Check for updates

Received: 27 January 2023 | Revised: 9 January 2024 | Accepted: 25 March 2024

DOI: 10.1111/jar.13237

SPECIAL ISSUE

JARID Journal of Applied Research in Intellectual Disabilities bild WILEY

# Prolonged exposure treatment for post-traumatic stress disorder: Single case studies in a sample of adults with mild intellectual disabilities

Paul Prins [1,2] | Karin Nijhof [2,3]

[1]Stevig, Nijmegen, The Netherlands

[2]Pluryn, Nijmegen, The Netherlands

[3]Behavioral Science Institute Radboud University, Nijmegen, The Netherlands

**Correspondence**
Paul Prins, Stevig, Wanssumseweg 14, 5807 EA Oostrum, The Netherlands.
Email: p.prins@stevig.nl

## Abstract

**Background:** Post-traumatic stress disorder (PTSD) is common in adults with intellectual disabilities. Often there are additional disorders such as substance use, mood and anxiety disorders. The current study focuses on the feasibility and initial efficacy of prolonged exposure (PE) for PTSD in adults with mild intellectual disabilities. The secondary effect of PE on additional mood, anxiety and substance use disorders is also examined.

**Methods:** A single case experimental design ($N = 12$) with an A (baseline)-B (intervention) phase including a follow-up measurement after 3 months was conducted. Time series and single time points measurements were performed.

**Results:** Six participants dropped-out. The results showed a significant decrease in PTSD symptoms and a significant decrease in additional symptoms (social avoidance, anxiety and stress), among participants who completed treatment.

**Conclusion:** PE appears to be a feasible and effective treatment for PTSD in some adults with mild intellectual disabilities. Suggestions emerge from this study to make standard PE treatment more appropriate for adults with mild intellectual disabilities. Further research is needed to reduce drop-out in trauma treatment. Some suggestions for this are made in this study. Treatment of PTSD with PE did not appear to affect comorbid mood disorders. Further research is needed.

KEYWORDS

intellectual disabilities, post-traumatic stress disorder, prolonged exposure treatment, single-case study

## 1 | INTRODUCTION

People with mild intellectual disabilities have a full-scale IQ between 50 and 85 and problems in adaptive functioning (American Psychiatric Association, 2013; Troost & Groen, 2016). They are mostly dependent on support. People with intellectual disabilities are at increased risk for adverse life experiences (e.g., violence, poverty, sexual abuse).

They are also more vulnerable to develop a post-traumatic stress disorder (PTSD) after experiencing a potentially traumatic event compared to the general population as they have less access to sources of resilience (Keesler, 2020; McNally et al., 2021; Scheffers et al., 2020), such as emotional regulation skills and a supportive social network (Karatzias et al., 2019; McGlivery, 2018).

The Diagnostic and Statistical Manual of Mental Disorders fifth edition (American Psychiatric Association, 2013) refers to PTSD when someone is exposed to an actual or threatened death, serious injury or sexual violence, and, as a result, the person suffers (for more than a month) from intrusive painful memories related to the event, avoids stimuli that are connected with the shocking event, and there is increased arousal and reactivity, as well as negative changes in

 © 2024 John Wiley & Sons Ltd. 

cognitions and mood. Of the 80% of the general population who experience a traumatic event, 5%–10% develops PTSD (Mevissen, et al., 2016a), while the prevalence of PTSD in people with intellectual disabilities is estimated between 10% (Daveney et al., 2019) and 40% or even higher (Mevissen, Didden, et al., 2020). Moreover, the number of PTSD classifications in the group of patients with intellectual disabilities (19.7%) turns out significantly higher compared to the number of patients in the general population (10.4%; Wieland et al., 2012). Comorbid disorders occur in 80%–90% of people with PTSD (Pizzimenti et al., 2017; van Minnen et al., 2015). The most common comorbid diagnoses with PTSD are substance use disorders, mood and anxiety disorders (Luteijn et al., 2020; Pizzimenti et al., 2017; van Minnen et al., 2015). The prevalence of comorbid disorders in people with intellectual disabilities is expected to be at least similar (Van Duijvenbode & Van der Nagel, 2019).

Trauma-focused therapy is more effective than non-trauma-focused therapy in treating PTSD (AKWA, 2020). International guidelines for the treatment of PTSD recommend the psychological treatments Prolonged Exposure (PE), Cognitive Therapy (CT), Cognitive Processing Therapy (CPT), Eye Movement Desensitization and Reprocessing Therapy (EMDR) and Trauma Focused Cognitive Behavioural Therapy (TF-CBT) (AKWA, 2020; National Institute for Clinical Excellence, 2005) as first, and most effective, choice treatments for PTSD. If treatment focuses on PTSD, the comorbid disorders in addition to PTSD symptoms may also decrease (van Minnen et al., 2015).

Research suggests that PTSD can be treated with trauma-specific treatments in people with intellectual disabilities (Byrne, 2022; Karatzias et al., 2019; Kroese et al., 2016; McNally et al., 2021; Mevissen et al., 2016b), especially when the treatment is adapted or modified to the specific needs of the individual (Keesler, 2020). Adaptions may be necessary because it can be challenging for people with intellectual disabilities to describe their experiences, locate and describe the associated emotions and take control of their own lives (Skelly, 2020a; Skelly, 2020b). Research on the treatment of PTSD in people with intellectual disabilities has focused primarily on EMDR, CBT and TF-CGT, while PE is a widely studied and effective treatment for PTSD in the general population and for comorbid disorders such as personality disorders and psychosis (van Minnen et al., 2015). There are differences in indication, however. EMDR is, for example, recommended in cases of very high stress, powerlessness, shame and preverbal trauma (Stöfsel, 2020). PE is recommended when re-experiences are paramount in the person with PTSD and avoidance is common. Little research has been done on the effectiveness of treatment of PTSD in people with intellectual disability with PE (Byrne, 2022; McNally et al., 2021), meaning that there is very limited knowledge about the proposed mechanisms of change for PE for adults with intellectual disabilities (Byrne, 2022).

The literature suggests ways in which existing trauma treatments can be adapted for people with intellectual disabilities. A review study by Luteijn et al. (2020) shows that various adaptations are made by therapists. Extra attention is paid to establishing the therapeutic relationship. The network of the person with an intellectual disability is involved from the beginning of treatment. Extra attention is paid to motivation. In the session, there is attention to adaptations in language use. Adaptions consist of reducing the rate of speech, using simple language and dealing with the traumatic memories in smaller parts. If necessary, spoken language can be supported with visual aids. More directive work may be necessary. Sessions may be shortened and the use of positive reinforcement is suggested. Additionally, it may be necessary to pay attention to teaching coping skills.

PE is a widely studied treatment for PTSD in the general population. Research showed that the most important components of PE are repeated imaginal exposure (IE) to the traumatic events and exposure in vivo (EV) to situations that are avoided in everyday life (Bryant et al., 2008; Foa et al., 2000). During IE, the traumatic memory is worked through and the person is taught to cope with the fearful expectation. In addition, during EV the person is exposed to frightening, but safe situations.

The working mechanism of PE is explained by the inhibitory learning model of extinction (Craske et al., 2014; van Minnen et al., 2015). Dysfunctional beliefs that are related to the trauma-related fear are changed or disconfirmed by information gathered during exposure (van Minnen et al., 2015). Craske et al. (2014) conducted research on enhancing exposure therapy. They rely on the inhibitory learning model of extinction as a mechanism for exposure therapy. Exposure therapy can be optimised by applying the following strategies (1) violation of expectancy; (2) deepening extinction; (3) incidental reinforced extinction; (4) removal of safety cues; (5) variability; (6) retrieval cues; (7) multiple contexts; and (8) affect labelling. The current PE protocol (Minnen & Arntz, 2017) is based on emotional processing theory and extinction models of fear reduction.

If PTSD is treated with PE, then the symptoms, belonging to any comorbid disorders such as depression and general anxiety, may also decrease and overall functioning can improve (van Minnen et al., 2015). Other comorbid disorders such as substance use disorder, delusions, hallucinations and suicidality do not appear to increase during treatment of PTSD with PE (van Minnen et al., 2015).

Few studies examined the treatment of PTSD in adults with intellectual disabilities with PE (Byrne, 2022; Keesler, 2020; McNally et al., 2021). As far as we know, there is one single case study testing the effectiveness of PE in a woman with intellectual disabilities (Lemmon & Mizes, 2002), which shows that short-term treatment of PTSD with PE is effective in her case. Fernando and Medlicott (2009) studied a modified version of exposure therapy with a female adult with intellectual disabilities. The treatment outcome is positive, although the results should be interpreted with caution (Keesler, 2020).

The literature mentions a number of possible, but unexplored, disadvantages of treating PTSD with PE in adults with intellectual disabilities. PE, for example, requires a lot of cognitive and communication skills. In PE, access to thoughts and feelings is assumed in order to initiate the trauma coping process (Karatzias et al., 2019). PE requires frequent and prolonged exposure to stressful trauma-related stimuli (Mevissen et al., 2016b). The above can be challenging for adults with intellectual disabilities as they may find it difficult to concentrate and focus their attention for longer periods of time (Berger et al., 2019). In addition, PE requires homework for better results (Cooper et al., 2017; Minnen & Arntz, 2017). People with intellectual disabilities need support doing their homework (Mevissen et al., 2016b). Despite these presupposed disadvantages, PE is increasingly being used in clinical

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

practice for adults with intellectual disabilities (Ooms-Evers et al., 2021).

The availability of scientifically substantiated, effective and efficient treatment for PTSD in adults with intellectual disabilities is of great importance to individuals, their system, and society given the disruptive effect PTSD can have on daily functioning and the high social costs in the absence of effective treatment. Trauma-specific interventions are evidence-based for the general population, yet the generalisation of their efficacy to adults with intellectual disabilities may be inappropriate and their implementation contraindicated because these interventions may be less accessible due to their reliance on communication and conceptual skills (Chinn et al., 2014; Taylor et al., 2008). Adaptions for people with intellectual disabilities are therefore necessary (Osugo & Cooper, 2016).

To date, there has been insufficient research into PE treatment for PTSD in adults with intellectual disabilities. Further, studies testing the effect of PE treatment in adults with intellectual disabilities on additional mood and anxiety symptoms and substance use disorders are sparce. Therefore, the present study focuses on the feasibility and initial efficacy of PE for PTSD in adults with intellectual disabilities. The present study also examines the secondary effect of PE on additional mood and anxiety symptoms and substance use disorder. Additional psychological symptoms are expected to decrease when the PTSD is successfully treated with PE.

## 2 | METHOD

### 2.1 | Procedure and participants

After a review by the Central Committee on Research Involving Human Subjects, the ethical committee of the Radboud University Nijmegen gave its approval (ECSW-2019-147R1). Participants were selected in a Dutch outpatient treatment centre specialised in treating people with adults with intellectual disabilities and additional mental health conditions. Between October 2020 and May 2021, a total of 25 clients with PTSD, were screened by the researcher for their suitability to participate in this study (see Figure 1). Participants were

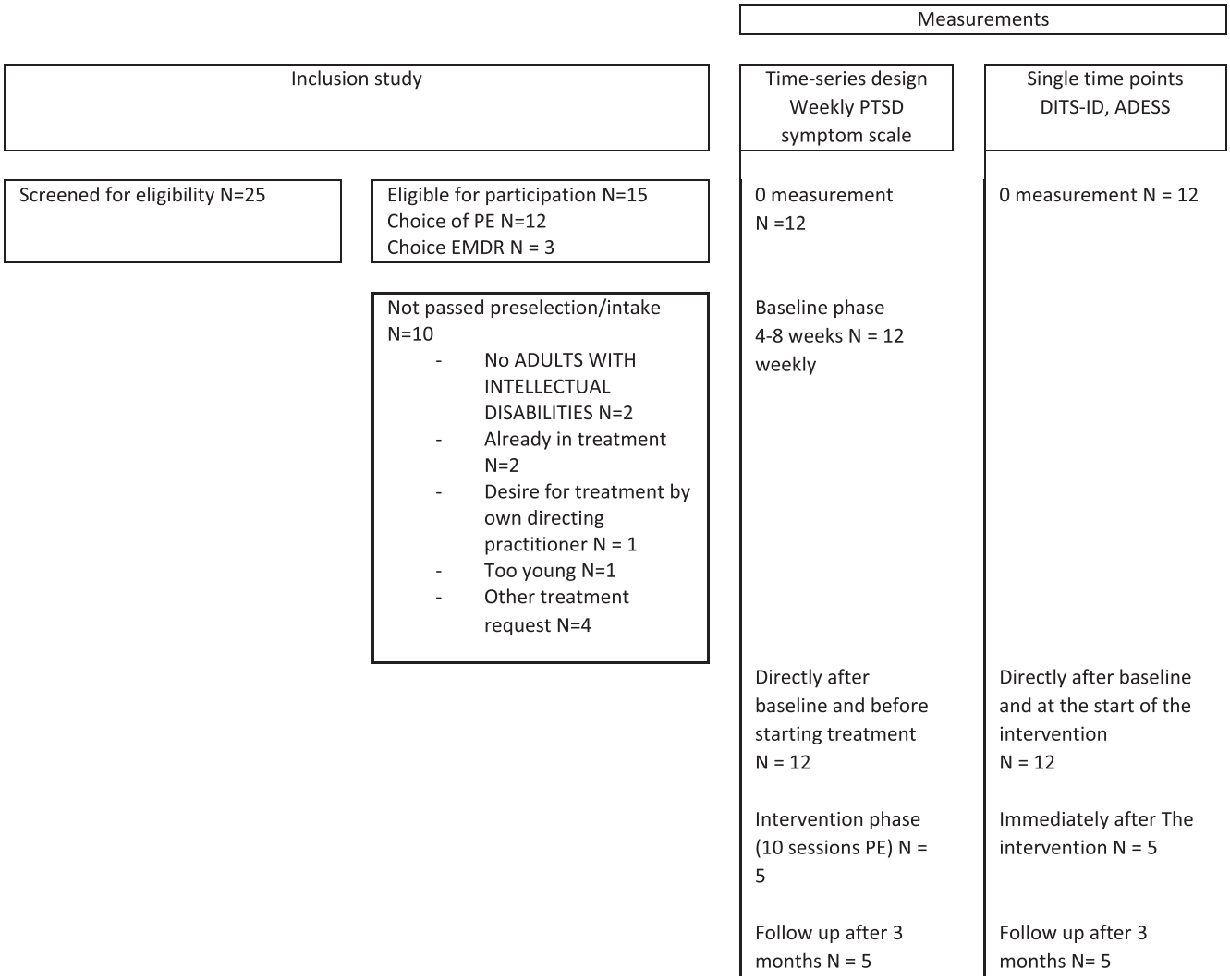


**FIGURE 1** Selection of patients and number of patients at different measurement points in the study.

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

included if they (1) had a FSIQ between 50 and 85 and problems in adaptive functioning (Troost & Groen, 2016); (2) met the criteria of PTSD; (3) were 18 years or older; and (4) had a supportive social network. Exclusion criteria were (1) a suicide attempt 8 weeks before the start of the study; (2) having received medication alteration 8 weeks before the start of the study; (3) following treatment for other psychological complaints at the moment; and (4) not being able to speak or understand the Dutch language.

When clients met the study criteria, an intake was planned with the researcher. The researcher is an experienced practitioner in working with people with intellectual disabilities and specialised in the treatment of PTSD. During an intake a clear explanation was given to the participant and his or her supporters about the treatment options. Visualisation was used to support this explanation. If present, information about treatment options was also given to the legal representatives. During the intake, treatment based on national guidelines (i.e., AKWA, 2020) was discussed, with two first-choice evidence-based options suggested: EMDR or PE. EMDR was recommended for very high stress, powerlessness, shame and preverbal trauma (Stöfsel, 2020). Prolonged Exposure was recommended when re-experiencing is paramount for the person with PTSD and avoidance is common (Stöfsel, 2020). If the client decided to start PE, he/she was asked to participate in the study. The client got written client information about EMDR, PE and the study, which was checked for readability by clients of the organisation. The client got 2 weeks to consider participation.

Finally, 12 of the 25 selected clients opted for treatment with PE (see Figure 1) and agreed to cooperate in the study. They all signed a consent form, as well as their mentor/curator, when necessary. Of the participants, 42% were male. The age ranged from 18 to 51 years ($M = 36.33$, $SD = 11.24$). The FSIQ ranged from 57 to 76 ($M = 66.08$, $SD = 6.39$). Four participants lived in a 24-h care facility. The remaining participants lived in their own home, of which 62.50% received ambulatory counselling. One participant lived at the parental home and received support from the family.

## 2.2 | Intervention with PE

The protocol-based treatment of PTSD, PE (Minnen & Arntz, 2017) was examined. The treatment consists of 10 weekly sessions of 90 minutes. The PTSD-symptoms-scale (PTSDSS) was filled in, scored and discussed at the beginning of each session. In the first session, the client and his/her network were informed in detail about the treatment. The rationale was explained and motivation was stimulated. Together with the therapist, the client made an overview of the re-experienced traumatic events. During the subsequent sessions, the traumatic memories were worked through with IE. The client was asked about the fearful expectations when confronted with this unpleasant event. After the session, it was discussed whether the anxious expectations were met. The intention was that these anxious expectations were disconfirmed by the information collected during the exposure (van Minnen et al., 2015). In addition, the client is asked to fill in a list of events he or she avoids. This list consists of different stimuli from which the client can choose. Through EV, in which the client is exposed to anxiety-provoking, but safe situations, the client learns not to be afraid (van Minnen et al., 2015). Between sessions, the client was given homework assignments in which they were exposed to the traumatic event by listening to sound recordings (IE) or to situations that are perceived as frightening but safe by performing (EV).

All therapists were experienced psychologists with an academic background. They all have experience in treating adults with intellectual disabilities and additional mental health issues. The therapists were all trained in the standard PE protocol and learned about the possible adaptions to apply to the standard PE protocol if necessary. Suggestions for adapting the PE treatment for people with intellectual disabilities covered in the training included (1) starting exposure even if the client fails to formulate a fearful expectation; (2) ask the client and his/her network (parent/family or support staff) about avoidance behaviour and (3) working with EV as much as possible. The trainers were also given ideas for adapting the structure of the sessions, such as working in a short block, doing another activity for a while and then moving on. It was also suggested to give therapy in a room with few distractions, to practice EV in different contexts, to get out of the therapy room as much as possible, ask the client frequently what he/she has learned during the session, repeat if necessary, and, do the EV tasks yourself and let the client observe you. As part of this study, the therapists were asked to perform the PE protocol according to the manual. Where necessary, they were allowed to make adaptions during treatment. They were asked to keep track of these.

## 2.3 | Study design

The present study used a single case experimental design with an A (baseline)-B (intervention) phase including a follow-up measurement after 3 months. Participants were randomly assigned to five different baseline lengths (4, 5, 6, 7, 8 weeks). Several measurements were performed in a time series design and a single time points design (see Figure 1). The time series design is ideally suited to investigate a new intervention (Morgan & Morgan, 2001), and has the potential to reveal how change occurs, not just whether it occurs (Borckardt et al., 2008).

## 2.4 | Instruments

### 2.4.1 | Timeseries

PTSD-symptoms were measured weekly using the PTSD-symptoms-scale (PTSDSS; Minnen & Arntz, 2017). This questionnaire consists of 22 questions to be answered on a 4-point scale (score 0 'never; no trouble at all' to 3 'five times or more per week; almost always; very much effort; yes very much'). The total sum score can vary from 0 to 66, with higher scores indicating more PTSD-

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

symptoms (Minnen & Arntz, 2017). The PTSDSS is standard part of the PE protocol. The validity of the PTSDSS has not been assessed.

### 2.4.2 | Single time points

In addition, single time point measurements were performed at baseline ($T_0$), at the start of the intervention ($T_1$), at the end of the intervention ($T_2$) and at 3 months follow-up ($T_3$). The following instruments were administered:

1. *The PTSDSS*—see explanation above.
2. *The Diagnostic Interview Trauma and Stressors-Intellectual Disability* (DITS-ID; Mevissen et al., 2018). The DITS-ID maps out the traumatic events (PTSD criterium A DSM 5; American Psychiatric Association, 2013) and asks for trauma symptoms (Criteria B, C, D, E DSM 5; American Psychiatric Association, 2013). Answer categories are 1 'Yes', 2 'No', or 3 'Sometimes'. In addition, the interference score is asked (0–8), with '0' meaning complaints do not interfere with daily life, to '8' meaning a lot of interference. Based on the DITS-ID, it can be determined whether a client meets the DSM 5 criteria for PTSD. The DITS-ID is a reliable interview for determining whether a client meets the DSM-5 classification for PTSD (Mevissen et al., 2018).
3. *The Anxiety, Depression and Mood Scale* (ADESS; Hermans et al., 2018) measures anxiety problems, mood problems, social avoidance and other problems. The ADESS consists of 28 questions to be answered on a 4-point scale (score 0 'behaviour does not occur or is not a problem' to 3 'behaviour is a serious problem'). The ADESS consists of the scales depressive mood (13 items, score 0–39), anxiety and tension (7 items, score 0–21), social avoidance (7 items, score 0–21) and other problems (11 items, score 0–33). A lower score indicates less problems. The test–retest reliability of the ADESS is good to excellent. The inter-rater reliability is also good to excellent for the total target group adults with intellectual disabilities (Hermans et al., 2018). The ADESS is the Dutch version of the ADAMS (Anxiety, Depression and Mood Scale; Esbensen et al., 2003).
4. Substance use was measured asking the participants the following questions: 'Do you smoke?', 'How much do you smoke?', 'Do you drink alcohol?', 'How much do you drink?', and 'Do you use drugs?', 'Which ones?', 'How many?'

At last, the therapists completed a questionnaire after each treatment session. The questions they had to answer were: (1) Were you able to run the standard PE protocol? If not, which adaptions did you make?, (2) Did the participant do the homework in the meantime? Was encouragement from his/her network necessary?, (3) Was the participants network actively involved in the treatment? How was the network involved? (4) Did other special circumstances occur during the session or the past week? and (5) Was there an alteration in the participants medication? In addition, the therapists involved in the study were interviewed during an 1-h meeting, when treatment was completed, about their experiences with the PE treatment. The topics covered in these meeting were whether the standard PE protocol is applicable to adults with intellectual disabilities; Were there any adaptations needed on the PE protocol? What were they? Did the therapists made any adaptions on the protocol during treatment? What did they think of the role of the participants' network? Was the homework done? Did PE work if no anxious expectation was set beforehand and evaluated after IE and EV? Should there be an adapted protocol?

## 2.5 | Statistical analyses

In the timeseries design, data from each participant was analysed separately and as a group using Kendall's TAU-U. TAU ($\tau$) is a non-parametric rank correlation coefficient, which is suitable for single-case experimental designs (Brossart et al., 2018). Like other correlation calculations, $\tau$ lies between $-1$ and $+1$. TAU-U allows the measurement of treatment effect between baseline and intervention phase. In addition, TAU-U can be used to look at trends within the different A-B phases (Brossart et al., 2018). The TAU-U calculator (Vannest et al., 2016), has been used to determine whether the treatment has had an effect or not.

To examine the effect of the intervention on the single time point measurements, the following variables have been compared on the different time points; the total number of PTSD-symptoms (PTSDSS and DITS-ID), the interference score on the DITS-ID, PTSD criterion B, C, D and E, the total score on the ADESS and scores on the ADESS subscales: mood, anxiety and tension, social avoidance and other problems. The variables have been compared on the different time points using the Wilcoxon Signed Rank Test, a non-parametric test. This test is suitable for single case studies.

Given the small number of participants in this study, a significant difference exists when the $p$ value is smaller than .01, .05 and .10 (McAleer, 2021). The effect is measured with the formula $r = Z/\sqrt{N}$. $N$ is the number of observations. Cohen's criteria are used to measure the effect size. The effects can be interpreted as follows: .1 is a small effect, .3 is an average effect and .5 is a large effect.

# 3 | RESULTS

## 3.1 | Descriptive statistics

Six of the twelve study participants (50%) completed PE treatment. The data of five participants were complete and included in the analyses. The other six participants dropped out of treatment. For two participants, PE treatment turned out not to be the right indication. One of the participants found the treatment too demanding, doing the homework in particular. This participant found it too difficult to face the traumatic events while doing homework. The other participant appeared to suffer more from anticipation anxiety, rather than from re-experiences of unpleasant past events. A different trauma-focused treatment seemed more appropriate. It was decided to treat

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

**TABLE 1** Experienced adverse life-events of the study population ($N = 5$).

| Adverse events | N | % |
|---|---|---|
| Bullying | 5 | 100 |
| Physical and sexual abuse | 4 | 80 |
| Death of a family member | 3 | 60 |
| Fire | 3 | 60 |
| Medical treatment | 3 | 60 |
| Threat of violence | 3 | 60 |
| Witnessing or being in an accident | 2 | 40 |
| Placed in an institution or prison | 2 | 40 |

these participants with the WRITEjunior (Lucassen & van der Oord, 2021) and EMDR, respectively. Four participants who dropped out needed more support from their network, for example to counter avoidance. Three of them resumed PE treatment after a short break. Unfortunately, they could not be included again in the study.

The five participants, with complete data, reported an average of 9.80 adverse life-events (SD = 2.17). See Table 1 for the most frequent reported adverse life-events. The events covered in the treatment were physical and sexual abuse, fire, imminent violence and accident. The study participants all suffered greatly from reliving these unpleasant events and from avoidance. On average, the participants reported 23 PTSD-symptoms (SD = 5.66) on the DITS-ID. The mean interference score measured with the DITS-ID was 6.60 (SD = 1.67), meaning that the participants suffered highly from the PTSD in their daily lives. The mean severity score, measured with the PTSDSS, was 38.60 (SD = 13.26) (see Table 2).

At the beginning of the study ($T_0$), participants showed above average to high total scores on the ADESS. Scores on the ADESS subscales measuring depressed mood, anxiety and tension, ranged from above average to very high. On the avoidance scale, scores ranged from average to high. On the scale measuring other problems, the scores ranged from average to very high (see Table 2).

Concerning substance use, two participants consumed alcohol on the weekend at the start of the study with a quantity varying from one bottle of low-alcohol beer for one participant to half a bottle of spirits for the other. Three participants smoked cigarettes from 10 to 15 cigarettes a day. None of the participants reported the use of drugs during study participation.

## 3.2 | Times series design: Weekly measurements on trauma symptoms

Participants showed a significant ($p < .05$) decrease in their PTSD-symptoms, measured with the PTSDSS comparing baseline and intervention phase (TAU-U = −0.36, $p = .015$). There were individual differences (see Figure 2) according to Kendall's TAU-U.

## 3.3 | Single time points measurements

A Wilcoxon Signed-Ranks Test indicated that the median of the total number of PTSD-symptoms measured with the PTSDSS and with the DITS-ID at post-test ($T_2$) was significantly lower than the median pre-test ($T_1$). The extent to which symptoms interfered with daily life also significantly decreased, indicated by the median of the interference at post-test ($T_2$) being lower than the median pre-test ($T_1$). The results of the last follow-up measurement showed a significant reduction of all the DSM-5 PTSD criteria. As can be seen in Table 2, two participants no longer met the PTSD classification according to DSM-5 after the intervention with PE. Two participants no longer suffered from dissociative complaints (see Table 2). Overall, we found a large effect of the PE treatment on PTSD-symptoms with −0.9 on the PTSDSS and the DITS-ID, and −0.91 for the interference score.

For the co-occurring symptoms, Wilcoxon Signed-Ranks Tests indicated that the median at post-tests ($T_2$) on the ADESS were the same as the median pre-tests ($T_1$) (see Table 2), meaning that there was no significant change in co-occurring symptoms directly after treatment. For social avoidance, the median score at post-test ($T_3$) was significantly lower than the median pre-test score ($T_2$). For anxiety and tension, the median score at post-test ($T_3$) was also significantly lower than the median pre-test score ($T_0$). For both, social avoidance and anxiety and tension large effects were found of −0.79 and −0.82 consecutively.

At baseline low rates of substance use were indicated in this sample, which did not change during the study.

## 3.4 | Protocol evaluation

The therapists indicated that the standard PE protocol is promising for adults with intellectual disabilities. However, all therapists made adaptions, tailored to the specific client they were treating.

Adaptions included the explanation of the rationale in simple language supported with visual images. The rationale of the treatment was also repeated more often. Moreover, the therapists took more time and sessions to motivate the clients. One therapist adapted the order of the protocol, in which EV in the treatment room was started before IE. Two participants showed some difficulty in explicitly formulating a fearful expectation, as a result of which the therapist tried to provide a fearful expectation, or started IE without an explicit fearful expectation. Also, the extent to which homework was done varied. Three participants regularly did their homework, one of them with the help of supervisors. Two did not manage to do their homework regularly. Finally, the therapists concluded that a linear decrease in trauma symptoms was not seen in all participants. Two participants were only able to put into words their traumatic events after several sessions. After successfully treating these events, the PTSD-symptoms decreased.

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

**TABLE 2** Single time point measurements: scores on the post-traumatic stress disorder-symptom-scale, DITS-ID and ADESS ($N = 5$).

| Variables | $M$ (SD) $T_0$ | $M$ (SD) $T_1$ | $M$ (SD) $T_2$ | $M$ (SD) $T_3$ | $T_0$–$T_1$ | | $T_1$–$T_2$ | | $T_2$–$T_3$ | | $T_0$–$T_3$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $Z$ | $p$ | $Z$ | $p$ | $Z$ | $p$ | $Z$ | $p$ |
| PTSDSS | 38.60 (13.26) | 36.00 (10.63) | 15.40 (10.41) | 11.00 (11.83) | −0.95 | 0.34 | −2.02 | 0.04* | −0.68 | 0.50 | −2.02 | 0.04* |
| DITS–ID | | | | | | | | | | | | |
| Number of symptoms | 23.00 (5.66) | 24.60 (5.68) | 10.67 (5.51) | 12.80 (8.01) | 1.10 | 0.30 | −1.63 | 0.10 | −0.73 | 0.47 | −2.02 | 0.04* |
| Interference score | 6.60 (1.67) | 6.40 (1.34) | 3.60 (2.88) | 2.60 (1.95) | −0.38 | 0.71 | −1.83 | 0.07** | −1.52 | 0.13 | −2.03 | 0.04* |
| Complaints criterion B | 6.40 (0.55) | 7.20 (1.92) | 3.00 (2.35) | 3.20 (3.03) | 2.00 | 0.05** | −1.68 | 0.07** | −0.68 | 0.50 | −1.62 | 0,10** |
| Complaints criterion C | 3.00 (1.00) | 2.60 (1.52) | 1.20 (0.84) | 1.20 (1.10) | −1.00 | 0.32 | −1.00 | 0.32 | −1.34 | 0.18 | −1.84 | 0.07** |
| Complaints criterion D | 5.80 (2.77) | 6.00 (1.41) | 4.00 (2.12) | 4.80 (2.77) | 0.27 | 0.79 | −0.68 | 0.50 | −0.18 | 0.85 | −1.63 | 0.10 |
| Complaints criterion E | 5.80 (1.92) | 6.20 (2.28) | 3.00 (2.00) | 3.20 (2.39) | 0.00 | 1.00 | −1.63 | 0.10 | 0.00 | 1.00 | −1.83 | 0.07** |
| PTSD according DSM 5 | 5 | 5 | 3 | 3 | | | | | | | | |
| With dissociation | 4 | 3 | 1 | 1 | | | | | | | | |
| *ADESS* | | | | | | | | | | | | |
| Depressed mood | 17.60 (5.03) | 14.25 (8.66) | 15.40 (6.77) | 16.40 (5.13) | −1.10 | 0.27 | −0.38 | 0.71 | 0.14 | 0.89 | −0.37 | 0.72 |
| Anxiety and tension | 12.60 (2.70) | 9.5 (5.20) | 10.20 (4.15) | 9.40 (3.85) | −0.56 | 0.58 | 0.00 | 1.00 | −0.69 | 0.50 | −1.77 | 0.08** |
| Social avoidance | 9.20 (3.27) | 7.00 (3.92) | 9.4 (4.67) | 6.20 (4.97) | −1.30 | 0.20 | 0.37 | 0.71 | −1.84 | 0.07** | −1.08 | 0.28 |
| Other problems | 13.80 (4.97) | 10.50 (5.69) | 11.20 (5.22) | 13.80 (5.26) | −0.73 | 0.47 | 0.74 | 0.46 | 0.18 | 0.85 | 0.27 | 0.79 |
| Total score | 39.60 (8.17) | 31.25 (14.86) | 34.20 (12.64) | 35.80 (12.64) | −0.73 | 0.47 | −0.18 | 0.85 | −0.41 | 0.67 | −0.41 | 0.69 |

*$p < .05$; **$p < .10$.



14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

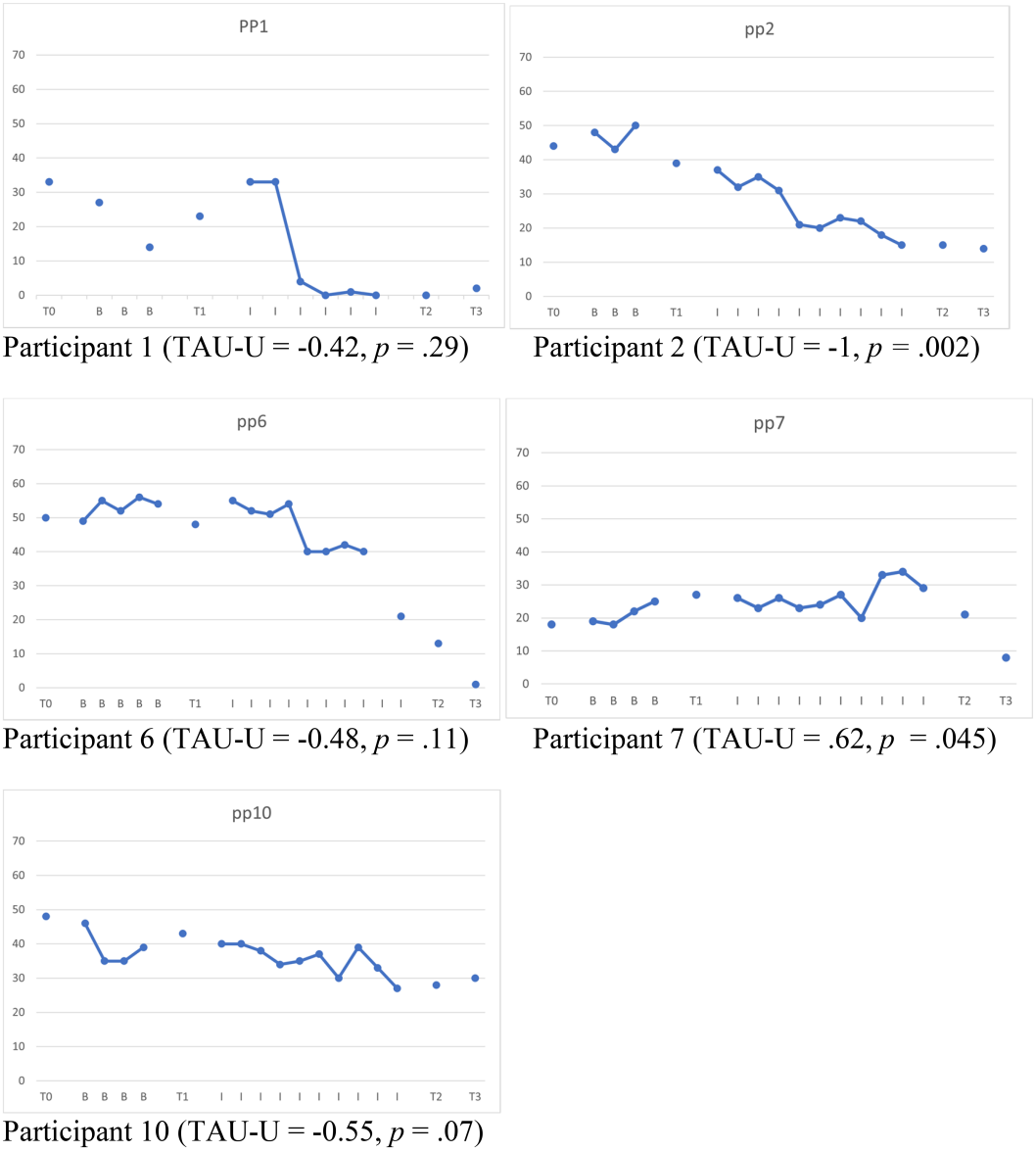


**FIGURE 2** Weekly measurements with the post-traumatic stress disorder symptoms scale at baseline phase (B), intervention phase (I), after-measurement (T2) and after-measurement after 3 months (T3).

## 4 | DISCUSSION

The aim of the current study was to investigate whether PE is a feasible and initially effective treatment for adults with intellectual disabilities with PTSD. The findings suggest that PE can be a feasible and effective treatment for some adults with intellectual disabilities with PTSD. This is in line with earlier research concluding that PTSD in adults with intellectual disabilities can be treated with trauma-focused treatments (Byrne, 2022; Karatzias et al., 2019; Keesler, 2020; McNally et al., 2021).

Therapists in the current study adapted the PE protocol as follows: more time for motivating, repeating the rationale more often, continuing to explain how the treatment works to keep client engaged, adapted language with visual support, EV first and then IE, presenting a fearful expectation or even starting without a fearful expectation. Not formulating a fearful expectation in advance seems to contradict the inhibitory learning model of extinction (Craske et al., 2014; van Minnen et al., 2015). However, our hypothesis is that while there is an anxious expectation, these participants did not manage to put it into words.

Homework is important but not necessary. This finding is consistent with the research of Powers et al. (2010), who found that PTSD symptoms can decrease even without doing homework, although PE works better when homework has been done (Cooper et al., 2017; Minnen & Arntz, 2017). It is recommended to use instruments to measure change during treatment developed specifically for people with adults with intellectual disabilities (Berger et al., 2019; Luteijn et al., 2020).

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Finally, members of the network—parents, family and caregivers—should be involved in treatment. They can be involved in PE treatment in various ways. The network can be asked about PTSD symptoms in addition to the person with intellectual disability themselves. They can, after being explained the rationale and method of treatment, support the person with intellectual disability in the treatment. This support can include motivating them for treatment, help with homework (Mevissen et al., 2016b). They can also play an important role in tension regulation.

Therapists need specific knowledge and skills to treat people with intellectual disabilities and PTSD. In this study, all therapists were experienced practitioners of people with intellectual disabilities and PTSD. They have knowledge of PTSD, how PTSD can manifest in people with intellectual disabilities, are trained in trauma treatment and know how to adapt trauma treatment to the client's abilities.

### 4.1 | Strengths and limitations

One strength of this study was the use of a single case studies design. Single case studies do offer a methodologically solid method of evaluation to examine whether an intervention works (Morgan & Morgan, 2001; Smith, 2012). The research design in this study used different measurements, time series and single time points. Another strength was the use of different questionnaires, two of which were—the DITS-ID and the ADESS—specifically developed and researched for adults with intellectual disabilities (Luteijn et al., 2020).

However, this study also has limitations. The number of drop-out was high. There were various reasons for this drop-out. For two participants, a different trauma-focused treatment seemed more appropriate. Four participants needed more support from their network, for example to counter avoidance. Although it is common in trauma treatment that about 13%–50% of people drop out or respond inadequately to trauma treatment (Resick et al., 2017; Schnurr et al., 2015), the results should be interpreted with caution.

The idea was to carry out a multiple baseline design to avoid the problems with internal validity (Cuyvers, 2021; Kratochwill et al., 2010). However, due to the small number of participants in the study from which we obtained complete data, there is insufficient differential timing of intervention initiation. This means that the change after the intervention could possibly be explained by other factors as well (Cuyvers, 2021; Kratochwill et al., 2010).

### 4.2 | Implications

This study suggests that the standard PE protocol seems to be well tolerated by some adults with intellectual disabilities and PTSD. We also want to highlight the need to adapt the standard PE protocol for adults with intellectual disabilities with PTSD. The current study provided suggestions for adjustments to the standard PE protocol for adults with intellectual disabilities. Replication of this study, with a modified PE protocol and a larger sample size, may provide more certainty about the effectiveness of treatment of PTSD in adults with intellectual disabilities with PE. Future research on the effect of PE treatment of PTSD should also focus on comorbid disorders, such as mood disorders.

Next, it is important to investigate how drop-out can be reduced. An appropriate treatment choice for PTSD that suits the adult with mild intellectual disability is important. In addition, a supportive social network plays a role in preventing drop-out. Drop-out during treatment could potentially be reduced if the social network received psychoeducation on trauma-sensitive support (Keesler, 2020; Kroese et al., 2016; Luteijn et al., 2020; Ooms-Evers et al., 2021). Finally, trauma-focused treatment can be expected to lead to fewer participant drop-outs if it is short and intensive and takes place in a trauma-sensitive environment (Hendriks et al., 2017; Ooms-Evers et al., 2021). In these intensive trauma treatments, clients receive a two-week programme with 2 trauma treatments (both EMDR and PE) 4 days a week and an intensive exercise programme. This is offered both inpatient and outpatient in a trauma-sensitive environment.

## 5 | CONCLUSION

Although this study seems to indicate that PE is well tolerated and effective in some adults with mild intellectual disabilities, further research is needed. This is very important because PTSD is common in people with intellectual disabilities and is treatable. It is important that therapists get the tools to make a good assessment for appropriate treatment of PTSD. In addition, adapted protocols should be made available to help therapists to give appropriate treatment to adults with intellectual disabilities and PTSD.

#### ACKNOWLEDGEMENTS

We would like to thank all the people who participated in this study for their commitment and openness.

#### FUNDING INFORMATION

There was no external funding for this study.

#### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

#### DATA AVAILABILITY STATEMENT

The data were analysed and stored in the research and development department of the Dutch outpatient treatment centre. Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

#### REFERENCES

AKWA. (2020). *Zorgstandaard psychotrauma-en stressorgerelateerde stoornissen*. GGZstandaarden. https://www.ggzstandaarden.nl/zorgstandaarden/psychotrauma-en-stressorgerelateerde-stoornissen/introductie

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Association.

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Berger, I., van der Hout, M., Hoogenboom, A. M. C. H., Berger, E., & Mulder, C. L. (2019). Aanpassingen in behandeling van patiënten met ernstige psychiatrische aandoeningen en een lichte verstandelijke beperking; een kwalitatief onderzoek. *Tijdschrift voor Psychiatrie*, *621*, 375–383.

Borckardt, J. J., Nash, M. R., Murphy, M. D., Moore, M., Shaw, D., & O'Neil, P. (2008). Clinical practice as natural laboratory for psychotherapy research: A guide to case-based time-series analysis. *American Psychologist*, *63*(2), 77–95.

Brossart, D. F., Laird, V. C., & Armstrong, T. W. (2018). Interpreting Kendall's Tau and Tau-U for single-case experimental designs. *Cogent Psychology*, *5*(1), 1518687.

Bryant, R. A., Moulds, M. L., Guthrie, R. M., Dang, S. T., Mastrodomenico, J., Nixon, R. D. V., Felmingham, K. L., Hopwood, S., & Creamer, M. (2008). A randomized controlled trial of exposure therapy and cognitive restructuring for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *76*(4), 695–703.

Byrne, G. (2022). A systematic review of treatment interventions for individuals with intellectual disability and trauma symptoms: A review of the recent literature. *Trauma, Violence, and Abuse 23*(2), 541–554.

Chinn, D. S., Abraham, E. K., Burke, C., & Davies, J. (2014). *IAPT and learning disabilities*. Kings college London.

Cooper, A. A., Kline, A. C., Graham, B., Bedard-Gilligan, M., Mello, P. G., Feeny, N. C., & Zoellner, L. A. (2017). Homework "dose," type, and helpfulness as predictors of clinical outcomes in prolonged exposure for PTSD. *Behavior Therapy*, *48*(2), 182–194.

Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy*, *58*, 10–23.

Cuyvers, K. (2021). Multiple baseline design. In A. Eskes & C. van Oostveen (Eds.), *Onderzoek langs de meetlat: Onderzoeksdesigns voor verpleegkundigen* (pp. 59–64). Bohn Stafleu van Loghum.

Daveney, J., Hassiotis, A., Katona, C., Matcham, F., & Sen, P. (2019). Ascertainment and prevalence of post-traumatic stress disorder (PTSD) in people with intellectual disabilities. *Journal of Mental Health Research in Intellectual Disabilities*, *12*(3–4), 211–233.

Esbensen, A. J., Rojahn, J., Aman, M. G., & Ruedrich, S. (2003). *Anxiety and mood scale*. The Ohio State University.

Fernando, K., & Medlicott, L. (2009). My shield will protect me against the ANTS: Treatment of PTSD in a client with an intellectual disability. *Journal of Intellectual and Developmental Disability*, *34*(2), 187–192.

Foa, E. B., Keane, T. M., & Friedman, M. J. (2000). Guidelines for treatment of PTSD. *Journal of Traumatic Stress*, *13*(4), 539–588.

Hendriks, L., de Kleine, R. A., Heyvaert, M., Becker, E. S., Hendriks, G. J., & van Minnen, A. (2017). Intensive prolonged exposure treatment for adolescent complex posttraumatic stress disorder: A single-trial design. *Journal of Child Psychology and Psychiatry*, *58*(11), 1229–1238.

Hermans, H., Hamers, P., Jelluma, N., & Evenhuis, H. (2018). *Handleiding Angst, Depressie En Stemming Schaal (ADESS)*. Erasmus MC.

Karatzias, T., Brown, M., Taggart, L., Truesdale, M., Sirisena, C., Walley, R., Mason-Roberts, S., Bradley, A., & Paterson, D. (2019). A mixed-methods, randomized controlled feasibility trial of Eye Movement Desensitization and Reprocessing (EMDR) plus Standard Care (SC) versus SC alone for DSM-5 Posttraumatic Stress Disorder (PTSD) in adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, *32*, 806–818.

Keesler, J. M. (2020). Trauma-specific treatment for individuals with intellectual and developmental disabilities: A review of the literature from 2008 to 2018. *Journal of Policy and Practice in Intellectual Disabilities*, *17*(4), 332–345.

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). Single-case designs technical documentation. What Works *Clearinghouse*.

Kroese, B. S., Willott, S., Taylor, F., Smith, P., Graham, R., Rutter, T., Stott, A., & Willner, P. (2016). Trauma-focussed cognitive-behaviour therapy for people with mild intellectual disabilities: Outcomes of a pilot study. *Advances in Mental Health and Intellectual Disabilities*, *10*(5), 299–310.

Lemmon, V. A., & Mizes, J. S. (2002). Effectiveness of exposure therapy: A case study of posttraumatic stress disorder and mental retardation. *Cognitive and Behavioral Practice*, *9*(4), 317–323.

Lucassen, S., & van der Oord, S. (2021). *WRITEjunior, protocol schrijftherapie voor getraumatiseerde kinderen en adolescenten 4–18 jaar*. SWP.

Luteijn, I., VanDerNagel, J. E., van Duijvenbode, N., de Haan, H. A., Poelen, E. A., & Didden, R. (2020). Post-traumatic stress disorder and substance use disorder in individuals with mild intellectual disability or borderline intellectual functioning: A review of treatment studies. *Research in Developmental Disabilities*, *105*, 103753.

McAleer, M. (2021). How can I justify the use of statistical significance at the 10%? Research. https://www.researchgate.net/post/How-can-I-justify-the-use-of-statistical-significance-at-the-10/5ff4980544e3ea69e41b3b97/citation/download

McGlivery, S. (2018). *The identification and treatment of trauma in individuals with developmental disabilities*. NADD Press.

McNally, P., Taggart, L., & Shevlin, M. (2021). Trauma experiences of people with an intellectual disability and their implications: A scoping review. *Journal of Applied Research in Intellectual Disabilities*, *34*(4), 927–949.

Mevissen, L., Didden, R., Korzilius, H., & De Jongh, A. (2016a). Assessment of posttraumatic stress disorder in children with mild to borderline intellectual disabilities. *European Journal of Psychotraumatology*, *7*, 29786.

Mevissen, E. H. M., Didden, H. C. M., & Jongh, A. D. (2016b). EMDR voor trauma-en stressorgerelateerde klachten bij patiënten met een verstandelijke beperking. *Dth-Kwartaalschrift voor Directieve Therapie en Hypnose*, *36*, 5–26.

Mevissen, L., Didden, R., & De Jongh, A. (2018). *Handleiding Diagnostisch Interview Trauma en Stressoren—Licht Verstandelijke Beperking*. Accare.

Mevissen, L., Didden, R., de Jongh, A., & Korzilius, H. (2020). Assessing posttraumatic stress disorder in adults with mild intellectual disabilities or borderline intellectual functioning. *Journal of Mental Health Research in Intellectual Disabilities*, *13*(2), 110–126.

Minnen, A. V., & Arntz, A. (2017). Protocollaire behandeling van patiënten met een posttraumatische-stressstoornis (PTSS): Imaginaire exposure en exposure in vivo. In G. Keijsers, A. van Minnen, & M. Verbraak (Eds.), *Protocollaire behandelingen voor volwassenen met psychische klachten 1* (pp. 311–369). Boom.

Morgan, D. L., & Morgan, R. K. (2001). Single-participant research design: Bringing science to managed care. *American Psychologist*, *56*(2), 119–127.

National Institute for Clinical Excellence. (2005). Post-traumatic stress disorder The management of PTSD in adults and children in primary and secondary care. Nice. https://www.nice.org.uk/guidance/ng116/evidence/march-2005-full-guideline-pdf-6602623598

Ooms-Evers, M., van der Graaf-Loman, S., van Duijvenbode, N., Mevissen, L., & Didden, R. (2021). Intensive clinical trauma treatment for children and adolescents with mild intellectual disability or borderline intellectual functioning: A pilot study. *Research in Developmental Disabilities*, *117*, 104030.

Osugo, M., & Cooper, S. A. (2016). Interventions for adults with mild intellectual disabilities and mental ill-health: A systematic review. *Journal of Intellectual Disability Research*, *60*(6), 615–622.

Pizzimenti, C. L., Navis, T. M., & Lattal, K. M. (2017). Persistent effects of acute stress on fear and drug-seeking in a novel model of the comorbidity between post-traumatic stress disorder and addiction. *Learning & Memory*, *24*(9), 422–431.

Powers, M. B., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Foa, E. B. (2010). A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*, *30*(6), 635–641.

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Resick, P. A., Wachen, J. S., Dondanville, K. A., Pruiksma, K. E., Yarvis, J. S., Peterson, A. L., Mintz, J., & STRONG STAR Consortium. (2017). Effect of group vs individual cognitive processing therapy in active-duty military seeking treatment for posttraumatic stress disorder: A randomized clinical trial. *JAMA Psychiatry*, *74*(1), 28–36.

Scheffers, F., van Vugt, E., & Moonen, X. (2020). Resilience in the face of adversity in adults with an intellectual disability: A literature review. *Journal of Applied Research in Intellectual Disabilities*, *33*(5), 828–838.

Schnurr, P. P., Chard, K. M., Ruzek, J. I., Chow, B. K., Shih, M. C., Resick, P. A., & Lu, Y. (2015). Design of VA Cooperative Study# 591: CERV-PTSD, comparative effectiveness research in veterans with PTSD. *Contemporary Clinical Trials*, *41*, 75–84.

Skelly, A. (2020a). Trauma exposure and the importance of attachment in people with intellectual disabilities. *Bulletin of the Faculty for People with Intellectual Disabilities*, *18*(1), 15–19.

Skelly, A. (2020b). Practical assessment of trauma and attachment in people with intellectual disabilities. *Bulletin of the Faculty for People with Intellectual Disabilities*, *18*(1), 20–25.

Smith, J. D. (2012). Single-case experimental designs: A systematic review of published research and current standards. *Psychological Methods*, *17*(4), 510–550.

Stöfsel, M. (2020). *Trauma en verwerkingstechnieken*. Bohn Stafleu van Loghum.

Taylor, J. L., Lindsay, W. R., & Willner, P. (2008). CBT for people with intellectual disabilities: Merging evidence, cognitive ability and IQ effects. *Behavioural and Cognitive Psychotherapy*, *36*(6), 723–733.

Troost, P., & Groen, W. (2016). Diagnostiek van psychische stoornissen. In H. C. M. Didden, P. Troost, X. M. H. Moonen, & W. B. Groen (Eds.), *Handboek psychiatrie en lichte verstandelijke beperking* (pp. 271–302). De Tijdstroom.

Van Duijvenbode, N., & Van der Nagel, J. E. (2019). A systematic review of substance use (disorder) in individuals with mild to borderline intellectual disability. *European Addiction Research*, *25*, 263–282.

van Minnen, A., Zoellner, L. A., Harned, M. S., & Mills, K. (2015). Changes in comorbid conditions after prolonged exposure for PTSD: A literature review. *Current Psychiatry Reports*, *17*(3), 17.

Vannest, K. J., Parker, R. I., Gonen, O., & Adiguzel, T. (2016). Tau-U Calculator | Single Case Research. Singlecaseresearch. http://singlecaseresearch.org/calculators/tau-u

Wieland, J., Kaptein-de Haan, S., & Zitman, F. (2012). Psychiatric disorders in outpatients with borderline intellectual functioning: Comparison with outpatients from regular mental health care and outpatients with mild intellectual disabilities. *Canadian Journal of Psychiatry*, *4*, 213–219.

**How to cite this article:** Prins, P., & Nijhof, K. (2024). Prolonged exposure treatment for post-traumatic stress disorder: Single case studies in a sample of adults with mild intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, *37*(3), e13237. https://doi.org/10.1111/jar.13237

14683148, 2024, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jar.13237 by Radboud University Nijmegen, Wiley Online Library on [19/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License