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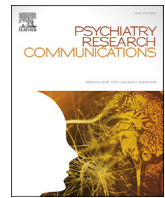
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# The convergent validity of the childhood trauma questionnaire (short-form) and the brief betrayal trauma survey in a first-episode psychosis sample

Julie Perrine Schaug<sup>a</sup>, Ole Jakob Storebø<sup>a,b,c,\*</sup>, Stephen Fitzgerald Austin<sup>a,b,d</sup>,  
Anne Marie Trauelsen<sup>e</sup>, Marlene Buch Pedersen<sup>d</sup>, Ulrik Helt Haahr<sup>a</sup>, Erik Simonsen<sup>f,g</sup>

<sup>a</sup> Psychiatric Research Unit, Psychiatric Services Region Zealand, 4200, Slagelse, Denmark

<sup>b</sup> Department of Psychology, University of Southern Denmark, Faculty of Health Sciences, 5230, Odense M, Denmark

<sup>c</sup> Department of Child and Adolescent Psychiatry, Psychiatry Region Zealand, 4000, Roskilde, Denmark

<sup>d</sup> Early Psychosis Intervention Center, Psychiatric Services Region Zealand East, 4000, Roskilde, Denmark

<sup>e</sup> Psychiatric Center Copenhagen, Capital Region, 2400, Copenhagen, Denmark

<sup>f</sup> Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, 2200, Copenhagen, Denmark

<sup>g</sup> Mental Health Services, Copenhagen University Hospital, Psychiatric Services Region Zealand, 4000, Roskilde, Denmark

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## ABSTRACT

Different forms of childhood maltreatment are known to be significant risk factors for psychosis. However, the strength of this relationship is frequently contested due to different findings between studies, partly because of variations in the conceptualizations and assessments of childhood trauma. The objective of the current study was to explore the convergent validity of two childhood trauma instruments, the Brief Betrayal Trauma Survey (BBTS) and the Childhood Trauma Questionnaire short-form (CTQ-SF), in a sample of first-episode psychosis (FEP) participants. This was a cross-sectional study where participants from a Danish early psychosis service (OPUS) were recruited over a 2-year period. Ninety-nine participants were assessed with both instruments, and reports of childhood emotional, physical, and sexual abuse were compared. There were significantly differing reports of childhood trauma in all domains, with higher reports of childhood abuse in the CTQ than in the BBTS. Findings suggest previous heterogeneous results in studies exploring the association between childhood trauma and psychosis could partly be due to different assessments of trauma. Future studies wishing to explore this association should aim to use a common conceptualization of childhood trauma in their assessments.

## 1. Introduction

Childhood and adolescence adversities are considerable risk factors for developing psychosis (Bonoldi et al., 2013; Carr et al., 2013; Varese et al., 2012). Childhood trauma (CT) such as physical (McCabe et al., 2012; Rubino et al., 2009), sexual (Cutajar et al., 2010; Elkliit and Shevlin, 2011), and emotional abuse (Braehler et al., 2013; Rubino et al., 2009) have all been found to be potential risk factors. Trauma involving a perpetrator, i.e., childhood interpersonal trauma, is thought to be especially damaging (Arseneault et al., 2011; Haahr et al., 2018), as it may trigger dissociation (Freyd, 1994; Freyd et al., 2001), which is again linked to later psychosis (Braehler et al., 2013; Sun et al., 2018; Varese et al., 2012). There are also several indications of a dose-response effect of CT on the risk of developing psychosis (Arseneault et al., 2011; Shevlin et al., 2008; Trauelsen et al., 2015), implying that each traumatic event

either amplifies the risk of or creates an interactive effect in the development of psychosis, thus calling for precise CT assessments.

Many people with psychotic disorders have often been subjected to a number of childhood adversities (Rosenberg et al., 2007; Trauelsen et al., 2015). Different forms of CT can result in different experiences and characteristics of auditory hallucinations (Begemann et al., 2022) or delusions (Bendall et al., 2013), or have different effects on the psychosis severity, prognosis, and functional outcomes (Bailey et al., 2018; Garcia et al., 2016). It has been highlighted that the assessment instrument used to assess CT may influence the results (Trauelsen et al., 2015). While it has been found that people with psychosis are more than three times more likely to be exposed to childhood adversities than the general population (Matheson et al., 2013), many argue that the evidence for this being a causal relationship is limited (Bendall et al., 2008; Matheson et al., 2013). A number of factors make the claim of causality

\* Corresponding author. Department of Psychology, University of Southern Denmark, Faculty of Health Sciences, 5230, Odense M, Denmark.  
E-mail address: [ojstoreboe@health.sdu.dk](mailto:ojstoreboe@health.sdu.dk) (O.J. Storebø).

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problematic, such as the cross-sectional nature of most studies investigating correlational effects. However, one of the factors often discussed is the variety of methods used to assess CT, which makes interpretations and comparisons of the data between studies difficult. As different assessments often approach and conceptualize CT differently, the definitions of childhood trauma differ between studies, ultimately leading to conflicting results and difficulties in drawing a clear conclusion (Alameda et al., 2021; Bendall et al., 2008; Morgan and Fisher, 2007; Vila-Badia et al., 2021). To build a body of research which estimates the impact of CT on the risk of developing psychosis, a strong methodology with accurate and valid assessments of CT across studies is crucial.

One of the most utilized instruments for assessing childhood adversities in literature is the Childhood Trauma Questionnaire (short-form) (CTQ-SF) (Lai et al., 2021), although a variety of other instruments are used (Burgermeister, 2007; Vila-Badia et al., 2021). The Brief Betrayal Trauma Survey (BBTS) is one of the few which explicitly distinguish between interpersonal and other types of trauma. Additionally, it differentiates between the level of closeness regarding the interpersonal relationships between the victim and the perpetrator (Goldberg and Freyd, 2006). These are factors that could be particularly relevant when investigating the association with later psychosis (Haahr et al., 2018). Furthermore, the BBTS is an interview, as opposed to a self-report, a difference which has previously been found to yield significantly different rates of reported CT (Dill et al., 1991).

As the use of different CT assessments is considered a possible limitation, the potential differences between various methods assessing CT in the same group of participants should be explored. Thus, the objective of the current study was to explore the convergent validity of the BBTS and CTQ-SF in a sample of first-episode psychosis (FEP) participants. This convergent validity was examined across three subscales of childhood trauma: (1) childhood emotional abuse, (2) childhood physical abuse, and (3) childhood sexual abuse. To our knowledge, no other studies have compared these instruments in this population. There is a known heterogeneity of CT reports between instruments, and that self-report questionnaires have been found to yield higher reports of trauma than interviews (Dill et al., 1991; Jansen et al., 2016). Therefore, we expected significant discrepancies between the two assessments, with more reports of childhood trauma in the CTQ compared to the BBTS.

## 2. Method

### 2.1. Design

This study had a cross-sectional design. Participants were primarily assessed individually with the BBTS by a trained clinician, with the intent of comparing CT rates with a previous study also employing the BBTS (Haahr et al., 2018). Most participants subsequently completed the CTQ alone for a different study on the same day (Trauelsen et al., 2015). Thus, data from two different childhood trauma assessments was obtained from the same group of participants. The assessments were conducted in a clinical setting.

### 2.2. Participants

Denmark has a nationwide early intervention program (OPUS) for persons with FEP (Petersen et al., 2005), from which the participants in the current study were recruited for a research project by Haahr et al. (2021). Inclusion criteria of the study were an ICD-10 diagnosis F20-29 (schizophrenia spectrum disorder) (except for F21, schizotypal disorder) and being aged 18–35 years old. A previous diagnosis of psychosis or insufficient Danish skills to complete the interviews were grounds for exclusion, whereas substance abuse was not. At baseline, 129 participants gave informed consent. Of these, 110 participants were assessed with the BBTS, and 101 participants were assessed with the CTQ-SF, thus resulting in a complete sample of 99 participants who provided data from both instruments. The full baseline versus the study sample was similar

regarding most demographic variables, though there were differences in sex ( $p = .006$ ), marital status ( $p = .027$ ), and diagnosis ( $p = .015$ ). The participant demographics can be found in the supplementary materials (Table S1).

### 2.3. Measures

#### 2.3.1. BBTS

The Brief Betrayal Trauma Survey is a semi-structured interview, derived from the Brief Betrayal Inventory (BBI), and consists of 12 potentially traumatic events. The BBTS was developed with two goals in mind: Firstly, to cover as many major potentially traumatic events as possible. Secondly, to separate experiences that involve a betrayal of trust from those that do not, such as childhood abuse by an adult close to the victim compared to assault by a stranger (Goldberg and Freyd, 2006). The interview includes four main event discriminations: (1) interpersonal from non-interpersonal events, (2) betrayal events (in which the perpetrator had a close relationship with the victim) from other interpersonal events (where the relationship was not as close), (3) childhood from adult events, and (4) physical versus sexual versus psychological/emotional types of abuse. The present study mainly focused on the fourth dimension, as it is the most similar to the trauma subscales conceptualized in the CTQ. For each event, the interviewee answered whether the event happened, the number of times the event took place, and their age at the time. The BBTS has been found to have good validity and test-retest reliability (Goldberg and Freyd, 2006; Martin et al., 2010).

#### 2.3.2. CTQ-SF

The original Childhood Trauma Questionnaire is a well-validated 70-item self-report questionnaire that was developed to provide a reliable and valid retrospective assessment of childhood trauma and neglect before the age of 18 (Bernstein et al., 1994). The CTQ short-form (CTQ-SF) is a shortened version with 28 items, developed to be easy and quick to administer as part of a routine assessment (Bernstein et al., 2003), and is most often referred to as the CTQ. The CTQ consists of five clinical scales of childhood adversities: physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect. Additionally, there are three minimization/denial validity items, developed to detect underreporting of maltreatment. The items describe childhood events in objective terms, and participants score the severity/frequency of the event through a Likert-scale (1 = never true, 5 = very often/always true), creating dimensional scales. Cut-off scores are often applied to dichotomize individuals into groups with and without histories of clinically significant abuse and neglect. Moderate to severe cut-offs aim to identify these patients, while still keeping false-positive errors at a minimum (Bernstein et al., 1997; Walker et al., 1999).

### 2.4. Statistical procedure

Data from both instruments were dichotomized, to give a simplified representation of whether CT was reported in each of the three subscales measured by both instruments: childhood emotional abuse (CEA), childhood physical abuse (CPA), and childhood sexual abuse (CSA). For the CTQ, moderate to severe cut-off scores of 6 for CSA and CPA, and 8 for males and 10 for females for CEA were applied, as suggested in the Danish CTQ manual (Bernstein and Fink, 2011), and applied in the study for which the CTQ data was collected (Trauelsen et al., 2015). For the BBTS, the relevant interview items were added together to represent their subscale: (1) item 10 for CEA, (2) items 6, 7, and 11 for CPA, and (3) items 8 and 9 for CSA. As there were different numbers of items per subcategory, minimal cut-off was employed. Furthermore, as CEA would only contain one item, and emotional/psychological abuse has no uniform, legal nor conceptual definition, making it one of the broadest CT subcategories (Baker, 2009), a second CEA variable (CEA2) was created from the BBTS for a sensitivity analysis. This included the BBTS item 5, inquiring about witnessing domestic violence, which according to some

conceptualizations fall under the umbrella of psychological/emotional abuse (Baker, 2009; Bottoms et al., 2016; Vergano et al., 2018).

Participants could thus be placed into four possible groups per CT subscale: CTQ(+) or CTQ(-), and BBTS(+) and BBTS(-), the (+) symbolizing CT being reported, and the (-) symbolizing no reported CT. The CTQ also offers a dimensional score for each subscale, and to better observe the potential discrepancies, the range was recoded from 5-25 to 0-20, with zero representing that no CT was reported. As the BBTS has a differing number of items for each subscale and the frequency of the CT is given in an exact number, creating a similar dimensional score for each subscale in the BBTS was problematic, with each solution creating a new set of limitations. Therefore, only dichotomized values were used for the BBTS. Lastly, there were two missing values in the BBTS, thus making the complete sample  $N = 98$  for CPA and CSA, and  $N = 97$  for CEA.

### 2.4.1. Data analysis

Data were analyzed in IBM SPSS v. 28. First, four McNemar's tests were conducted to indicate whether there was a significant difference in the number of participants who yielded differing reports between instruments. Second, to further explore the potential discrepancies, four simple linear regressions were conducted to compare the CTQ dimensional scores, based on whether the participants were in the BBTS(-) or BBTS(+) group. This analysis was done to observe two dimensions of validity: (1) Whether the model was able to significantly predict an increase in the total CTQ score between the two BBTS groups, and (2) whether the regression constant was significantly different from zero. This analysis would indicate whether the differences were due to: (1) higher scores in the BBTS than the CTQ, or (2) higher scores in the CTQ than in the BBTS. Bootstrapping was utilized to make the analysis more robust to violations of assumptions and normality (Bollen and Stine, 1990).

### 2.5. Ethical considerations

All participants received oral and written study information, which clearly stated that they could withdraw their consent or participation in the study at any time and it would have no impact on their treatment. The protocol was submitted to the Regional Ethics Committee and pre-approval was found unnecessary. The Data Protection Council, Region Zealand, approved data management (REG-044-2013).

## 3. Results

The trauma reported in each assessment instrument is presented in Table 1. The McNemar's tests confirmed that there were significant differences in the number of trauma reports between the CTQ and the BBTS for both CEA ( $\chi^2 = 24.74, p < .001$ ) and CSA ( $p = .012$ ), but not for CPA ( $\chi^2 = 1.03, p < .310$ ). The proportions of corresponding and conflicting

**Table 1**  
Childhood trauma prevalence as reported in the CTQ-SF and the BBTS, for each clinical subscale.

Trauma subscale	CTQ-SF			BBTS	
	Mean (SD)	Yes (%) <sup>c</sup>	No (%) <sup>c</sup>	Yes (%)	No (%)
Childhood emotional abuse <sup>a</sup>	6.03 (5.23)	62 (63.9)	35 (36.1)	32 (33.0)	65 (67.0)
Childhood physical abuse <sup>b</sup>	1.41 (2.54)	36 (36.7)	62 (63.3)	43 (43.9)	55 (56.1)
Childhood sexual abuse <sup>b</sup>	1.81 (4.29)	24 (24.5)	74 (75.5)	15 (15.3)	83 (84.7)

Note. CTQ-SF = childhood trauma questionnaire (short form); BBTS = brief betrayal trauma survey.

<sup>a</sup>  $n = 97$ .

<sup>b</sup>  $n = 98$ .

<sup>c</sup> Based on cut-off scores from Bernstein and Fink (2011).

reports in each instrument and subscale are shown in Fig. 1.

Four simple linear regressions were conducted to see if the BBTS dichotomous scores for each subscale could predict the total CTQ scores. All equations were significant, and are presented in Table 2. Having reported trauma in any of the subscales in the BBTS significantly predicted a higher CTQ score compared to those who did not report any trauma in the BBTS: CEA,  $\beta = 7.67, 95\% \text{ CI } [5.87, 9.33], p < .001$ ; CPA,  $\beta = 1.93, 95\% \text{ CI } [0.96, 2.96], p = .004$ ; and CSA,  $\beta = 9.26, 95\% \text{ CI } [6.30, 12.23], p < .001$ . However, the mean CTQ scores in the BBTS(-) group were found to be significantly higher than zero in CEA ( $\beta_0 = 3.59, 95\% \text{ CI } [2.81, 4.49], p < .001$ ), CPA ( $\beta_0 = 0.58, 95\% \text{ CI } [0.28, 1.00], p = .002$ ), and CSA ( $\beta_0 = 0.41, 95\% \text{ CI } [0.11, 0.84], p = .037$ ). This indicated that a significant number of participants who did not report any trauma in either of the CT subscales of the BBTS, did report trauma in the CTQ.

The sensitivity analyses using the CEA(2) variable did not yield significantly different results in either test: both the McNemar's test ( $\chi^2 = 15.61, p < .001$ ) and the linear regression ( $\beta = 7.28, 95\% \text{ CI } [5.40, 8.94], p < .001$ ) were still significant.

## 4. Discussion

This study investigated the convergent validity of the CT assessment instruments CTQ-SF and BBTS in people with FEP, across three shared subscales of childhood trauma: childhood emotional, physical, and sexual abuse. In line with the hypotheses, participants' reported rates of abuse in each subscale differed between the two instruments, with generally higher reports of CT in the CTQ-SF than in the BBTS.

### 4.1. Childhood emotional abuse (CEA)

The proportion of participants who reported CEA in the CTQ but not in the BBTS was significantly different. This discrepancy was most evident in the number of participants who reported CEA in the CTQ but not the BBTS, which was almost as large as the group who reported CEA in both measures (Fig. 1A). The regression analysis supported this observation. The mean CTQ score of participants who did not report CEA in the BBTS was significantly higher than zero. This finding indicates either a substantial overrepresentation of CEA in the CTQ, an underrepresentation in the BBTS, or both. While a sensitivity analysis was conducted using a slightly broader conceptualization of CEA from the BBTS, the results remained the same. The conflicting reports found in the present study may explain the differing results reported in previous research concerning the prevalence and associations between CEA and psychosis. While many have found CEA to have a significant association with some domains of psychosis (Ramsay et al., 2011; Rubino et al., 2009; Trauelsen et al., 2015), others have found the relationship to be weak or non-significant (Baudin et al., 2017; Shevlin et al., 2007). Furthermore, CEA, often referred to as psychological abuse or maltreatment, has been critiqued for being the most broadly operationalized subcategory of CT across different between instruments (Baker, 2009), which further supports the current findings of low convergent validity.

### 4.2. Childhood physical abuse (CPA)

Childhood physical abuse showed the overall best convergent validity out of the three subscales. It was the only subscale where the difference in report prevalence did not reach statistical significance, though inconsistencies could still be observed (Fig. 1C). The subsequent regression analysis partially supported this finding, showing that the CTQ scores in the group of participants who reported CPA in the BBTS were significantly higher than the scores in the group that did not. However, similarly to CEA, the regression also showed either an overrepresentation of CPA in the CTQ, underrepresentation in the BBTS, or a combination of both. Conversely, this effect was not present when moderate cut-off scores were used in the CTQ. Instead, Fig. 1C appears to show the opposite pattern, with more participants reporting CPA in the BBTS.

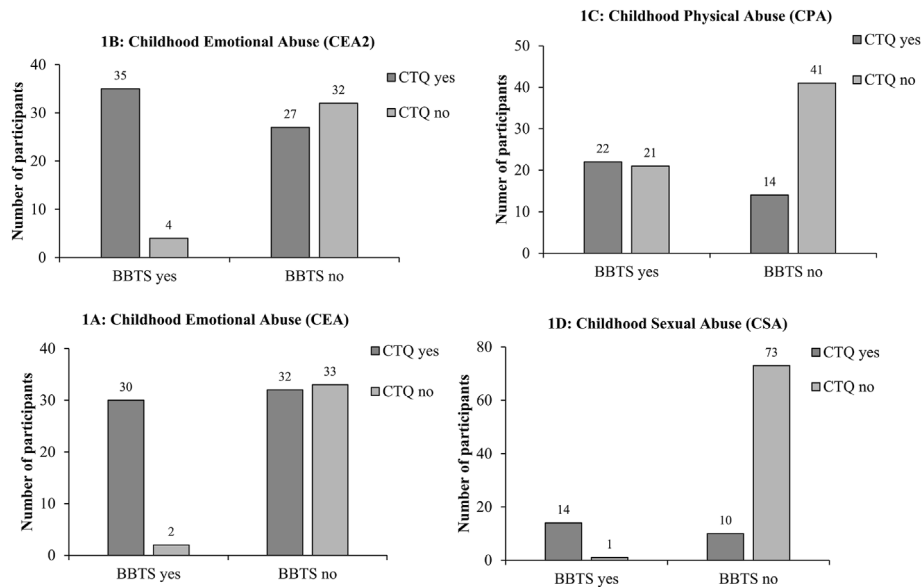


Fig. 1. Number of participants who reported CEA, CPA, and CSA, in the Childhood Trauma Questionnaire Short-Form (CTQ) and the Brief Betrayal Trauma Survey (BBTS).

Table 2

Simple linear regression models predicting CTQ scores in each trauma subscale, depending on whether they reported trauma in the BBTS.

	<i>t</i>	$\beta$	<i>p</i> <sup>a</sup>	<i>SE</i> <sup>a</sup>	BCa 95% CI <sup>a</sup>	<i>R</i> <sup>2</sup>	<i>F</i>	<i>df</i>	<i>p</i>
<b>CEA</b>						.48	86.50	1, 95	<.001
BBTS –	7.57	3.59	<.001	0.46	2.81, 4.49				
BBTS +	9.30	7.67	<.001	0.86	5.87, 9.33				
<b>CEA(2)</b>						.47	83.31	1, 96	<.001
BBTS –	6.26	3.15	<.001	0.41	2.41, 3.94				
BBTS +	9.13	7.28	<.001	0.84	5.40, 8.94				
<b>CPA</b>						.14	16.03	1, 96	<.001
BBTS –	1.82	0.58	.002	0.19	0.28, 1.00				
BBTS +	4.00	1.93	.004	0.53	0.96, 2.96				
<b>CSA</b>						.61	147.74	1, 96	<.001
BBTS –	1.38	0.41	.037	0.19	0.11, 0.84				
BBTS +	12.16	9.26	<.001	1.52	6.30, 12.23				

Note. BBTS = brief betrayal trauma survey; CTQ = childhood trauma questionnaire; CEA = childhood emotional abuse; CPA = childhood physical abuse; CSA = childhood sexual abuse.

BBTS(–) represents the regression constant ( $\beta_0$ ), i.e. no trauma reported in the relevant BBTS subscale; BBTS(+) represents the regression parameter ( $\beta$ ), i.e. trauma was reported in the relevant BBTS subscale.

<sup>a</sup> Bootstrap results based on 1000 bootstrap samples.

These conflicting results may partly explain why studies disagree on the strength of the relationship between CPA and different dimensions of psychosis. Many have found the prevalence of CPA to be significantly associated with psychosis (McCabe et al., 2012; Rubino et al., 2009; Shevlin et al., 2007), whereas others have found it to be a weak or non-existent factor (Huang et al., 2019). Moreover, one study reported mixed results depending on which instrument the CPA conceptualization was taken from (Ramsay et al., 2011).

#### 4.3. Childhood sexual abuse (CSA)

CTQ scores appeared to be significantly higher in the group that reported CSA in the BBTS compared to those who did not. CSA was the only subcategory reported by only one participant in the BBTS, but not in the CTQ. There was however a significant amount who reported CSA in the CTQ (Fig. 1D). The regression analysis further showed CTQ scores to be significantly higher than zero in the group of participants who did not report any CSA in the BBTS. However, this result was the closest to non-significance out of all subscales, i.e., there was likely a very low rate of false reports of CSA in the BBTS. These findings further suggest that there is a possible overrepresentation in the CTQ, underrepresentation in the

BBTS, or a combination of both. Moreover, the findings are compatible with discrepancies between studies investigating the relationship between CSA and psychosis, where, depending on the nature of the CSA (Cutajar et al., 2010), significant associations (Elklit and Shevlin, 2011; Trauelsen et al., 2015), weak or no associations (Ramsay et al., 2011; Rubino et al., 2009), or even mixed results have been found.

#### 4.4. General discussion

The findings of the current study provide an explanation as to why many studies report differing associations between CT subcategories and psychosis, and emphasize the need for valid and accurate assessments of CT across studies. There are several factors potentially contributing to the significantly different reports between the two instruments. Firstly, the findings showed that if participants reported they had experienced CT in the BBTS, most also reported this in the CTQ, suggesting that the rate of false positives in the BBTS and false negatives in the CTQ were low. Instead, the discrepancies appeared to mainly come from participants reporting they did not experience CT in the BBTS, while later reporting they did experience some measure of CT in the CTQ.

There is an overall tendency to retrospectively underreport CT

(Burgermeister, 2007; London et al., 2008), and false positives are considered rare (Hardt and Rutter, 2004). An overall lower rate of CT reported in interviews compared to self-report questionnaires has been described in previous studies (Dill et al., 1991; Jansen et al., 2016), further supporting the current findings. Self-disclosure of abuse might be easier in a confidential and anonymous self-report setting than in a face-to-face interview (Dill et al., 1991), as many often feel ashamed, blame themselves, or fear not being believed, particularly in cases of close interpersonal trauma (Lev-Wiesel et al., 2014; Ullman, 2003, 2007). Additionally, there may be interpersonal factors between the participant and the interviewer that affect the participant's disclosure, such as the perceived friendliness of the interviewer (Lev-Wiesel et al., 2014) or a lack of trust and rapport (Jansen et al., 2016). On the other hand, a face-to-face setting allows the interviewer to observe the participant's reactions and body language, and to probe should the participant be unsure or hesitant. This interview format does pose questions about whether applying any sort of pressure is ethically acceptable. Furthermore, the potentially negative effects of disclosing CT on the participant emphasize the importance of a positive and reassuring response from the interviewer (Read et al., 2007; Ullman, 2003).

In cases of severe close interpersonal trauma, a person may have partly or fully forgotten traumatic events due to dissociation (Freyd et al., 2001; London et al., 2008). The BBTS was created to explicitly target this aspect of CT, *i.e.*, close interpersonal traumatic events. However, the very nature of this type of trauma may cause an underreporting due to trauma-specific amnesia (Freyd, 1994; Ullman, 2003). Following, the largest discrepancies between instruments were observed in CEA, which some have found to be the most powerful subscale of CT when explaining the variance in dissociation in psychotic patients (Braehler et al., 2013). Furthermore, those with a close relationship to the perpetrator in interpersonal trauma more often delay disclosure (Foyne et al., 2009), giving additional suggestions as to why reports may be lower in the BBTS.

The way the instruments inquire about CT may also have played a prominent role. Many BBTS items explicitly ask if the participant experienced abuse, which requires the participant to make a personal judgement about whether their experiences were abusive or not, and whether they see themselves as a victim. Peoples' ideas of what constitutes abuse may vary depending on legal definitions and personal opinions (Bottoms et al., 2016). Therefore, answers may be influenced by subjective perceptions, which has been found to lower response rates (Brewin et al., 1993; Dill et al., 1991; Lev-Wiesel et al., 2014; Moody et al., 2018). Conversely, the CTQ presents most questions objectively and gives the opportunity to give a graded response. Questionnaire items with specific descriptions of a potentially traumatic event are generally preferred over questions that ask the participants to label themselves as abused (Hardt and Rutter, 2004; Moody et al., 2018), and have been found to result in more valid answers (Dill et al., 1991; Hardt and Rutter, 2004; Lev-Wiesel et al., 2014). Similarly, a few BBTS items leave little to no room for subjectivity, which should, according to this reasoning, strengthen their validity. Accordingly, the CPA subscale, which has the most explicit, objective, and elaborate description of the three subscales, had the best convergent validity with the CTQ when cut-off scores were used.

When discussing the validity of CT reported in the CTQ compared to the BBTS, it should be mentioned that the rate of CT reported between studies using the CTQ often varies a great deal due to several methodological factors (Baker and Maiorino, 2010). In the current study, CT prevalence measured with the CTQ was found to be 63.9% for CEA, 36.7% for CPA, and 24.5% for CSA, which is concurrent with previous studies. For instance, studies assessing FEP participants have found the CEA prevalence to range from 11% (Wang et al., 2013) to 90% (Spidel et al., 2010), that of CSA from 6% (Corsi-Zuelli et al., 2020) to 39.8% (Spidel et al., 2010), and that of CPA from 8% (Catalan et al., 2017) to 36% (Bendall et al., 2012). While it is possible that these varying rates could be influenced by different confounding factors, *e.g.*, socioeconomic status, noteworthy differences remain considering they are measured in

the same population (FEP individuals). Additionally, in comparison, studies using the BBTS, report a seemingly more stable prevalence of both close interpersonal trauma and non-interpersonal CT: 31.5% and 13.1% (Haahr et al., 2018), 35.1% and 16.3% (Solesvik et al., 2016), and 36% and 16% (Stain et al., 2014), respectively. However, Haahr et al. (2018), who calculated the prevalence of the same subscales with the BBTS in a manner identical to that of the current study, found lower rates (CEA: 14.7% vs. 33%; CPA: 20.7% vs. 43.9%; CSA: 10.4% vs. 15.3%). This could indicate that the problem lies with the emotional, physical, and sexual abuse subscales rather than the assessment instruments.

#### 4.5. Limitations

This study had several limitations, one of the most significant being the fundamental differences the CTQ-SF and BBTS, which resulted in a comparison across only three subscales of CT. A large amount of data could not be included, such as the childhood neglect subscales of the CTQ, or the non-interpersonal trauma events and all potential adult trauma of the BBTS, all of which are associated with psychosis (Garcia et al., 2016; Lommen and Restifo, 2009; Varese et al., 2012). Furthermore, because of large differences in how the instruments are scored, many details had to be excluded from the BBTS to allow comparisons, such as the frequency of the event or the age of when the event took place, which is also associated with psychosis (Alameda et al., 2015; Baudin et al., 2017; Trauelsen et al., 2015). While the current study did not assess the association between CT and psychosis, these are severe limitations should one want to synthesize data from these instruments to explore this. Additionally, the BBTS had a differing number of items for each subscale, all of which were fewer than the five per subscale in the CTQ, which limited the comparability of the two. The statistical weaknesses and issues that come with the dichotomization of data were also a major limitation (Fedorov et al., 2009), particularly as only dichotomous BBTS values were utilized.

Some might also consider the retrospective nature of both instruments as a limitation. However, retrospective measures of CT have been found to be reliable and stable (Brewin et al., 1993), even in patients with psychosis (Fisher et al., 2011; Simpson et al., 2019). The lack of a nonclinical control group can be considered a limitation in terms of generalizations and comparability; however, the study's objective was to assess CT reports in psychosis populations specifically. Lastly, in all cases, the CTQ was administered after the BBTS, which may have led to a cued recall of traumatic memories (Herman and Harvey, 1997; Williams, 1995), further skewing the trauma reports. However, considering participants completed both assessments on the same day, this is unlikely. Still, future studies may wish to randomize the order of when each instrument is used to minimize potential effects of cued recall. Strengths of the study included the representative nature of the participant sample and the fact that the same participants completed both instruments.

#### 4.6. Conclusions

The present study explored the convergent validity of two well-validated and reliable assessment instruments of CT by focusing on CEA, CPA, and CSA in the same sample of FEP participants. Significant inconsistencies in reports between the two instruments were found, supporting several systematic reviews highlighting the issue of how different ways of conceptualizing and measuring childhood trauma leads to heterogeneous results when exploring the association between childhood trauma and psychosis (Bendall et al., 2008; Matheson et al., 2013; Vila-Badia et al., 2021). If researchers continue to operationalize and conceptualize CT differently using different methodologies, synthesizing and comparing data will continue to be problematic, which ultimately hinders the building a foundation of knowledge about different types of CT and its consequences. The fact that the majority of the limitations of the current study concerned problems with comparability between the CTQ and BBTS emphasizes this issue further. The present findings cannot

indicate which of the two instruments is more valid or accurate, yet their differences do support the call for a common conceptualization of CT and its subscales in research. Additionally, considering the strong evidence that most CTs are interrelated rather than independent, studies should aim to assess all possible adversities to prevent confounding (Dong et al., 2004; Trauelsen et al., 2015). Factors known to influence the severity of traumatization, such as frequency or age should also be included. Finally, a more all-encompassing and common CT assessment would allow more solid conclusions to be drawn in research, and benefit clinicians by providing them with a better understanding of their patients' trauma history before commencing treatment.

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## Author statement

Julie Perrine Schaug: Conceptualization, Formal Analysis, Methodology, Data curation, Writing- Original draft preparation. Ole Jakob Storebø: Supervision, Methodology, Reviewing and editing. Stephen Fitzgerald Austin: Supervision, Methodology, Reviewing and editing. Anne Marie Trauelsen: Reviewing and editing. Marlene Buch Pedersen: Supervision, Reviewing and editing. Ulrik Helt Haahr: Supervision, Methodology, Reviewing and editing. Erik Simonsen: Reviewing and editing, Methodology.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.psycom.2023.100112>.

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