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RESEARCH ARTICLE

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The effectiveness of individual schema therapy in older adults with borderline personality disorder: A multiple-baseline case series design

David A. Khasho¹ | Sebastiaan P. J. van Alphen^{1,2,3,4} | Machteld A. Ouwens^{1,5} |
 Arnoud Arntz⁶ | Sylvia M. J. Heijnen-Kohl³ | Arjan C. Videler^{1,5} 

¹GGz Breburg, PersonaCura, Clinical Centre of Excellence for Personality Disorders and Autism in Older Adults, Tilburg, The Netherlands

²Department of Clinical and Life Span Psychology, Vrije Universiteit Brussel (VUB), Brussels, Belgium

³Mondriaan, Clinical Centre of Excellence for Older Adults with Personality Disorders, Heerlen-Maastricht, The Netherlands

⁴Department of Medical and Clinical Psychology, Tilburg University, Tilburg, The Netherlands

⁵Tranzo Department, Tilburg University, Tilburg, The Netherlands

⁶Department of Clinical Psychology, University of Amsterdam, Amsterdam, The Netherlands

Correspondence

Arjan C. Videler, Korvelseweg 187, 5025 JE, Tilburg, The Netherlands.
 Email: a.videler@ggzbreburg.nl

Abstract

Objective: The aim of this study was to explore the effectiveness of schema therapy (ST) in older adults with borderline personality disorder (BPD).

Methods: Multiple baseline case series design with five BPD patients, with a mean age of 66. After a baseline phase with random length, patients received weekly ST sessions for a year, followed by follow-up sessions during 6 months. Participants rated the credibility of negative core beliefs weekly; various secondary outcome measures were assessed every 6 months (severity of BPD, early maladaptive schemas, schema modes, personality functioning, maladaptive personality traits, psychological distress and quality of life), and BPD diagnosis was assessed before baseline and after follow-up. Data were analysed with mixed regression analyses and paired *t*-tests.

Results: Results revealed that ST led to a significant decrease in credibility of negative core beliefs, with high effect sizes. All participants remitted from their BPD diagnosis.

Conclusion: This is the first study exploring the effectiveness of ST for BPD in older adults, and it suggests that ST can be a powerful intervention for this group of patients.

KEYWORDS

borderline personality disorder, multiple baseline design, older adults, psychotherapy, schema therapy

1 | INTRODUCTION

Borderline personality disorder (BPD) is a lifelong pattern of instability in interpersonal relationships, self-image and affect (Zanarini et al., 2012). The prevalence of BPD in the general population is around 1.6% (American Psychiatric Association [APA], 2022). In later life, the prevalence of BPD may decrease. In the St. Louis

Personality & Aging Network (SPAN) study, a prevalence rate for BPD of 0.4% was found in community-dwelling older adults between the ages of 55 and 64 (Oltmanns et al., 2014). However, it has proven difficult to diagnose personality disorders adequately in older adults (Balsis et al., 2007; Cruitt & Oltmanns, 2018). Large-scale IRT analyses on data of more than 34,000 community-dwelling people, aged between 19 and 90 years, revealed substantial age-related differences

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in DSM-5 BPD symptom expression (McMahon et al., 2019). In particular, this pertains to somewhat attenuated and less overt manifestations of impulsivity. However, a pattern of instability of affect and interpersonal relations continues to characterize older adults with BPD, with depressive symptoms, feelings of emptiness, anger, unstable interpersonal relationships and somatic complaints (D'Agostino et al., 2022). Thus, the description of BPD traits in the DSM-5 might lead to an underestimation of the 'true' prevalence of BPD in older adults. Dimensional models of BPD appear more age-neutral and more useful across the entire life span (Videler et al., 2019). Such a dimensional approach of personality disorders is the DSM-5 alternative model of personality disorders, defined by impairments in personality functioning and pathological personality traits (APA, 2022). The present study incorporated such a broad diagnostic view in assessing BPD in older adults, employing both the categorical and dimensional approaches.

To date, psychotherapy is recommended as the primary treatment for BPD (Simonsen et al., 2019). There are different evidence-based treatments for BPD in younger adults, among which are dialectical behaviour therapy, systems training for emotional predictability and problem-solving, mentalization-based treatment, schema therapy (ST) and transference-focused psychotherapy (Cristea et al., 2017; Stoffers-Winterling et al., 2022). ST seems to fit with the psychotherapy expectations of older adults, as it incorporates psychoeducation and because of its structured, skill-enhancing and problem-focused features (Videler et al., 2014). ST is an integrative treatment, which draws on the cognitive-behavioural, attachment, psychodynamic and emotion-focused traditions (Kellogg & Young, 2006). In this treatment model, early maladaptive schemas (EMS) are considered core elements of personality disorders. EMS are self-defeating emotional and cognitive patterns established in childhood and repeated throughout life (Young et al., 2003). A schema mode is a combination of activated schemas and coping strategies, which describes the current emotional, cognitive and behavioural state a patient is in. Cognitive interventions, experiential techniques and the therapeutic relationship are important elements in ST. The goal of treatment is to decrease the impact of EMS and to replace maladaptive schema modes with more healthy alternatives, so that patients succeed in getting their core emotional needs met (Rafaeli et al., 2011).

ST has been proven effective for younger adults in several studies (Bamelis et al., 2014; Giesen-Bloo et al., 2006; van Dijk et al., 2023), and there is emerging evidence that ST can also be effective for older adults (van Dijk et al., 2022; Videler et al., 2014, 2018, 2021), although in clinical practice, therapeutic nihilism still prevails towards treatment of personality disorders in later life (Penders et al., 2020; Videler et al., 2020). Individual ST was found to be an effective treatment for older adults with cluster C personality disorders (Videler et al., 2018). With a multiple baseline design, the positive effects of individual ST were indicated by a significant positive linear trend during the treatment phase and seven out of eight participants remitted from their cluster C personality disorder diagnosis. Despite these hopeful results, there is an urgent need for more

Key Practitioner Message

- Borderline personality disorder (BPD) persists into later life.
- Treatment of BPD in older adults is understudied.
- We propose the value of schema therapy (ST) for older adults with BPD.
- In our multiple baseline case series study, ST was effective and resulted in remission of BPD diagnosis.
- The present study indicates to abandon therapeutic nihilism in treating older adults with BPD.

studies investigating treatment options in later life (Penders et al., 2020).

The aim of the present study was to examine whether ST can be an effective treatment for older adults with BPD. The primary objective was to study the effect of ST on the strength of participants' negative core beliefs, which were considered to be at the heart of their BPD problems. This idiosyncratic measure represented the EMS that are assumed to underlie the patient's BPD problems according to the ST model (Young et al., 2003). Similar to the study of Videler et al. (2018), we hypothesized that ST diminishes the strength of these negative core beliefs and participants will no longer meet the criteria for BPD. Secondary objectives were reduced severity of BPD symptoms, decreased EMS and maladaptive schema modes, more frequent helpful schema modes (healthy adult and happy child mode), improvement of personality functioning and decreased maladaptive personality traits, reduced psychological distress and improved quality of life.

2 | METHODS

2.1 | Participants

Participants were four patients from the Clinical Centre of Excellence for Personality Disorders and Autism of GGz Breburg and one patient from the Clinical Centre of Excellence for Older Adults with Personality Disorders of Mondriaan, both mental health institutes in the Netherlands.

Inclusion criteria were (1) a primary diagnosis of BPD, assessed with the Structured Clinical Interview for DSM-5 Personality disorders (SCID-5-P; First et al., 2016). Participants who met subthreshold level of the diagnostic criteria of BPD (four instead of the minimum of five criteria) were also included, considering the different behavioural expressions of BPD in older adults (as argued in the introduction), but only when criterion 2 was met; (2) increased scores on the traits negative affectivity, disinhibition and psychoticism of the Personality Inventory for DSM-5 (PID-5; Bastiaens et al., 2016), which are aspects of the alternative model for the diagnosis of personality disorder that are correlated with the criteria of the DSM-5 section II model for BPD

(Bach et al., 2017). A mean score of 2 or higher is considered to be increased (Bach et al., 2015). The PID-5 was administered to both the participant and a close relative; (3) absence of chronic somatic comorbidity which seriously affects daily life functioning; (4) minimum age of 60 years; and (5) willingness to participate in the study.

Exclusion criteria were (1) severe depression; (2) bipolar disorder; (3) psychotic disorder (other than transient stress-related psychosis, if this overlaps with criterion 9 of BPD); (4) IQ under 80; (5) substance use disorder that needs clinical detoxification (participation was possible after successful detoxification); (6) neurocognitive disorder as assessed with an MMSE score below

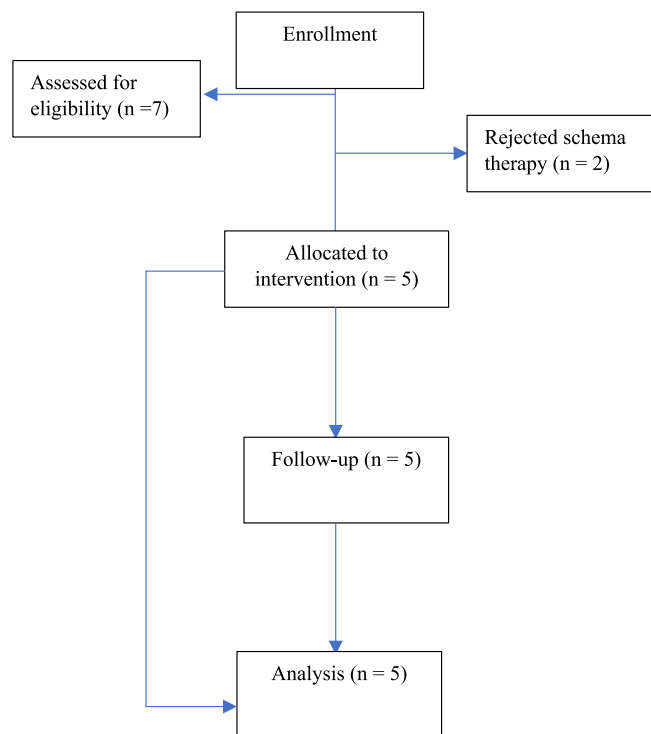


FIGURE 1 Flow diagram.

25 (Folstein et al., 1975). All these factors were taken into account during the multidisciplinary clinical assessment at the particular healthcare centre. Another treatment was not expedient, and preferably the use of psychiatric medication was kept constant during the study and was at least monitored using single-session registration forms.

The five participants were recruited from seven patients that met inclusion criteria and were screened for participation; two patients on second thought rejected treatment based on ST. Figure 1 presents the patient flow, and Table 1 gives an overview of the characteristics and course of treatment of the participants. Informed consent was obtained from all participants. The study was approved by METC Brabant, an independent ethical committee (approval number NL65141.028.18/P1820).

2.2 | Design

We used a non-concurrent multiple-baseline case series design (Ferron & Sentovich, 2002). An advantage of a multiple-baseline case series design over an open trial is that it offers experimental control over time versus intervention effects. Secondly, an important advantage of this design over a randomized controlled trial (RCT) is that it requires fewer participants, because participants act as their own controls (Kadzin, 2011); frequent assessment of a central variable compensates for the small number of participants. Therefore, a multiple-baseline design can demonstrate significant change and also that this change is the result of the intervention and not of time (Bulté & Onghena, 2009; Kadzin, 2011). Multiple-baseline designs require dependent variables that are frequently assessed, are highly sensitive to change and represent a core aspect of the disorder that is addressed by treatment (Kadzin, 2011). As a central variable, we chose the strength of the participant's personal negative core beliefs, which they viewed as central to their BPD problems.

TABLE 1 Demographic data and treatment information of participants ($N = 5$).

Participant	1	2	3	4	5	Mean (SD)
Age	69	74	61	64	62	66.0 (5.43)
Gender	F	F	F	F	M	
BPD diagnosis according to section II DSM-5	Yes	Yes	Yes	Yes	Yes	
BPD diagnosis according to section III DSM-5 ^a	No	No	No	No	No	
Medication	AE	AD	AD	AE & AD	None	
Mental health care prior to study (estimated in years)	25	30	3	2	5	13.0 (13.40)
Baseline sessions	6	6	4	5	8	5.8 (1.48)
Treatment sessions	33	70	54	66	60	56.6 (14.52)
Booster sessions	4	5	7	4	7	5.4 (1.52)
Total number of sessions	43	81	65	75	75	67.8 (15.01)

Abbreviations: AD, antidepressant; AE, anti-epileptic; BPD, borderline personality disorder; F, female; M, male.

^aIncreased scores (mean > 2) on the traits of negative affectivity, disinhibition and psychoticism of the PID-5.

The present study consisted of three phases. First, a baseline phase varying in length from 4 to 8 weeks in which core beliefs were identified. The variation in baseline length offers the possibility to differentiate between time effects and experimental effects of the treatment. The length of the baseline phase was randomized across participants to increase internal validity. Randomization of participants over variations in baseline length increases the experimental control over differentiating time from treatment effects. Baseline length was randomly assigned by an independent colleague using a lottery system. The lottery system consisted of five different possible outcomes (4, 5, 6, 7 and 8 weeks). Each different outcome was represented twice. No therapeutic interventions were applied during the baseline phase. The second phase was the treatment phase and consisted of weekly ST for BPD according to the methods of Young et al. (2003). For an elaborate description of ST for the treatment of BPD, see Arntz and Van Genderen (2011). The duration of the treatment phase was 52 weeks and was estimated to be sufficient to accomplish meaningful results (Videler et al., 2018). During the treatment phase, the therapist decided when to introduce the different techniques, according to the ST model (Arntz & van Genderen, 2011; Kellogg & Young, 2006) and participants' case conceptualization. The follow-up phase lasted 6 months and included monthly booster sessions in which the aim was to maintain the effects of ST. Outcomes (as described in assessments) were repeatedly assessed during all study phases, independently from the therapies and blind for therapists.

The aim and design of the present study have already been published (Khasho et al., 2019). In this article, we discussed that it is possible to detect a large effect size ($d > 1.5$; power $> .80$) with four participants with 20 measurements each, based on Ferron and Sentovich (2002). Bouwmeester and Jongerling (2020) recently developed an online tool (<https://architecta.shinyapps.io/SingleCaseDesigns>) to calculate the power of a multiple baseline design. Calculations with this tool showed sufficient power for the present study ($> .80$).

2.3 | Procedure

All participants were informed by the principal investigator, both orally and by letter, and signed an informed consent. During the baseline phase, EMS and schema modes were explored, psychological symptoms and level of functioning were determined, and in-depth information about the treatment was given. Weekly ST sessions were given in the treatment phase. Preserving the acquired knowledge and skills was the focus of the booster sessions. Treatment integrity was monitored in various ways. All therapists in this study were well trained and educated in ST. All therapists received an instruction in which the study design and ways of reporting the sessions were made explicit. Furthermore, each therapy session was registered using a tailor-made registration form to describe the applied ST intervention. And finally, therapy sessions were randomly recorded on video and rated for adherence to ST. Four trained ST therapists used the

Schema Therapy Rating Scale (Young & Fosse, 2005) to assess adherence. Nine therapy sessions were rated, and ratings ranged from 3.7 to 6.0 on a 6-point Likert scale.

2.4 | Primary outcome

The primary outcome measure was the weekly assessed strength of negative core beliefs. These beliefs were evoked by a semi-structured procedure during the baseline phase. Each participant formulated three to five negative core beliefs they believed to be central to their BPD problems. These negative core beliefs were then rated weekly during baseline and treatment phases and monthly during the follow-up phase on a visual analogue scale (VAS) on 0%–100% credibility. The VAS was rated at the start of each session, and the therapist was not present when participants filled in the VAS to assure integrity. Filled-in forms were given to the therapist in a closed envelope and passed on to the research team. The average of the ratings per assessment was taken as dependent variable (range 0–100).

2.5 | Secondary outcome

BPD was assessed with the SCID-5-P, a semi-structured interview for DSM-5 personality disorder diagnosis. BPD criteria are rated on a 3-point scale as absent, sub-threshold or threshold. Reliability and validity are not yet available but are expected to be similar to the Dutch version of the Structured Clinical Interview for DSM-IV Axis II disorders (SCID-II; Weertman et al., 2000), as both instruments are almost similar. Inter-rater agreement appeared excellent in adults with an average age of 35.5 years (range 18–61), with a mean value of Cohen's kappa of .84 (Lobbestael et al., 2011). Recently, the great majority, 95.8%, of the categorically measured items of SCID-II was found to be age neutral in 84 younger adults (aged 20–45 years) and 68 older adults (aged 65–85) (van Alphen et al., 2022).

The current severity of BPD was assessed with the Dutch version of the Borderline Personality Disorder Severity Index (BPDSI; Arntz et al., 2003), a semi-structured interview that assesses the frequency and severity of BPD symptoms during the last 3 months. The BPDSI consists of nine sections, one for each of the DSM criteria for BPD and appeared reliable and internally consistent (Arntz et al., 2003). Internal reliability of the BPDSI in the current study was good ($\alpha = .85$).

EMS were measured with the Dutch Young Schema Questionnaire (YSQ; Sterk & Rijkeboer, 1997). The questionnaire consists of 16 subscales and includes 205 items, which are phrased as negative core beliefs and rated along a 6-point Likert scale. In a clinical sample with a mean age of 33.9 years (range 18–74), the YSQ showed good reliability and convergent and discriminant validity (Rijkeboer & Van Den Bergh, 2006). The YSQ appeared to measure EMS equally across ages (Pauwels et al., 2014). Internal reliability of the YSQ in the current study was excellent ($\alpha = .98$).

Schema modes were assessed by the Dutch Short Schema Mode Inventory (SMI; Lobbestael et al., 2010). It consists of 14 subscales and includes 118 items that must be rated on a 6-point Likert scale. This questionnaire has acceptable internal consistencies (Cronbach α 's from .79 to .96) and moderate construct validity (Lobbestael et al., 2010). Internal reliability of the SMI in the current study was excellent ($\alpha = .94$).

Personality functioning was measured with the Severity Indices of Personality Problems short form (SIPP-SF; Verheul et al., 2008), a self-report questionnaire aiming to measure the severity of the generic and changeable components of personality disorders. The SIPP-SF consists of 60 items and five domains: self-control, identity integration, responsibility, relational capacities and social concordance. Participants are asked to answer on a 4-point scale to what extent they agree with the statement presented, referring to the past 3 months. A study into the construct validity of the SIPP-SF for older adults demonstrated a structure of the above-mentioned five higher-order domains of personality functioning (Rossi et al., 2017). Among community-dwelling younger and older adults the SIPP-SF appeared age-neutral (Debast et al., 2018), and in a clinical sample of older adults, the SIPP-SF domains showed good to excellent internal reliability (Cronbach's $\alpha = .75-.91$) and effectively discriminated between participants with and without a PD (Van Reijswoud et al., 2021). Internal reliability of the SIPP-SF in the current study was excellent ($\alpha = .97$).

Maladaptive personality traits were measured using the Personality Inventory for DSM-5 (PID-5); a 220-item self-report questionnaire developed to assess personality traits in line with the dimensional perspective of personality pathology as advocated in Section III of DSM-5 (Dutch version by van der Heijden et al., 2014). The original five-factor structure of the PID-5 is confirmed in the Dutch version, and it has adequate reliability and convergent and discriminant validity (Bastiaens et al., 2016). Internal reliability of the PID-5 in the current study was excellent ($\alpha = .99$).

Psychological distress was measured by the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983). The BSI is a 53-item self-report measure, which is rated on a 5-point rating scale. The reliability and validity of the BSI are good, with reliability coefficients ranging from .68 to .91 (Morian & Tan, 1998), and the Dutch version of the BSI has been validated in older adults (de Beurs, 2011). Internal reliability of the BSI in the current study was excellent ($\alpha = .98$).

Quality of life was assessed by the Dutch World Health Organization Quality of Life Brief Form (WHOQOL-BREF; Trompenaars et al., 2005). The WHOQOL-BREF is a self-report measure that consists of 26 items, which are rated on a 5-point Likert scale. Research in two samples of older adults, with mean ages of 73 and 76 years, showed good reliability and satisfactory construct validity (Low et al., 2008). Internal reliability of the WHOQOL-BREF in the current study was good ($\alpha = .85$).

The secondary outcomes were measured four times: at the start of treatment (T0) and after 6 (T1), 12 (T2) and 18 months (T3), except for the SCID-5-P, which was administered twice (at the start of treatment and after 18 months).

2.6 | Statistical analysis

2.6.1 | Negative core beliefs

Mixed regression analyses were used to assess the differences between the treatment and follow-up phases on the one hand, and baseline on the other hand, in average scores and linear change. The following effects were tested in the fixed part of the model: (1) a general linear time effect, starting with time = 0 when the first assessment was taken for an individual, (2) dummy indicators for the treatment and follow-up phases (contrasting each to baseline) and (3) a centred time-within-condition covariates for the treatment phase, to assess time-by-phase interaction, that is, changes in the time effect across phases (cf. Arntz et al., 2013; Videler et al., 2018). The random model part consisted of the autoregressive model AR1 for the within-subject covariance structure, which had a better fit than Autoregressive-Moving-Average model (ARMA11). Random slopes to allow inter-individual variation in time and condition effects were not included, because it led to reduced fit of the model or convergence problems. The first step of the analytic strategy was to test for a general time effect. The next step was to assess the full model with all predictors entered and then to delete in backward fashion the time-by-phase interactions that were non-significant at two-tailed $p = .1$ level. If the main time effect was non-significant, it was deleted at the last step. Cohen's d for the core beliefs were calculated as effect size of change at the end of a phase with respect to baseline: $d = \frac{\text{mean outcome difference between baseline and current phase}}{\text{standard deviation of the baseline}}$.

2.6.2 | Secondary measures

For the analysis of borderline symptomatology, EMS, schema modes, personality functioning and traits, psychological distress and quality of life we used a paired t -test comparing T0 (start treatment) with T3 (after 18 months). Due to normality issues, a repeated measures design could not be applied for these variables using T0 through T3. De Winter (2013) showed that it is possible to apply a paired t -test on a small sample size when the within-pair correlation is high and the effect size is large. Within-pair correlations are shown in Tables 2 and 3. Cohen's d was calculated as effect size of the change between T0 and T3. A Wilcoxon signed ranks test was applied when requirements for a paired t -test were not met. Effect size r was then calculated with $r = z/\sqrt{N}$.

3 | RESULTS

3.1 | Negative core beliefs

Mixed regression did not reveal a significant linear effect of time when tested as single predictor, $t(25.81) = -1.91, p = .068$. With all predictors entered in a mixed regression, the time-within-baseline and time-within follow-up effects appeared to be non-significant, $ps > .22$.

TABLE 2 Within-pair correlations SCID-5-P.

	T3_SCID-5-P (BPD)	T3_BPDSI	T3_YSQ	T3_SMI healthy adult	T3_SMI happy child	T3_PID-5 participant negative effect	T3_PID-5 participant antagonism	T3_PID-5 participant disinhibition	T3_PID-5 participant psychoticism
T0_SCID-5-P (BPD)	.72								
T0_BPDSI		.96							
T0_YSQ			.58						
T0_SMI (healthy adult)				.62					
T0_SMI (happy child)					.48				
T0_PID-5 participant negative effect						.66			
T0_PID-5 participant antagonism							.96		
T0_PID-5 participant disinhibition								.79	
T0_PID-5 participant psychoticism									.73

Abbreviations: BPD, borderline personality disorder; PID-5, Personality Inventory for DSM-5; SCID-5-P, Structured Clinical Interview for DSM-5 Personality disorder; SMI, Schema Mode Inventory; T0, start of treatment; T3, follow-up at 18 months; YSQ, Young Schema Questionnaire.

After stepwise deleting, the main effect of time appeared to be non-significant and was therefore also deleted. Table 4 presents the final results of the mixed regression analysis. The main effect of treatment was significant, as was the main effect of follow-up (as compared to baseline). The time-within-treatment effect also showed a significant effect, showing a decrease of credibility of negative core beliefs. Effect sizes of treatment versus baseline, and follow-up versus baseline were large ($d = 1.82$ and 1.84 , respectively); these effects represent the end point of phases and not the middle point of phases.

The estimated means of the credibility of the negative core beliefs are shown in Figure 2. The estimated means show decreases in credibility of dysfunctional core beliefs during the treatment phase and lower scores during follow-up than during baseline phase.

3.2 | Borderline personality diagnosis

All five participants did not meet the full criteria for DSM-5 BPD anymore after 18 months, as measured with the SCID5-P. The number of identifiable criteria varied from 0–4. A paired samples *t*-test was conducted to compare the mean total score of the number of BPD criteria at T0 and T3. There was a significant difference in the scores on T0 and T3 ($p = .007$) with a large effect size ($d = 2.43$).

The severity of BPD criteria, as assessed with the BPDSI, also decreased significantly. A paired samples *t*-test was conducted to

compare the severity of BPD criteria a T0 and T3. There was a significant difference in the scores on T0 and T3 ($p = .000$) with a large effect size ($d = 2.30$). See Table 5 for further details.

3.3 | Early maladaptive schemas and schema modes

The overall credibility of EMS did not decrease significantly on the YSQ, as shown in Table 5, although the paired *t*-test indicates a trend in the difference in the scores ($p = .086$).

Scores on Healthy Adult mode and Happy Child mode, which are expected to become frequently tangible for participants after ST and are measured with the SMI, did not increase significantly (see Table 5).

3.4 | Personality traits and functioning

Personality functioning as measured with the SIPP-SF did not increase significantly in four of the five domains (see Tables 5 and 6). Results of the domain Identity integration showed a significant increase between T0 and T3 ($p = .043$) with a large effect size ($r = .90$).

Scores on the PID-5, measuring maladaptive personality traits, did not decrease significantly; this was the case for questionnaires

TABLE 3 Within-pair correlations PID-5.

	T3_PID-5 informant negative effect	T3_PID-5 informant antagonism	T3_PID-5 informant disinhibition	T3_PID-5 informant psychoticism	T3_SIPP-SF self-control	T3_SIPP-SF relational capacities	T3_SIPP-SF social concordance	T3_BSI	T3_WHOQOL-BREF
T0_PID-5 informant negative effect	-.07								
T0_PID-5 informant antagonism		.20							
T0_PID-5 informant disinhibition			.49						
T0_PID-5 informant psychoticism				.84					
T0_SIPP-SF self-control					.60				
T0_SIPP-SF relational capacities						.34			
T0_SIPP-SF social concordance							.95		
T0_BSI								.89	
T0_WHOQOL-BREF									.49

Abbreviations: BSI, Brief Symptom Inventory; PID-5, Personality Inventory for DSM-5; SIPP-SF, Severity Indices of Personality Problems short form; T0, start of treatment; T3, follow-up at 18 months; WHOQOL-BREF, World Health Organization Quality of Life Brief Form.

TABLE 4 Results of mixed regression analysis of core beliefs.

Parameter	<i>b</i>	std. error	<i>df</i>	<i>t</i>	<i>p</i>	Effect size
Intercept	83.669	11.711	7.945	7.144	<0.001	
Treatment	-18.988	6.446	17.184	-2.946	0.009	1.82
Follow-up	-33.373	12.020	10.407	-2.776	0.019	1.84

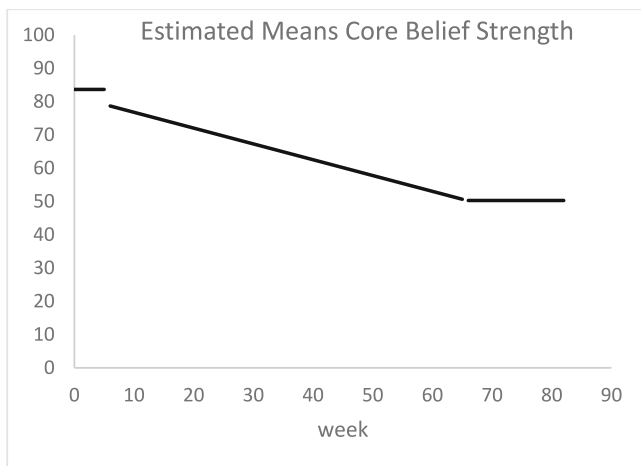


FIGURE 2 Estimated means core belief strength.

scored by both participants and close relatives (see Tables 5 and 6).

3.5 | Symptomatic distress

The individual scores of the participants on psychological distress, measured with the BSI, decreased, and there was a significant difference in the scores on T0 and T3 ($p = .020$) with a moderate effect size ($d = 0.77$; see Table 5).

3.6 | Quality of life

Individual scores on quality of life, measured with the WHOQOL-BREF, improved, but not significantly (see Table 5).

TABLE 5 Results of paired *t*-test.

	T0 mean (sd)	T3 mean (sd)	<i>t</i>	<i>p</i>	Effect size
SCID-5-P (BPD)	10.80 (1.30)	4.00 (3.74)	5.155	.007	2.43
BPDSI	18.11 (6.09)	5.90 (4.39)	11.896	<.001	2.30
YSQ	2.93 (6.09)	2.06 (0.98)	2.269	.086	
SMI (healthy adult)	4.08 (0.64)	4.74 (0.92)	-2.034	.112	
SMI (happy child)	3.08 (0.26)	4.07 (1.24)	-1.958	.122	
PID-5 participant negative effect	30.80 (10.33)	17.40 (15.53)	2.576	.062	
PID-5 participant antagonism	8.40 (8.96)	5.40 (7.27)	2.372	.077	
PID-5 participant disinhibition	21.40 (7.89)	15.80 (13.33)	1.415	.230	
PID-5 participant psychoticism	24.00 (20.10)	14.00 (18.12)	1.564	.193	
PID-5 informant negative effect	30.00 (16.43)	16.50 (5.00)	1.541	.221	
PID-5 informant antagonism	4.50 (2.65)	4.50 (3.70)	0.000	1.000	
PID-5 informant disinhibition	13.25 (9.64)	7.50 (8.81)	1.234	.305	
PID-5 informant psychoticism	7.50 (4.20)	4.00 (2.16)	-1.141	.337	
SIPP-SF self-control	3.00 (0.70)	3.32 (0.53)	-1.243	.282	
SIPP-SF relational capacities	2.18 (0.92)	2.72 (1.00)	-1.076	.342	
SIPP-SF social concordance	3.00 (0.80)	3.08 (0.99)	-0.550	.611	
BSI	65.00 (31.27)	41.40 (30.38)	3.719	.020	.77
WHOQOL-BREF	76.60 (7.92)	82.20 (13.54)	-1.057	.350	

Abbreviations: BPD, borderline personality disorder; BPDSI, Borderline Personality Disorder Severity Index; BSI, Brief Symptom Inventory; PID-5, Personality Inventory for DSM-5; SCID-5-P, Structured Clinical Interview for DSM-5 Personality disorder; SIPP-SF, Severity Indices of Personality Problems short form; SMI, Schema Mode Inventory; T0, start of treatment; T3, follow-up at 18 months; WHOQOL-BREF, World Health Organization Quality of Life Brief Form; YSQ, Young Schema Questionnaire.

	<i>Z</i>	Asymp. sig. (two-tailed)	<i>r</i>
SIPP-SF identity integration	-2.023	0.043	0.90
SIPP-SF responsibility	-0.276	0.783	
PID-5 participant detachment	-1.214	0.225	
PID-5 informant detachment	-1.604	0.109	

TABLE 6 Results of Wilcoxon signed ranks test.

Abbreviations: PID-5, Personality Inventory for DSM-5; SIPP-SF, Severity Indices of Personality Problems short form.

4 | DISCUSSION

To the best of our knowledge, this is the first empirical study on the effectiveness of psychotherapeutic treatment for BPD in older adults. We investigated ST as a treatment for BPD in older adults, using a multiple-baseline case series design. We found strong effects of ST on decreasing the credibility of negative core beliefs and borderline symptomatology. Mixed regression analyses revealed evidence for the main effect of treatment as well as the follow-up phase in comparison to the baseline phase. Also, the credibility of negative core beliefs diminished significantly during treatment. The general time effect decreased strongly after treatment conditions were entered into the model, indicating that it is highly unlikely that effects can be attributed to a time effect. All five participants remitted from their BPD diagnosis when they were reassessed with the SCID-5-P after 18 months. These results corroborate our hypotheses that ST leads to a decrease

of the credibility of negative core beliefs and that participants no longer met the criteria for BPD.

Concerning our secondary objectives results varied. Severity of BPD symptoms and psychological distress decreased. This was also significantly the case for the domain Identity integration, an aspect of personality functioning. Considering that stable self-image is a facet of Identity integration, this result correlates with the identified decrease in borderline symptomatology. A statistical trend in the positive direction was found for EMS. No significant results could be determined for the other outcome measures (healthy schema modes, personality traits and quality of life). Possibly, a prolonged length of treatment and higher treatment dosage may lead to more distinct results considering these outcome measures. Treatment dosage in the present study was set at 52 weekly sessions, followed by six monthly booster sessions, which is lower than that in other ST trials in younger adults, with the number of treatment sessions ranging from 78 up to

300 sessions (Bamelis et al., 2014; Giesen-Bloo et al., 2006; Nordahl & Nysæter, 2005). The length of treatment in the present study was based on the fact that 52 sessions appeared effective in older adults with cluster C personality disorders (Videler et al., 2018). All secondary outcomes were included for exploratory reasons only. To investigate the effectivity of ST on these secondary outcomes, a larger trial with a controlled between-groups design would be necessary.

Some limitations of the present study should be mentioned. First, some factors may have affected treatment integrity. One participant chose to refuse further booster sessions in the middle of her follow-up phase, because she was convinced that she did not need further treatment. Two participants were both hospitalized twice, respectively due to severe psychosomatic complaints and severe depressive symptoms. One participant also received supportive consultation in her home environment. Another participant received a couple of sessions of EMDR instead of imaginary rescripting, the latter being an experiential technique used in ST, to treat traumatic life events. However, both imagery rescripting and EMDR were found to be effective in treating symptoms of PTSD, depression and dissociation and trauma-related cognitions in adults with PTSD arising from childhood trauma (Boterhoven de Haan et al., 2020). Three participants were prescribed a different dosage or type of medication. Although we can establish with some conviction that the decreased credibility of the negative core beliefs is not due to time effects, we cannot determine the degree of influence caused by the above-mentioned integrity issues on the main intervention (ST). A second limitation is the small number of measurements for some participants in the baseline phase. Due to the design of this study, therapists were asked to determine the negative core beliefs at the very beginning of the baseline phase, so that rating them could start as soon as possible. However, determination of the negative core beliefs took more time than expected, causing less measurements in the baseline phase. More assessments in the baseline phase could have provided stronger statistical power and thus evidence for the effect of ST. This would have also been the case, if a concurrent multiple baseline design was applied, in which simultaneous measurement occurs for all participants; however, as control for coincidental events in multiple baseline designs rests mostly on replicated within-tier comparisons, in general, concurrent designs are not methodologically stronger than nonconcurrent designs (Slocum et al., 2022). A third limitation is that only nine sessions were rated for adherence to ST out of all 250 sessions. However, all therapy sessions were registered using a tailor-made registration form to describe the applied ST intervention and checked by the research team. Another limitation is that our participants were relatively young older adults with a mean age of 66 years old, so our findings might not generalize to the older old. Finally, due to the COVID-19 pandemic, the course of treatment was interrupted in various ways for all participants. Despite this uncertainty and haziness, all participants remained motivated for treatment and participation in this study, leading to continuation of (online) treatment sessions and a comprehensive collection of data.

The current study also has important strengths. As mentioned, this is the first study to methodologically explore the psychotherapeutic

treatment of BPD in older adults. Secondly, because of the different expression of BPD in older people, we used the DSM-5 alternative model of personality disorders besides the DSM-5 categorical BPD diagnosis for assessing BPD. Also, we attempted to minimize the demand effect of participants towards their therapists through blind ratings of the negative core beliefs and assessment of the questionnaires by the first author.

Ultimately, replication of our findings in a RCT is warranted, in which a prolonged treatment phase and higher treatment dosage should be considered, possibly combining individual ST with group ST; this was recently found to be more effective and had greater treatment retention than group therapy with equal treatment dosage in adults with BPD (Arntz et al., 2022). Furthermore, modifications of ST, that have been suggested for older adults, such as integrating positive or early adaptive schemas (Videler et al., 2020), might enhance treatment outcome.

4.1 | Conclusions

In sum, our finding that ST has a positive effect on patients with BPD in later life is a promising result and corresponds with a previous study on treatment with ST of cluster C personality disorders in older adults (Videler et al., 2018). Therefore, the results of the present study will hopefully help to abandon therapeutic nihilism in treating older adults with personality disorders even further and to encourage healthcare professionals to practice ST with confidence and conviction in the treatment of older adults with BPD.

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CONFLICT OF INTEREST STATEMENT

The authors report there are no competing interests to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, [AV], upon reasonable request.

ORCID

Arjan C. Videler  <https://orcid.org/0000-0002-2175-3453>

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