (0.72)	4.87	<.001	0.40 (0.73)	4.65	<.001
PosAffect	0.52 (0.51)	n. s.	-	-	0.61 (0.49)	-1.19	.242
NegFeelSelf	1.52 (1.45)	0.55 (1.22)	4.35	<.001	0.69 (1.19)	3.72	.001
EmotAbuseSelf	0.37 (0.68)	0.11 (0.42)	2.60	.013	0.11 (0.46)	2.60	.013
EmotAbuseOthers	0.17 (0.49)	0.08 (0.36)	1.31	.392	0.16 (0.53)	0.19	.847
NegRelateBeliefsFrom	0.56 (1.42)	0.31 (0.86)	1.16	.253	0.16 (0.61)	1.87	.138
NegRelateBeliefsTo	0.25 (0.65)	0.12 (0.64)	1.32	.193	0.09 (0.46)	1.63	.193
PhysAbuseSelf	0.17 (0.44)	0.05 (0.23)	1.92	.122	0.19 (0.42)	-0.25	.804
PhysAbuseOthers	0.07 (0.25)	0.04 (0.20)	0.71	.482	0.11 (0.35)	-1.15	.482
PossibleAbuse	0.22 (0.63)	0.03 (0.16)	2.02	.049	0.03 (0.19)	2.02	.049
SexAbuse	0.00 (0.00)	0.01 (0.12)	-	-	0.00 (0.00)	-	-
Father							
Positive	9.18 (4.47)	8.47 (4.22)	1.00	.648	9.37 (4.17)	-0.28	.784
Secure	3.41 (3.08)	3.89 (3.19)	-1.04	.305	4.18 (3.05)	-1.66	.208
NegAffect	0.83 (0.97)	0.18 (0.49)	4.28	<.001	0.38 (0.71)	2.96	.005
PosAffect	0.52 (0.51)	0.54 (0.50)	-0.25	.807	0.56 (0.50)	-0.51	.807
NegFeelSelf	1.48 (1.47)	0.34 (1.01)	5.01	<.001	1.03 (1.40)	1.97	.056
EmotAbuseSelf	0.37 (0.71)	0.06 (0.29)	2.96	.010	0.21 (0.60)	1.52	.135
EmotAbuseOthers	0.50 (0.84)	0.04 (0.26)	3.73	.002	0.35 (0.73)	1.22	.230
NegRelateBeliefsFrom	0.51 (1.14)	0.23 (0.77)	1.65	.210	0.40 (1.02)	0.65	.517
NegRelateBeliefsTo	0.41 (0.97)	0.12 (0.53)	1.97	.110	0.32 (1.02)	0.61	.546
PhysAbuseSelf	0.15 (0.42)	0.06 (0.23)	1.49	.215	0.23 (0.49)	-1.26	.215
PhysAbuseOthers	0.13 (0.41)	0.04 (0.21)	1.55	.258	0.19 (0.52)	-0.94	.352
PossibleAbuse	0.15 (0.52)	0.03 (0.17)	1.61	.230	0.08 (0.41)	0.95	.347
SexAbuse	0.11 (0.53)	0.01 (0.12)	1.27	.259	0.02 (0.21)	1.14	.259

Sample – I = Italian-speaking sample (Simonelli et al., 2017; $n =$, p. 79), Sample – E = English-speaking sample (Frewen et al., 2013; $n =$, p. 222), Sample – G = German-speaking student subsample ($n = 46$), n. s. = not specified, *M* = Mean, *SD* = standard deviation, *p*^a adjusted with FDR (Benjamini & Hochberg, 1995).

the Italian- and English-speaking samples. In the subscales *Negative Affect* and *Negative Feeling Self*, significant differences were shown in comparison to both samples in the response categories Mother or Father ($p < .01$). Mean values were consistently higher in the German-speaking sample than in the Italian- or English-speaking comparison samples.

3. Discussion

Regarding the psychometric properties of the German translation, the reliability as well as the convergent and concurrent validity of the CARTS could generally be further supported. Significant differences emerged between the Mother and Father ratings and in some scales between German-, Italian- and English-speaking samples suggesting that the CARTS may be sensitive to cross-sample differences in childhood attachment relationships and maltreatment.

Across all response categories and subscales and generally in line with earlier studies, the CARTS mostly showed acceptable internal consistencies. Lower reliability scores for the subscales *Negative Affect*, *Physical Abuse Self* and *Physical Abuse Others* were reconfirmed (Frewen et al., 2013; Simonelli et al., 2017) but can be attributed to the heterogeneity of the items used in the three subscales. The *Negative Affect* subscale consists of three items which describe rather different emotional states, while the items in the subscales referring to physical abuse vary considerably in their severity (slap/hit vs. punch/kick), potentially resulting in an inconsistent response behaviour and thus lower internal consistency. Despite their divergence in specific item content, each of the individual items can still be attributed to the higher-order subscale to which they are intended. Collectively, results imply that interpretation on a scale-level may be limited, whereas the items individually provide valuable information.

With reference to the CTQ-SF as a widely used and repeatedly validated measure (Klinitzke, Romppel, Häuser, Brähler, & Glaesmer, 2012), the CARTS' convergent validity was further corroborated. The inclusion of parental ratings overall predicted additional variance in all CTQ-SF subscales. In contrast to the Italian validation study (Simonelli et al., 2017), the CARTS item content could not be determined as independent of parental overprotection measured by the PBI showing that including Mother or Father ratings into the model incrementally predicted variance, albeit to a small degree. Further research is therefore needed to evaluate how the caregiving dimension of overprotection is potentially covered by the CARTS.

In the assessment of concurrent validity, most CARTS subscales were significantly correlated with general psychopathological (BSI-18) or posttraumatic stress (GPS) symptoms. In line with former research, the higher the ratings in those CARTS subscales that included positively

framed variables such as emotional availability, proximity or security, the less psychopathological and posttraumatic stress symptoms were reported (Mikulincer & Shaver, 2012; Schore, 2001). At the same time, as to be expected, CARTS subscales which assessed experiences of abuse, for example, were predominantly associated with psychopathological and posttraumatic impairments (e.g. Buckingham & Daniolos, 2013). The effect sizes observed are consistent with childhood attachment and relational trauma presenting as protective and risk factors, respectively, for subsequent psychopathological and posttraumatic stress outcomes in adulthood, while the lack of stronger correlations is consistent with the predominance of resilient outcomes.

With regard to adult attachment relationships, the present findings demonstrate mostly significant correlations between the CARTS subscales and both subscales of the ECR-R, supporting the theory of attachment continuity (Feeney & Noller, 1990; Hamilton, 2000). Both attachment and maltreatment experiences during childhood have a crucial impact on adult attachment, according to the results. Significant correlations primarily emerged with respect to the Mother ratings, possibly indicating a particularly strong influence of the maternal attachment in adult partnerships.

In this context, paired comparisons revealed that mothers were generally rated as being more positive, emotionally available and a greater source of security and proximity than fathers, which is consistent with previous research (Clay et al., 2017; Hallers-Haalboom et al., 2014; Lovas, 2005). In contrast, fathers were reported to be significantly more physically and sexually abusive than mothers. The findings replicate the results of previous studies on the CARTS (Frewen et al., 2013) and support the presented hypothesis. Significant paired correlations between Mother and Father ratings further demonstrated that most items were determined to apply to both parents, in degree. Accordingly, on the one hand, respondents reporting a good and secure relationship with their mother tend to report a good and secure relationship with their father and so on, but the lack of stronger correlations on the other demonstrates the potential independence of attachment securities one may experience with each parent. From ratings concerning the Self in relation to Mother or Father ratings, it can further be assumed that both Mother's and Father's emotional constitution (measured by *Negative Affect*) have a crucial impact on a child, stressing the equal relevance of both parents in child-rearing (Clay et al., 2017). In parallel, physical abuse by mother or father may subsequently lead to a higher potential of becoming violent oneself (Ben-David, Jonson-Reid, Drake, & Kohl, 2015). The microsystemic environment therefore plays a decisive role in terms of the Social Learning Theory (Bandura, 1978).

Comparing the German-speaking subsample to Italian- or English-speaking samples, significant differences were found in the CARTS subscales assessing negative emotions and cognitions or experiences of emotional abuse relating to the Mother or Father ratings. Here the German study consistently yielded higher scores than the Italian study or the original Canadian study. German mothers and fathers were thus found to be more a source of negative emotions, cognitions and emotional abuse than in both other samples. Surprisingly, however, attachment experiences to mother or father were still rated as predominantly equally secure and positive, as the CARTS subscales measuring attachment security (*Positive, Secure* and *Positive Affect*) showed no significant differences in the response categories Mother and Father. It is possible that experiences of emotional abuse in the Italian or Canadian samples, although existing, are either less reported or that they were rather not perpetrated by mother or father with the same prevalence as in the current German-speaking participants. The mainly non-significant comparison values could be attributed to the three samples originating from a similar, namely Western, cultural background. The CARTS appears to be able to detect cross-sample differences, however support of the CARTS as being applicable for cross-cultural investigations will require further research.

Several limitations have to be considered. As the CARTS is still being adapted and optimized, practical conclusion would be premature at this point. First of all, in terms of psychometric properties, lower internal consistencies in certain subscales have to be acknowledged. As already discussed, these results could be expected due to face valid differences in item content. Although certain items are summarized in specific subscales measuring one overall construct, the CARTS may benefit better from an interpretation at an individual item level in these cases. Secondly, statistical analyses indicate that the response category Self was often not factored into the ratings. It remains an open question why respondents in most cases disregard ratings concerning themselves. Either the items have been intentionally chosen as not applicable to Self or they have just not been attributed to the own person due to their phrasing. In the latter case, conclusions of this response category should be drawn with caution and further considerations are required. Thirdly, the current version of the CARTS refers to childhood as well as adolescence covering a period of 18 years. As acknowledged previously, it is not transparent to which exact time span a respondent relates when answering the items and a potential development or change in perception cannot be illustrated through the CARTS (Frewen et al., 2013). Further, the generalizability of the findings may be limited due to sample characteristics, most notably, wherein gender effects could derive from the predominantly female sample. The relatively high drop-out rate of almost 60% also needs to be

considered as a potential limit to generalizability and sample representativeness, although such a rate is perhaps not atypical in online survey research.

Further research is needed to substantiate the findings obtained. A primary goal should be the validation of yet unvalidated translations of the CARTS in order to promote its global application. Revalidation in German-, English- or Italian-speaking populations is also recommended. A special focus should be placed on the application in clinical samples where higher prevalence rates of child maltreatment can be expected. Based on the available data collected from the present sample, further analyses can be conducted taking other family members into account. For example, sibling relationships in the context of childhood traumatic experiences have been the subject of previous research implementing the CARTS (Frewen et al., 2015). The investigation of relationships to step- or grandparents or of certain family constellations, such as potential differences between biological and non-biological family members, represent interesting future research topics.

In summary, previous findings concerning the CARTS psychometric properties were replicated in the present study for a German translation. The relevance of including the relational context in the investigation of child maltreatment continues to be supported. As an innovative and promising measuring tool, the survey method of the CARTS could also be used in other scientific contexts than in psychotraumatological research.

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Ethics statement

The research study meets all ethical regulations as required by the ethics committee of the University of Vienna (#00428). Informed consent was obtained from all participants.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author, Brigitte Lueger-Schuster. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

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References

- Affi, T. O., & MacMillan, H. L. (2011). Resilience following child maltreatment: A review of protective factors. *Canadian Journal of Psychiatry, 56*(5), 266–272. doi:10.1177/070674371105600505.
- Assink, M., van der Put, C. E., Meeuwssen, M. W., de Jong, N. M., Oort, F. J., Stams, G. J. J., & Hoeve, M. (2019). Risk factors for child sexual abuse victimization: A meta-analytic review. *Psychological Bulletin, 145*, 459–489. doi:10.1037/bul0000188.
- Bandura, A. (1978). Social learning theory of aggression. *Journal of Communication, 28*, 12–29. doi:10.1111/j.1460-2466.1978.tb01621.x.
- Ben-David, V., Jonson-Reid, M., Drake, B., & Kohl, P. L. (2015). The association between childhood maltreatment experiences and the onset of maltreatment perpetration in young adulthood controlling for proximal and distal risk factors. *Child Abuse & Neglect, 46*, 132–141. doi:10.1016/j.chiabu.2015.01.013.
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society Series B, 57*, 289–300. doi: 10.1111/j.2517-6161.1995.tb02031.x.
- Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., . . . Desmond, D. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect, 27*, 169–190. doi:10.1016/S0145-2134(02)00541-0.
- Bowlby, J. (1969). *Attachment and loss, Vol. 1, attachment*. New York: Basic Books.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Buckingham, E. T., & Daniolos, P. (2013). Longitudinal outcomes for victims of child abuse. *Current Psychiatry Reports, 15*, 342. doi:10.1007/s11920-012-0342-3.
- Cicchetti, D., & Toth, S. L. (2016). Child maltreatment and developmental psychopathology: A multilevel perspective. *Developmental Psychopathology, 1*–56. doi:10.1002/978119125556.devpsy311.
- Clay, D., Coates, E., Tran, Q., & Phares, V. (2017). Fathers' and mothers' emotional accessibility and youth's developmental outcomes. *American Journal of Family Therapy, 45*, 111–122. doi:10.1080/01926187.2017.1303651.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cyr, C., Michel, G., & Dumais, M. (2013). Child maltreatment as a global phenomenon: From trauma to prevention. *International Journal of Psychology, 48*, 141–148. doi:10.1080/00207594.2012.705435.
- Derogatis, L. R. (2000). *BSI 18: Brief symptom inventory 18*. Minneapolis, MN: National Computer Systems, Inc.
- Feeney, J. A., & Noller, P. (1990). Attachment style as a predictor of adult romantic relationships. *Journal of Personality and Social Psychology, 58*, 281–291. doi:10.1037/0022-3514.58.2.281.
- Finkelhor, D., Vanderminden, J., Turner, H., Hamby, S., & Shattuck, A. (2014). Child maltreatment rates assessed in a national household survey of caregivers and youth. *Child Abuse & Neglect, 38*, 1421–1435. doi:10.1016/j.chiabu.2014.05.005.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*, 39–50. doi:10.2307/3151312.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*, 350–365. doi:10.1037/0022-3514.78.2.350.
- Freisthler, B., Merritt, D. H., & LaScala, E. A. (2006). Understanding the ecology of child maltreatment: A review of the literature and directions for future research. *Child Maltreatment, 11*, 263–280. doi:10.1177/1077559506289524.
- Frewen, P., Brown, M., DePierro, J., D'Andrea, W., & Schore, A. (2015). Assessing the family dynamics of childhood maltreatment history with the Childhood Attachment and Relational Trauma Screen (CARTS). *European Journal of Psychotraumatology, 6*, 1–13. doi:10.3402/ejpt.v6.27792.
- Frewen, P. A., Evans, B., Goodman, J., Halliday, A., Boylan, J., Moran, G., . . . Lanius, R. A. (2013). Development of a Childhood Attachment and Relational Trauma Screen (CARTS): A relational-socioecological framework for surveying attachment security and childhood trauma history. *European Journal of Psychotraumatology, 4*, 1–17. doi:10.3402/ejpt.v4i0.20232.
- Global Collaboration on Traumatic Stress. (2019). Global collaboration on traumatic stress. Retrieved from <https://www.global-psychotrauma.net>
- Hallers-Haalboom, E. T., Mesman, J., Groeneveld, M. G., Endendijk, J. J., van Berckel, S. R., van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2014). Mothers, fathers, sons and daughters: Parental sensitivity in families with two children. *Journal of Family Psychology, 28*, 138–147. doi:10.1037/a0036004.
- Hamilton, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development, 71*, 690–694. doi:10.1111/1467-8624.00177.
- Hillis, S., Mercy, J., Amobi, A., & Kress, H. (2016). Global prevalence of past-year violence against children: A systematic review and minimum estimates. *Pediatrics, 137*, 1–13. doi:10.1542/peds.2015-4079.
- Jaffee, S. R., Takizawa, R., & Arseneault, L. (2017). Buffering effects of safe, supportive, and nurturing relationships among women with childhood histories of maltreatment. *Psychological Medicine, 47*, 2628–2639. doi:10.1017/S0033291717001027.
- Karos, K., Niederstrasser, N., Abidi, L., Bernstein, D. P., & Bader, K. (2014). Factor structure, reliability, and known groups validity of the German version of the Childhood Trauma Questionnaire (Short-form) in Swiss patients and nonpatients. *Journal of Child Sexual Abuse, 23*, 418–430. doi:10.1080/10538712.2014.896840.
- Klevens, J., Ports, K. A., Austin, C., Ludlow, I. J., & Hurd, J. (2018). A cross-national exploration of societal-level factors associated with child physical abuse and neglect. *Global Public Health, 13*, 1495–1506. doi:10.1080/17441692.2017.1404622.
- Klinitzke, G., Romppel, M., Häuser, W., Brähler, E., & Glaesmer, H. (2012). The German version of the Childhood Trauma Questionnaire (CTQ): Psychometric characteristics in a representative sample of the general population. *Psychotherapie, Psychosomatik, medizinische Psychologie, 62*, 47–51. doi:10.1055/s-0031-1295495.
- Kobak, R., Zajac, K., & Madsen, S. D. (2016). Attachment disruptions, reparative processes, and psychopathology: Theoretical and clinical implications. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory,*

- research, and clinical applications (3rd ed., pp. 25–39). New York: The Guilford Press.
- Lansford, J. E., Deater-Deckard, K., Bornstein, M. H., Putnick, D. L., & Bradley, R. H. (2014). Attitudes justifying domestic violence predict endorsement of corporal punishment and physical and psychological aggression towards children: A study in 25 low- and middle-income countries. *Journal of Pediatrics*, *164*, 1208–1213. doi:10.1016/j.jpeds.2013.11.060.
- Lovas, G. S. (2005). Gender and patterns of emotional availability in mother–toddler and father–toddler dyads. *Infant Mental Health Journal*, *26*, 327–353. doi:10.1002/imhj.20056.
- Magalhães, T., Taveira, F., Jardim, P., Santos, L., Matos, E., & Santos, A. (2009). Sexual abuse of children. A comparative study of intra and extra-familial cases. *Journal of Forensic and Legal Medicine*, *16*, 455–459. doi:10.1016/j.jflm.2009.05.007.
- Magruder, K. M., McLaughlin, K. A., & Elmore Borbon, D. L. (2017). Trauma is a public health issue. *European Journal of Psychotraumatology*, *8*, 1–9. doi:10.1080/20008198.2017.1375338.
- Mikulincer, M., & Shaver, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry*, *11*, 11–15. doi:10.1016/j.wpsyc.2012.01.003.
- Olf, M., & Bakker, A.; the Global Collaboration on Traumatic Stress. (2016). *Global psychotrauma screen (GPS)*. Retrieved from <https://global-psychotrauma.net/gps>
- Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, *52*, 1–10. doi:10.1111/j.2044-8341.1979.tb02487.x.
- Schnyder, U., Schäfer, I., Aakvaag, H. F., Ajdukovic, D., Bakker, A., Bisson, J. I., ... Frewen, P. (2017). The global collaboration on traumatic stress. *European Journal of Psychotraumatology*, *8*, 1–5. doi:10.1080/20008198.2017.1403257.
- Schore, A. N. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, *22*, 201–269. doi:10.1002/1097-0355(200101/04)22:1<201::AID-IMHJ8>3.0.CO;2-9.
- Simonelli, A., Sacchi, C., Cantoni, L., Brown, M., & Frewen, P. (2017). Italian translation and cross-cultural comparison with the Childhood Attachment and Relational Trauma Screen (CARTS). *European Journal of Psychotraumatology*, *8*, 1–13. doi:10.1080/20008198.2017.1375839.
- Stoltenborgh, M., Bakermans-Kranenburg, M. J., Alink, L. R., & van Ijzendoorn, M. H. (2015). The prevalence of child maltreatment across the globe: Review of a series of meta-analyses. *Child Abuse Review*, *24*, 37–50. doi:10.1002/car.2353.
- Ventus, D., Antfolk, J., & Salo, B. (2017). The associations between abuse characteristics in child sexual abuse: A meta-analysis. *Journal of Sexual Aggression*, *23*, 167–180. doi:10.1080/13552600.2017.1318963.