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Development and evaluation of the Trauma Screener-Intellectual Disability: a post-traumatic stress disorder screening tool for adults with mild intellectual disability or borderline intellectual functioning

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Abstract

Background This study aimed to evaluate the validity and reliability of the adult self-report and proxy version of the Trauma Screener-Intellectual Disability (TS-ID) in adults with mild intellectual disability or borderline intellectual functioning (MID-BIF). An optimal cut-off value was determined for the ratio of specificity to sensitivity for predicting the diagnosis of post-traumatic stress disorder (PTSD).

Methods The TS-ID was adapted from a Dutch Child and Adolescent Trauma Screener, for use with adults with MID-BIF. Outcomes based on the TS-ID were compared with the presence of PTSD, as classified using the Diagnostic Interview Trauma and Stressors–Intellectual Disability (Mevissen *et al.* 2018). The TS-ID adult version was administered to 97 participants with MID-BIF who lived in supported housing, whereas the TS-ID proxy version was administered to 92 family members or professional caregivers.

Results The TS-ID adult version showed high internal consistency (Cronbach's α = .94) and excellent validity (AUC = .94) for distinguishing PTSD in adults with MID-BIF. Optimal specificity and sensitivity was found at a cut-off score of 18. Although the TS-ID proxy version demonstrated excellent internal consistency (Cronbach's α = .93), it showed no validity in statistically distinguishing PTSD in adults with MID-BIF.

Conclusions The TS-ID showed favourable psychometric qualities as a screening instrument of PTSD in the case for people with MID-BIF.

Keywords Assessment, Borderline intellectual functioning, Mild intellectual disability, Post-traumatic stress disorder, PTSD, Screening, Trauma

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Introduction

Post-traumatic stress disorder prevalence in individuals with mild intellectual disability or borderline intellectual functioning

People with mild intellectual disability or borderline intellectual functioning (MID-BIF) (IQ 50–85) experience many negative life events (e.g. McDonnell *et al.* 2019) and may develop post-traumatic stress disorder (PTSD) more often than the general population (e.g. Mevissen *et al.* 2016; Mason-Roberts *et al.* 2018; Nieuwenhuis *et al.* 2019; De Vogel & Didden 2022). The DSM-5-TR criteria for PTSD include exposure to actual or imminent death, serious injury and/or sexual violence, followed by symptoms of intrusions, avoidance, negative alterations in cognitions and mood and alterations in arousal and reactivity. PTSD symptoms last for at least 1 month and cause distress in social or occupational functioning or functioning in other important areas (American Psychiatric Association [APA] 2022). PTSD has been found to be associated with several other mental health problems (Pietrzak *et al.* 2012; Goldstein *et al.* 2016), which may be especially the case in individuals with MID-BIF (McNally *et al.* 2021). In recent years, a growing body of research has indicated that trauma treatment such as eye movement desensitisation and reprocessing EMDR therapy is suitable, safe and potentially effective for adults with MID-BIF diagnosed with PTSD and/or comorbid behavioural and mental health problems (e.g. Penninx *et al.* 2021; Verhagen *et al.* 2023).

Post-traumatic stress disorder unnoticed

Although PTSD is common among individuals with MID-BIF, it often remains unnoticed in this target group (Nieuwenhuis *et al.* 2019; Mevissen *et al.* 2020; Kildahl *et al.* 2020a; Kildahl *et al.* 2020b). For instance, in Mevissen *et al.*'s (2020) study, among 106 adults with MID-BIF, the prevalence of PTSD-diagnoses reported in the patients' file was much lower (2%) than the rate (38%) of PTSD that was found based on a standardised clinical interview for PTSD. These and other studies suggest that PTSD is frequently underdiagnosed in individuals with MID-BIF. It is likely that if PTSD is not recognised, potentially effective trauma treatment will not be provided.

Screening may help to identify PTSD in individuals with MID-BIF at an early stage. Several trauma screeners based on the DSM-5-TR have been developed and validated for individuals without MID-BIF. However, these screeners have not been adapted or validated for people with MID-BIF. When employing such questionnaires for individuals with MID-BIF, it is important to make adjustments, including simplified language and supporting visualisation, to improve accessibility and comprehension (Kooijmans *et al.* 2022). Until recently, a screening instrument for PTSD was not available for individuals with MID-BIF.

The present study

For the purpose of developing a PTSD screener adapted to people with MID-BIF, we adapted the Kinder en Jeugd Trauma Screener (KJTS; Kooij *et al.* 2024) after permission from the KJTS research group. The language level of the KJTS appears to be at the level that is also used in clinical work with adults with MID-BIF. However further adaptations were necessary to align the screener with the perspectives of individuals with MID-BIF (e.g. some of the KJTS refers to school and not to work; see Methods section). For example, the item content of the KJTS refers to parents and relatives but not to professional caregivers. The KJTS consists of three parts. The first part of the KJTS is based on the Clinical Administered PTSD Scale for Children and Adolescents (CAPS-CA; Nader *et al.* 1996). Both the second and third parts of the KJTS were developed using the Child and Adolescent Trauma Screen (CATS-2; Sachser *et al.* 2022). There are two versions of the KJTS: the self-report and caregiver report versions. Recent research shows that the KJTS self-report version is valid and reliable in screening for PTSD in children and adolescents (7–22 years old) in the general population (Kooij *et al.* 2024). We adapted the KJTS self-report version into the Trauma Screener-Intellectual Disability Adult version (TS-ID adult version). The KJTS caregiver report version was adapted into the Trauma Screener-Intellectual Disability Proxy version (TS-ID proxy version).

The purpose of the present study was to evaluate TS-ID by examining the validity and reliability of

both versions of the screener for use in adults with MID-BIF. We also investigated which cut-off value of the TS-ID adult version fits the optimal ratio of specificity to sensitivity in predicting diagnosis according to a structured PTSD interview.

Methods

Participants and setting

Adults with MID-BIF who were living in supported housing of two ID care services in the Netherlands ('s Heeren Loo and Trajectum) were informed about the study by their treatment staff. The inclusion criteria were that participants were diagnosed with MID or BIF, were at least 18 years old and had sufficient Dutch language ability. The exclusion criteria were suicidality, alcohol/drug use and use of serious sedating medications (e.g. anxiolytics). Participation in this study was voluntary. All clients interested in participating received an information letter. The study protocol received approval from the Medical Research Ethics Committee, East Netherlands (reference number: 2020-6967-NL75909.091.20). One hundred participants provided written informed consent to participate in this study. For participants who lacked the capacity to provide formal consent a legal representative was asked to provide the consent.

Data were collected from 97 participants (three participants did not complete the Diagnostic Interview Trauma and Stressors-Intellectual disability [DITS-ID]). For five of the 97 participants, only the TS-ID adult version was completed. For the remaining 92 participants, both the TS-ID adult version and the TS-ID proxy version were completed. There were 55 women (57%) and 42 men (43%) between 18 and 73 years of age (M = 32; SD = 14.1). IQ scores were available for 92 participants. The mean IQ was 68 (range: 50–85; SD = 9.4). For five participants, no IQ scores were found in their client files, but their files specified that they were diagnosed with MID. Among 37 participants (38%), we found the presence of at least one DSM-5 classification (American Psychiatric Association 2013) in their client file: 20 participants (21%) had autism spectrum disorder, 11 (11%) attention deficit hyperactivity disorder (ADHD), seven (7%) PTSD, three (3%) personality disorder, four (4%) mood disorder, and two (2%) anxiety disorder. The 92 individuals who completed the TS-ID proxy version consisted of 73 professional caregivers, 11 fathers, five mothers, two sisters and one brother.

Instruments

Child and Adolescent Trauma Screen

The Kinder en Jeugd Trauma Screener (KJTS) (Kooij *et al.* 2024) is a trauma screener for children and adolescents (7–22 years old). There are self-report and caregiver report versions, each consisting of three sections. The first section was a Dutch translation of the event section of the Clinical Administered PTSD Scale Children and Adolescents (CAPS-CA; Nader *et al.* 1996) and consists of a checklist of traumatic and stressful events (19 events in the child version and 20 events in the parent version), in which participants can indicate whether they ever had experienced the event by marking 'Yes' or 'No'. The second section is a Dutch translation of the symptom section of the Child and Adolescent Trauma Screen (CATS-2; Sachser *et al.* 2022) and consists of a list of 20 questions that correspond to the DSM-5-TR symptom criteria for PTSD. Each item can be scored on a 4-point Likert scale (0 = *never*, 1 = *sometimes*, 2 = *often*, 3 = *almost always*). The third section is a Dutch translations of the impact and functioning section of the Child and Adolescent Trauma Screen (CATS-2; Sachser *et al.* 2022) and contains five questions about the impact of symptoms on daily functioning, with response options: 'Yes' or 'No'. The KJTS self-report and KJTS caregiver report both have high internal consistency. Kooij *et al.* (2024) found poor agreement between the self-report of the children and adolescents and their caregivers. Area under the curve (AUC) of the KJTS self-report was excellent compared to PTSD diagnosis using the CAPS-CA (Kooij *et al.* 2024).

Development of the adult version of the Trauma Screener-Intellectual Disability

The adult version of the Trauma Screener-Intellectual Disability (TS-ID adult version) was adapted from the self-report version of the KJTS. Adjustments were made based on input from the two focus groups and the clinical expertise of the first and third authors on trauma and PTSD in adults with MID-BIF. One focus group consisted of three adults

with MID-BIF, and the other consisted of four psychologists with extensive experience in the care and treatment of adults with MID-BIF. In both focus groups, the TS-ID adult version was presented to the participants, after which they were asked what their overall impression was and what they thought of its coverage. As a result, the instruction in part one of the TS-ID adult version was clarified, and in this section, the wording of three original events were modified, such as 'placed out of home' was changed into 'placed out of home or placed in crisis care', and the wording of five events was simplified. For example, 'dying of someone important to you' was reworded into 'death of someone important to you'. The instructions for scoring the questions in part two have also been clarified. The two questions in section three were modified to better fit the participants. For example, 'daycare' was added to 'school or work'. Next, the TS-ID adult version was piloted with five adults with MID-BIF in which the 'think aloud' method (Lundgrén-Laine & Salanterä 2010) was used to assess how they interpreted each question of the TS-ID. This was done by asking participants to speak out when answering the questions. The researcher observed carefully to determine whether the thought that was spoken aloud corresponded to the content of the question and the answer given. No further adjustments were made after pilot testing the adult TS-ID version.

Development of the proxy version of the Trauma Screener-Intellectual disability

The TS-ID proxy version is adapted from the KJTS caregiver report version. We adapted the KJTS caregiver report version based on the input from two focus groups and the clinical expertise of the first and third authors on trauma and PTSD in adults with MID-BIF. Focus group one consisted of two parents of adults with MID-BIF and focus group two consisted of two professional caregivers who supported people with MID-BIF. Several adaptations were made. In the adapted version the word 'child' has been replaced. For example, 'How often did your child suffer from the following feelings …' has been changed to 'How often did the person you are completing this list for suffer from the following feelings …'. The instructions in part one of the TS-ID adult versions have been clarified. In this section, three new events are added to the list of events and the three original events are expanded. For example, 'Experienced parents, or other family members hitting each other, kicking, throwing objects, or destroying things', which now also includes 'people from the living group'. Three phrases were simplified, such as 'Left alone for a long time or with other children without an adult around', which has been changed to 'Left alone for a long time without an adult around'. The instructions for scoring the questions in part two were also clarified. Regarding section three, the same adjustments were made as in the TS-ID adult version (see above). The TS-ID proxy version was piloted with two professional caregivers and four parents of adults with MID-BIF, in which also the 'think aloud' method was applied. No further changes were made to the TS-ID proxy version after pilot testing.

Trauma Screener-Intellectual Disability

There are two versions of the TS-ID, a self-report version (TS-ID-adult version) and a proxy version. The two versions of the TS-ID are identical in content but differ in phrasing. The adult version is completed by the client, while the proxy version is completed by a person who has regular contact with the person with MID-BIF. Both the TS-ID adult version and TS-ID proxy version contains three sections, with response options identical to those of the KJTS. The first section of the TS-ID adult version and the TS-ID proxy version consists of 22 and 23 events, respectively, in which a wide variety of events are questioned: not only events that meet the A criterion but also other negative life events. The proxy version of the TS-ID includes the following additional event: 'You have heard that the person for whom you are completing this list, has been touched unwanted, but he/she denies it'. Section two of both versions of the TS-ID consists of 20 PTSD symptoms corresponding to the DSM-5-TR symptom criteria (cluster B: items 1–5, cluster C: items 6–7, cluster D: items 8–14 and cluster E: items 15–20). The total symptom frequency score (range: 0–60) can be obtained by summing the scores of the 20 questions, in which questions 9, 10 and 15 are divided into several sub-questions. For the latter questions, only the highest score is recorded in the final score. The third section of both versions of the TS-ID contains

five questions about the impact of symptoms on daily functioning with response options: 'Yes' or 'No'.

Diagnostic Interview Trauma and Stressors-Intellectual Disability

The DITS-ID (Mevissen *et al.* 2018) is a clinical interview in which a PTSD diagnosis can be established in adults with MID-BIF, based on the DSM-5 criteria. The protocol systematically evaluates DSM-criteria A, B, C, D, E, F, G and H to determine whether an individual meets the criteria necessary for PTSD diagnosis. The DITS-ID was developed for people with MID-BIF. To facilitate accessibility, DITS-ID employs simplified language and visual cues. DITS-ID consists of five sections. The first section consists of 31 questions on whether the participant had ever been exposed to a certain event. If the answer is 'Yes', the interviewer asks 'What happened?' and maps an event on a timeline. According to the answer, the interviewer determines whether the event meets the A criterion of PTSD. The following section includes 39 questions on PTSD symptoms, 32 of which correspond to the DSM-5 symptom list (PTSD criteria B, C, D and E). In addition, four potentially atypical symptoms (e.g. 'Have you changed in terms of food since the events?'. For example, that you eat too much or too little?) are asked. Participants are requested to answer with 'Yes' or 'No', while the 'Other' category allows for answers such as 'I don't know' or 'I've always had that'. Then a thermometer chart, which serves as a visual analogue, helps participants to indicate the subjective degree of impairment in daily life on a scale from 0 (*totally not*) to 8 (*very much*); a score of 4 or higher indicates that the G criterion is met. If the G criterion is met, the participant is asked to provide details about when the symptoms started, at what age and after what event. This helps confirm whether the symptoms persist for more than a month, which is a prerequisite for diagnosing PTSD (criterion F). Finally, the interviewer assesses whether the symptoms can be attributed to medication, drug use, other medical conditions or mental disorders (criterion H). The DITS-ID has demonstrated good psychometric properties in adults with MID-BIF. Internal consistency was high, interrater reliability of the DITS-ID was good to excellent, and the construct and convergent validity of the DITS-ID was good (Mevissen *et al.* 2020; Versluis *et al.* 2024). In the present study, Cronbach's alpha for the DITS-ID total score on the symptom section (sum of 'Yes' scores) was .86, which indicates good internal consistency.

Procedure

The data were collected between November 2021 and June 2022. Trained master students of RadboudUniversity and Vrije University Amsterdam, and the first author administered the TS-ID adult and the DITS-ID to 97 participants. For all three sections of the TS-ID adult version (i.e. checklist on traumatic and stressful events, PTSD symptoms and impact of the symptoms on daily life), participants first read the instructions independently and were then asked, 'Can you tell me what to do now?'. If a participant could not read, all questions of the screener were read out loudly. If the participant understood what he or she had to do, they proceeded independently to complete the questions in the section. If the participant did not understand what they should do, the instruction was explained by the students or researcher after which they were asked again, 'Can you tell me what to do now?'. If the participant still did not understand what to do, the student or first author read the first three questions of the section to the participant, after which the participant responded. If, after the first three questions, the participant was still unable to continue answering the questions independently, all questions in the section were read aloud by the student or first author. Completing the TS-ID adult version took approximately 10 minutes on average (M = 10.3; SD = 4.5). Help was needed by 35 participants in the first part of the TS-ID adult version (i.e. checklist on traumatic and stressful events), 57 participants needed help in the second part (i.e. PTSD symptoms), and 45 participants needed help in the third part (i.e. impact of the symptoms on daily life). After the TS-ID adult version was completed, the DITS-ID was administered, which took approximately 60 minutes on average. This order was chosen to represent how the screener would be used in practice. The TS-ID proxy version was completed by a person who had regular contact with each participant. This person received the TS-ID proxy version from the researcher, asking to read the questionnaire instructions

carefully and then fill out the TS-ID proxy version independently.

An expert meeting was held to establish a cut-off score for TS-ID. The group of experts consisted of four psychologists specializing in the treatment and care of adults with MID-BIF and (suspected) PTSD. Consensus was found that the experts would rather have people wrongly screened positive as a result of the TS-ID score than people wrongly screened negative and not receive further diagnostic assessment of PTSD.

Analyses

To determine the reliability of the adult and proxy versions of the TS-ID, the internal consistency of the total symptom frequency score (section two) was calculated using Cronbach's alpha (SPSS version 27). The validity of the TS-ID adult version and TS-ID proxy version was assessed by comparing the total symptom frequency score of both versions with the final outcome of the DITS-ID (i.e. presence or absence of PTSD) using receiver operating characteristic (ROC) analysis. The discriminative capacity of both versions of the TS-ID was operationalised by calculating the AUC, which reflects their ability to distinguish between individuals with and without PTSD. When an optimal AUC value was obtained, we determined a cut-off point based on the optimal ratio between sensitivity (justified positive prediction) and 1 − specificity (false-positive prediction). In addition, Youden's J (Youden, 1950) was used as a supplementary evaluation to assess overall discriminative power. Furthermore, the positive predictive value (PPV) and negative predictive value (NPV) were calculated to provide additional insight into the predictive accuracy of the different cut-off points. In determining the cut-off score, explicit consideration was given to the outcomes of the expert meeting of professionals who will use the TS-ID in clinical practice.

The number of participants required was calculated using the R package for power calculation in diagnostic tests (Chernick & Liu 2002; Flahault *et al.* 2005; Chu & Cole 2007). Assuming a sensitivity and specificity of .8, an estimated precision of .2 (delta .2), a significance level of .05 and a power of .8 in a sample in which the distribution of yes/no PTSD is equally distributed (prevalence .5), a total of 78 participants were needed. If more than 10% of the questions in the DITS-ID, TS-ID adult version or TS-ID proxy version were not scored, the questionnaire was not included in the analyses. Accordingly, one TS-ID proxy questionnaire was excluded.

Results

Descriptive statistics

Of the 97 participants, 56 (58%) met the criteria for PTSD using DITS-ID. Of the individuals diagnosed with PTSD, 22 were male (39%), and 34 were female (61%); 26 had MID (49%), and 27 had BIF (51%).

Validity and reliability of the Trauma Screener-Intellectual Disability adult version

The validity of the TS-ID adult version was examined by calculating the AUC using ROC analysis. The AUC was assessed by comparing the total symptom frequency score of the TS-ID adult version with the outcome of the DITS-ID (i.e. the presence/absence of PTSD). The AUC value was .94 (N = 97, SD = .03, $p < .001$). This indicates the excellent validity of the TS-ID in distinguishing between individuals with and without a PTSD diagnosis (Fig. 1).

Cronbach's alpha for the total symptom frequency score (section two) of the adult TS-ID version was .94, indicating high internal consistency.

Cut-off value of the Trauma Screener-Intellectual Disability adult version

Because the ROC analyses indicated excellent validity of the TS-ID adult version in distinguishing individuals with and without a PTSD diagnosis, a cut-off value was determined for the TS-ID adult version. Based on the results depicted in Table 1, a cut-off score of 18 for the total symptom frequency score of the adult TS-ID was the optimal threshold in accordance with expert consensus, preferring a higher sensitivity at the expense of specificity. A cut-off score of 18 achieved a sensitivity of 96% and specificity of 83%, resulting in a Youden's J index of 0.79, a PPV of 89% and a NPV of 94%. Thus, sensitivity and specificity were in balance while diagnostic accuracy was maximal.

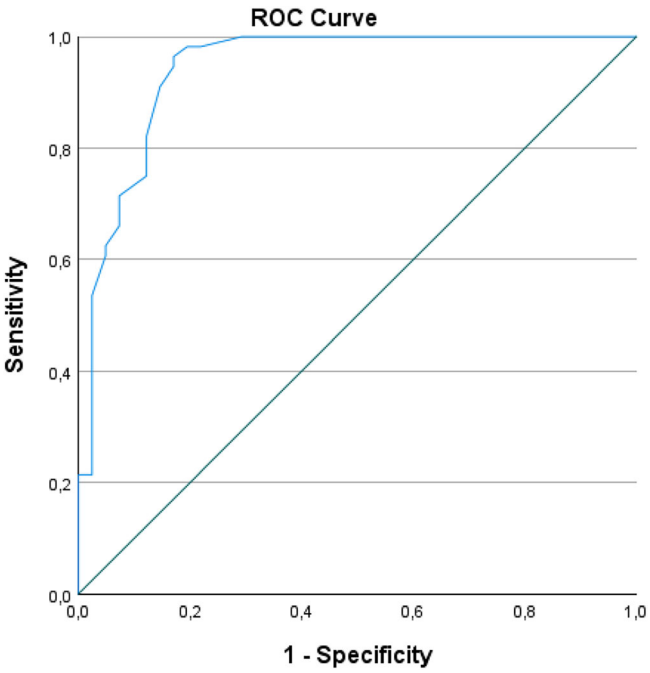

Figure 1. ROC curve for the TS-ID adult total frequency score and final outcome of the DITS-ID (i.e. yes or no PTSD).

Table 1 Sensitivity, specificity, Youden's *J*, PPV and NPV for cut-off scores of the TS-ID adult total score

Cut-off score TS-ID adult	Sensitivity	1 − specificity	Youden's *J*	PPV (%)	NPV (%)
14	1.00	.71	0.71	82.4	100
15	.98	.78	0.76	85.9	97.0
16	.98	.78	0.76	85.9	97.0
17	.98	.80	0.79	87.3	97.1
18	**.96**	**.83**	**0.79**	**88.5**	**94.4**
19	.95	.83	0.78	88.3	91.9
20	.91	.85	0.77	89.5	87.5
21	.82	.88	0.70	90.2	78.3
22	.79	.88	0.66	89.8	75.0
23	.75	.88	0.63	89.4	72.0
24	.71	.93	0.64	93.0	70.4
25	.70	.93	0.62	92.9	69.1
26	.66	.92	0.59	92.5	66.7
27	.63	.95	0.58	94.6	65.0
28	.61	.95	0.56	94.4	63.9
29	.54	.98	0.51	96.8	60.6
30	.50	.98	0.48	96.6	58.8

Note: Bold represents the optimal cut-off score.

Validity and reliability of the Trauma Screener-Intellectual Disability proxy version

The validity of the TS-ID proxy version was examined by calculating the AUC using ROC analysis. AUC was assessed by comparing the total symptom frequency score of the TS-ID proxy with the final outcome of the DITS-ID (i.e. yes or no PTSD). The AUC value was .60 (N = 91, SD = .06, p = .10), indicating low validity of the TS-ID proxy version for distinguishing between individuals with and without a PTSD diagnosis. Cronbach's alpha for the total symptom frequency score of the TS-ID proxy version (section two) was .93, indicating high internal consistency.

Because the ROC analyses indicated that the TS-ID proxy version is not a valid instrument for detecting PTSD in people with MID-BIF, a cut-off value was not determined for the TS-ID proxy version.

Discussion

The TS-ID adult version demonstrated high internal consistency and excellent validity in distinguishing

PTSD in adults with MID-BIF. A cut-off value of 18 is recommended for the adult version of the TS-ID, with which an optimal balance between sensitivity and specificity was achieved. While demonstrating high internal consistency, the TS-ID proxy version did not have significant validity in distinguishing individuals with and without a PTSD diagnosis.

The effectiveness of the TS-ID proxy version in assessing adults with MID-BIF may be limited by the lack of knowledge of parents (Kooij *et al.* 2024) and professional caregivers regarding their trauma history (Hoogstad *et al.* 2023). Furthermore, three of the four PTSD symptom clusters consist of symptoms about thoughts and feelings as a result of experiencing a traumatic event, that is, Intrusions (cluster B), Avoidance (cluster C) and Negative alterations in cognitions and mood (cluster D). Adults with MID-BIF communicate less clearly about their thoughts and feelings with their caregivers (Hassiotis & Turk 2012; Summers *et al.* 2017). Therefore, it may not be surprising that the TS-ID proxy version did not demonstrate significant validity in distinguishing individuals with and without a PTSD diagnosis. This lack of validity underscores the limitations and challenges of using proxy informants for screening for subjectively experienced psychological symptoms, such as for PTSD (Webb *et al.* 2024).

In our study, a large proportion of the participants required assistance in completing the TS-ID adult version. When assisting persons with MID-BIF to complete self-reports, the nature of the contact between them and the diagnostician can be a confounder, especially when sensitive topics are addressed (Kooijmans *et al.* 2022). It remains unclear whether the assistance from the master students and the main researcher has influenced clients' responses and consequently affected the validity and cut-off value of the TS-ID adult version. We have taken measures to reduce the influence: (1) To determine if support was needed, we asked participants, after they had read the TS-ID adult version instruction or after the instruction had been read aloud, 'Can you tell me what to do now?' rather than 'Do you know what to do?'. (2) Pilot testing showed that participants could understand the content of the questions; however, if not, we only provided instructions on understanding the question and not on answering it.

Limitations of the study

This study has some limitations that should be considered. First, we examined a specific sample of adults with MID-BIF living in supported housing in the Netherlands, which may limit the generalisability of the findings. Second, PTSD diagnosis was solely based on the DITS-ID rather than on a comprehensive differential diagnostic assessment. Therefore, the rate of PTSD in this sample should not be used as a clinical prevalence estimate. Finally, one of the developers of the TS-ID was also involved in collecting some of the data, which may have led to bias.

Recommendation for future research

The TS-ID version for adults is a new instrument, and future studies on the screener should be conducted in various samples and settings, such as outpatient care settings, forensic care and mental health settings, where many people with MID-BIF receive care and treatment (e.g. Nieuwenhuis *et al.* 2019). It is recommended that a standardised written procedure be developed to address commonly misunderstood items. Future research should explore how to implement such procedures to support better understanding without biasing the results. This could include investigating which items are well or less well understood across different samples, examining whether comprehension is related to verbal IQ or language skills and determining the most effective method for assisting clients during completion, such as reading items aloud versus using self-administration. Like adults with MID-BIF, children with MID-BIF also have an increased risk of experiencing many life events compared with children without MID-BIF (e.g. Mevissen *et al.* 2016; Dion *et al.* 2018; McDonnell *et al.* 2019; Vervoort-Schel *et al.* 2021). However, a screening tool for PTSD is not yet available in children with MID-BIF. Future studies should adapt and evaluate trauma screeners for children with MID-BIF so that PTSD can be better recognised in children with MID-BIF.

Conclusion

Although adults with MID-BIF have an increased risk of developing PTSD, PTSD is often not well recognised in these individuals (Nieuwenhuis *et al.* 2019; Mevissen *et al.* 2020; De Vogel &

Didden 2022). The adult TS-ID version appears to be a promising screening instrument for recognising PTSD in people with MID-BIF. Applying the TS-ID adult version appears likely to reduce the risk of under-diagnosing PTSD and provide adults with MID-BIF with the trauma treatment they need, which ultimately improves their quality of life.

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Conflict of interest

The authors declare that they have no conflict of interest.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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