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The Clinician-Administered Dissociative States Scale (CADSS): Validation of the German Version

Yoki L. Mertens MSc and Judith K. Daniels PhD

Department of Clinical Psychology, University of Groningen, Groningen, Netherlands

ABSTRACT

The Clinician-Administered Dissociative States Scale (CADSS) is a structured clinical interview to assess state dissociation rated by clinicians. The current study aimed to validate the German version of CADSS by comparing it to the established self-report measures for dissociation and exploring its underlying factor structure. Severity of within-session state dissociation was assessed directly following a standard psychotherapy session in a trauma-exposed patient sample (N= 105; 81.9% female). Internal consistency, convergent validity with other dissociation measures, and the factorial structure of the instrument were analyzed. The German version exhibited excellent internal consistency (Cronbach's α = .94) and correlated significantly with self-report measures of state dissociation (r = .86) and trait dissociation (r = .77) indicative of high convergent validity. Exploratory factor analysis revealed a three-factor solution with the factors (1) Depersonalization/Derealization, (2) Identity Confusion/Alteration, and (3) Amnesia. Results support the CADSS as a useful instrument to assess state dissociation, conceptualized as a multidimensional construct, in clinical practice.

Introduction

Dissociation is a multi-faceted construct broadly defined as "a disruption in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behaviour" (American Psychiatric Association, 2013, p. 291). Dissociative symptoms are frequently encountered across the psychiatric spectrum (Lyssenko et al., 2018), especially in disorders related to childhood trauma (Rafiq et al., 2018; Vonderlin et al., 2018). Patients suffering from dissociative experiences describe feeling detached from themselves (i.e., depersonalization) or their surroundings (i.e., derealization). Other dissociative symptoms include dissociative amnesia (e.g., gaps in memory) or identity confusion and alterations. Dissociation, often elicited by distressing internal or external stimuli, is a notoriously difficult construct to assess as it not only encompasses a variety of related,

CONTACT Judith K. Daniels ✉ j.k.daniels@rug.nl Department of Clinical Psychology, University of Groningen, Grote Kruisstraat 2/1, Groningen 9712, Netherlands

yet distinct symptom patterns, but can also be conceptualized as temporary, transient state as well as a general (pathological) trait (Carlson et al., 2018; Condon & Lynn, 2014).

Several assessment instruments covering different aspects of dissociation exist (Spitzer et al., 2017), the gold standard being the structured clinical interview for DSM-IV dissociative symptoms and disorders (SCID-D; Steinberg, 1994; exhibiting good validity and high discriminatory power according to a recent meta-analysis (Mychailyszyn et al., 2020)). Other available diagnostic interviews are the Dissociative Disorders Interview Schedule (DDIS; Ross et al., 1989) and the recently developed Dissociative Subtype of PTSD Interview (DSP-I; Eidhof et al., 2019). Whereas clinical interviews are assumed to increase objectivity and comparability, potential drawbacks of diagnostic interviews include their long duration (especially considering patients with concentration problems) and the extensive training and expertise required by the assessors to ensure reliable ratings. With regards to self-report scales, the Dissociative Experiences Scale (DES; Carlson & Putnam, 1993) is the most validated and frequently employed instrument to assess trait dissociation on the dimensions of absorption, derealization/depersonalization, and amnesia. Other trait dissociation scales include the Cambridge Depersonalization Scale (CDS; Sierra & Berrios, 2000), Multiscale Dissociation Inventory (MDI; Briere, 2002), Multidimensional Inventory of Dissociation (MID; Dell, 2006), Shutdown-Dissociation Scale (Schalinski et al., 2015), Trait Dissociation Questionnaire (TDQ; Murray et al., 2002), and the Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis et al., 1996).

In comparison, few well-validated instruments exist to date to assess state dissociation, defined as the occurrence and severity of dissociative symptoms on a short time scale such as 'during the last hour' or an experimental condition with a circumscribed duration (Carlson et al., 2018). Arguably, the Peritraumatic Dissociative Experiences Questionnaire (PDEQ; Marmar et al., 1997) developed to assess acute dissociation elicited by traumatic events can be regarded as such but is too specific to account for dissociation experienced in a variety of contexts. For the German-speaking population, the CDS by Sierra and Berrios (2000) has been validated in German (Michal et al., 2004) and its adapted state version has been successfully employed in clinical research (Michal et al., 2013, 2014). Furthermore, the Dissociation-Tension Scale Acute (DSS-Acute; C.E. Stiglmayr et al., 2003) and its comprised version (DSS-4; C. Stiglmayr et al., 2009) have been developed to assess state dissociation levels. An inherent problem of relying on self-report tools is its potential susceptibility to response biases. It has been proposed that poor introspective monitoring and alexithymia can lead to over-reporting of dissociative symptoms (Merckelbach et al., 2017), whereas a new study based on ambulatory assessment data conversely indicates a preponderance of underreporting of dissociative symptoms (Beutler, Daniels & Laddis, 2020).

Taken together, the majority of psychometric tools available are either time-consuming, rely exclusively on self-report, or focus on trait dissociation, typically assessed across a longer time span, and thus are less well suited to assess acute dissociation. The Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., 1998, revised version 2014) partially remedies these issues as it is a very short and efficient interview instrument developed to (repetitively) assess situation-dependent (e.g., experimentally induced) dissociative states. This is especially relevant regarding experimental investigations on the correlates of dissociation (e.g., physiology or neuroimaging), which often suffer from a low signal-to-noise ratio and therefore require a valid and sensitive assessment of what occurs in specific time windows. The CADSS comprises both an interview component to capture the subjective experience and an observer component to account for dissociative behavior observed from an outside perspective. Initial validation of the instrument presented excellent scale reliability (Cronbach's α = .94) and promising convergent validity (Bremner et al., 1998). However, in 2014 the author raised questions regarding the validity of the observer items as their inter-rater reliability was low and advised against their use (Bremner, 2014).

Since its development, the scale has been frequently employed in neuroimaging experiments employing script-driven trauma exposure (e.g., Lanius et al., 2002) as well as (ketamine) clinical trials and laboratory investigations (Castle et al., 2017; Feder et al., 2014; Rodrigues et al., 2021). Indirect support for its validity stems from an investigation by Condon and Lynn (2014), which required healthy participants to answer the interview items in a self-report questionnaire format. These self-reported ratings correlated moderately with other self-report measures, namely, the DES (r = .63) and PDEQ (r = .59), and exhibited only weak associations with other constructs, e.g., state anxiety (r= .29), indicating satisfying convergent and discriminant validity. However, the lack of a clinician assessing the items as intended by Bremner et al. (1998) and use of an undergraduate student sample impedes the generalization of these findings to clinical settings. As such, the present study aims to extend preliminary evidence of the scale's validity by correlating clinician-administered CADSS ratings of within-session (i.e., experienced during a therapy session) state dissociation with a) self-reported, within-session state dissociation, b) general trait dissociation, and – congruent with previous validation studies (e.g., Dell, 2006) – c) (early) traumatic life events. Considering earlier findings on the robust relation between trait dissociation and traumatic experiences (Dell, 2006; Stein et al., 2013), it is reasonable to expect CADSS ratings to be associated with past traumatic incidents, especially childhood trauma (Vonderlin et al., 2018).

Notably, there is limited research on the underlying factor structure of the CADSS despite its frequent usage. Bremner et al. (1998) originally proposed three subscales: derealization, depersonalization, and amnesia. The three-

factor model presented a satisfactory fit according to a recent confirmatory factor analysis in a sample of mood disorder patients undergoing clinical ketamine trials (Niciu et al., 2018). However, another study (Van Schalkwyk et al., 2018) conducted an exploratory factor analysis (EFA) in a comparable patient group and setting, which resulted in the exclusion of several CADSS items and assumption of a one-factor structure. The fact that findings of both aforementioned studies are based on assessments of mood disorder patients after ketamine infusion warrants further examination of the instrument's factor structure in a heterogeneous, transdiagnostic patient sample.

The aim of the current investigation is thus two-fold: to validate the German version of the CADSS in clinical settings and to investigate the factorial structure of the interview items. For the sake of completeness, further exploration of the observer items' validity was conducted. So far, only Bremner and colleagues reported on insufficient reliability of the observer items based on preliminary findings. The authors strongly encouraged future research to test whether dissociative behavior represents a viable and measurable construct (Bremner et al., 1998). It thus seemed prudent to also include psychometric testing of the observer items. We hope that our findings based on clinician-administered ratings of within-session state dissociation, assessed directly following a therapy session, will enhance understanding of the scale's ecological validity and clinical utility.

Materials and methods

Participants

A total of $N = 105$ German-speaking psychotherapy patients (81.9% female; mean age $M = 43.6$, $SD = 11.5$) were assessed with the CADSS, administered by their clinicians ($N = 105$), and completed various questionnaires. The participants overwhelmingly exhibited trauma-related symptomatology (see Table 1) characterized by high levels of comorbidity (58.4% Mood Disorders, 49.5% Posttraumatic Stress Disorder, 25.7% dissociative disorder not otherwise specified, 16.8% Dissociative Identity Disorder, 13.9% Anxiety Disorder; 11.9% Borderline Personality Disorder), followed psychotherapy predominantly as outpatients, and received an average of $M = 51.3$ ($SD = 61.4$) therapy sessions at assessment time. In total, 97.1% reported having experienced at least one traumatic event in their lifetime. The study was approved by the medical ethical committee of the University of Madgeburg, DE.

Table 1. Demographic variables

	% (n)	Comorbidity
Gender (*n* = 105)		
• Female	81.9 (86)	
• Male	18.1 (19)	
Education (*n* = 103)		
• University	28.6 (30)	
• High school (high)	19.0 (20)	
• High school (medium)	36.2 (38)	
• High school (low)	8.6 (9)	
• None	2.9 (3)	
• Other	2.9 (3)	
Marital Status (*n* = 105)		
• Single	45.7 (48)	
• Married	32.4 (34)	
• Civil partnership	2.9 (3)	
• Widowed	1.9 (2)	
• Divorced	17.1 (18)	
Fit for Work (*n* = 103)	43.8 (46)	
Clinical Setting (*n* = 104)		
• Outpatient	65.7 (69)	
• Inpatient	33.3 (35)	
ICD-10 Diagnoses (*n* = 101)		
• Affective Disorders	23.4 (59)	58.4%
• PTSD	19.8 (50)	49.5%
• DD	10.3 (26)	25.7%
• DID	6.7 (17)	16.8%
• Anxiety Disorders	5.6 (14)	13.9%
• Borderline PD	4.8 (12)	11.9%
• Other PDs	4.4 (11)	10.9%
• Somatoform Disorders	4.0 (10)	9.9%
• Eating Disorders	3.2 (8)	7.9%
• Dependence Syndrome	3.2 (8)	7.9%
• Adjustment Disorder	3.2 (8)	7.9%
• OCD	1.2 (3)	3.0%
• Acute Stress Disorder	0.8 (2)	2.0%
• Psychosis	0.4 (1)	1.0%
• Other Diagnoses	9.1 (23)	22.8%

Note. ICD-10 = International Statistical Classification of Diseases and Related Health Problems (ICD), 10th edition; PTSD = Posttraumatic Stress Disorder; DD = Other Dissociative Disorders; DID = Dissociative Identity Disorder; PD = Personality Disorder; OCD = Obsessive-Compulsive Disorder.

Materials

The Clinician-Administered Dissociative State Scale (CADSS; revised version by Bremner, 2014). The CADSS was originally developed and further revised by Bremner and colleagues to assess dissociative states, occurring in a limited timeframe (e.g., a neuroimaging scan or a therapy session), in a structured interview format (Bremner, 2014; Bremner et al., 1998). The present study translated and validated the revised CADSS scale; its adaptation from the original scale included the addendum of four additional interview items and the deletion of several observer items (Bremner, 2014). The resulting 28-item instrument contained 23 interview items and five observer items. Patients were instructed to report dissociative states experienced during the

preceding therapy session, and clinicians rated the reported and observed severity on a 5-point The Likert scale ranges from 0 (not at all) to 4 (extreme) with item-specific anchors provided for each score (see cf. Procedure).

Preliminary validation of the original version (Bremner et al., 1998) depicted good inter-rater reliability and excellent internal consistency for the interview items (19 items, Cronbach's α = .94). Additionally, the authors proposed three symptom subscales of the interview items, namely amnesia (sum of item 14 and 15; Cronbach's α = .74), depersonalization (sum item 3–7; Cronbach's α = .82), and derealization (sum 1, 2, 8–13, 16–19; Cronbach's α = .90). The observer scale (8 items) had a Cronbach's α of .90. However, the author cautioned against the use of the latter due to insufficient empirical evidence for its validity and comparatively poor interrater agreement (ICC = .34; Bremner, 2014; Bremner et al., 1998).

The German version of the revised CADSS was developed by a standard translation–backtranslation approach (Sperber, 2004): Two trauma therapists with native German and very advanced English language skills translated and backtranslated the questionnaire. A native English speaker compared the two English versions regarding shifts in meaning. Any discrepancies in meaning were resolved by another independent translation–backtranslation process.

The Cambridge Depersonalization Scale – State Version (CDS-S; Michal et al., 2004). The 22-item self-report instrument assesses state-dependent (e.g., elicited during distressing situations) depersonalization symptoms (Michal et al., 2013, 2014, 2004) and is an adaptation of the original scale (Sierra & Berrios, 2000). The severity of state dissociation is scored on a visual analog scale ranging from 0% (not at all) to 100% (very strong). Psychometric properties of the corresponding German trait version (Michal et al., 2004) indicated high reliability (Cronbach's α = .95; Gutmann split-half reliability = .95) and the state version also exhibited excellent internal consistency (Cronbach's α = .95) in the current sample.

Dissociative Experiences Scale – German Short Version (FDS-20; Spitzer et al., 2004). To assess experiences of trait dissociation, the shortened German version of the Dissociative Experiences Scale (Carlson & Putnam, 1993) was employed. The self-report instrument contains 20 items rated on a scale from 0% (never) to 100% (all the time). Participants rate how often they experience dissociative symptoms including amnesia, depersonalization/derealization, and absorption in a time interval of the past two weeks. The cutoff value for pathological dissociation in dissociative disorder patients is 22.9 (Spitzer et al., 2015). The FDS-20 exhibited high internal consistency in the original validation study (Spitzer et al., 2004) as well as in the current sample (Cronbach's α = .95).

Traumatic life events. To further characterize the patients' history, the German version of the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003; Klinitzke et al., 2012; Cronbach's α = .95) was employed. The shortened version comprises five subscales (emotional abuse, emotional

neglect, physical abuse, physical neglect, and sexual abuse), each assessed with five items rated on a 5-point Likert scale from 1 (not at all) to 5 (very frequent). Additionally, the 15-item trauma checklist of the Essen Trauma-Inventory (ETI-TL; Tagay et al., 2007) assessed whether participants experienced traumatic life events (0 = no; 1 = yes) (Cronbach's α = .77).

Procedure

Clinicians who specialized in trauma therapy were contacted by means of e-mail to ask for their willingness to participate in a validation study. Interested clinicians were sent the pen-and-paper test battery and informed their current patients about the option to participate in this study. Participation was completely voluntary; neither participants nor clinicians received compensation for their participation. Participants provided consent after they were fully informed about the study and participated anonymously. Clinicians and patients scheduled an extended appointment for the assessment following a therapeutic session, so that within-session state dissociation measured by the CADSS could be immediately assessed at the end of a standard psychotherapeutic session, diminishing the risk of retrospective biases. For the CADSS interview part, the clinician read out the items (e.g., "Do things seem unreal to you, as if you are in a dream?") loud and then rated symptom level severity based the patient's description with help of content-based anchors provided for each item (e.g., "1 = mild, things seem a little unreal, but I'm well aware of where I am"). For the observer part, interviewers silently rated their impression of how much the patient dissociated during therapy (e.g., "Does the subject appear to be separated or detached from what is going on, as if not part of the experience or not responding in a way that you would expect?"). Immediately following the CADSS administration, participants completed the self-report state dissociation questionnaire (CDS-S) to indicate state dissociation experienced *during* the preceding therapy session, followed by the remaining instruments. In the meantime, the clinician completed a short form on sociodemographic and diagnostic information.

Statistical analysis

Data analysis was performed using the IBM SPSS Statistics for Mac, version 26.0 (IBM Corp., Armonk, NY, USA). In order to retain as many observations as possible to ensure sufficient statistical power for the factor analyses, only subjects with more than >10% of missing values across the CADSS interview items were excluded (*n* = 3), resulting in a sample of *N* = 105. One single missing CADSS value was imputed with the mean. Missing values on the remaining scales were excluded listwise. No outliers were defined for the subsequent analyses; all values were accepted as valid entries.

Following Bremner's expressed concerns regarding the validity of the observer items (Bremner, 2014), the current factor analysis was restricted to the interview component of the CADSS, whereas additional reliability and correlational analyses of the observer items were included to allow for the comparison of current and previous findings regarding their utility. As a first step, the factorability of the 23 CADSS interview items was examined, resulting in the exclusion of three items (see cf. Factorability). For the analysis of the factor structure of the resulting item set, principal axis factoring with oblique rotation was chosen based on the assumption that the latent factors of dissociation are not completely independent of each other. Different solutions with principal axis factoring with oblique rotation including four, three, two and one factor(s) were explored and compared for the adjusted interview scale (Costello & Osborne, 2005; Sierra et al., 2005).

Next, composite scores of the assessed instruments were calculated as follows: Two subscale scores were obtained by summing across the items of the (adjusted) CADSS interview and the observer part, respectively, and adding both subscales for the total CADSS score. For CDS-S and FDS-20, the composite mean score was the average of all items. For the CTQ and ETI-TL, item ratings were added to compute the subscale and total sum scores for each measure. Reliability and correlational analyses with self-reported dissociation and traumatic life events were conducted to obtain further psychometric properties (internal consistency and convergent validity) of the CADSS scale. Statistical thresholding was set to $p < .05$ (two-sided).

Results

Descriptives

The CADSS mean scores of the total, interview, observer, and subscales can be found in Table 3. The mean CDS-S score was $M = 21.5$ ($SD = 20.1$), the mean FDS-20 score was 22.7 ($SD = 19.8$). Patients further reported high childhood trauma scores (CTQ-SF) of $M = 65.8.6$ ($SD = 26.1$) with following mean subscale values: emotional abuse: $M = 15.6$ ($SD = 6.4$); emotional neglect: $M = 11.5$ ($SD = 4.7$); physical abuse: $M = 10.56$ ($SD = 6.0$); physical neglect: $M = 16.3$ ($SD = 5.9$); sexual abuse: $M = 12.6$ ($SD = 7.8$). On average, patients reported having personally experienced or witnessed $M = 5.8$ ($SD = 3.1$) distinct traumatic life events in their lifetime; only three participants ($n = 3$; 2.1%) did not report any traumatic incidences (ETI-TL).

Factor analysis

Factorability

Inspection of the anti-image correlation matrix showed that all but one (item 19) diagonal was above .5. However, an item analysis indicated that items 13, 17, and 19 were suffering from low inter-item correlations (< .3). All three items described

experiences of hyperrealism, namely item 13 ("Do things seem to be happening very quickly, as if there is a lifetime in a moment?"; $M = 0.6$), item 17 ("Do things seem very real, as if there is a special sense of clarity?"; $M = 0.7$), and item 19 ("Do colors seem much brighter than you would have expected?"; $M = 0.1$). Despite the conceptual similarities, they did not load onto the same factor in a preliminary factor analysis including all interview items (initial Kaiser–Meyer–Olkin Measure of Sampling Adequacy = .870; Bartlett's test of sphericity ($\chi^2(253) = 1271.96$, $p < .001$) and their exclusion resulted in a clearer factor structure.

Factor extraction

Initial factor extraction based on the Kaiser criterion resulted in four factors with an initial eigenvalue above one. The eigenvalues of the extracted factors explained 44.4%, 8.08%, 5.97%, and 5.07% of the variance, respectively. The fourth factor depicted only one primary factor loading above .4 at item four, and its inclusion led to several cross-loadings across factors. Ultimately, a three-factor solution (depicted in Table 2) indicated the best factor structure based on the clear distinction between factors that align with theoretical and clinical considerations on dissociation (Sierra et al., 2005). The resulting model had a Kaiser–Meyer–Olkin Measure of .880 and the Bartlett's test of sphericity rejected the null hypothesis ($\chi^2(190) = 1196.47$, $p < .001$), verifying the sampling adequacy for the chosen analysis. The total variance explained by the three factors was 58.52%. The average extracted communality score ($M = 0.53$), indicative of the proportion of variance explained by the extracted factors, was adequate as well.

Factor naming

Items with salient loadings on factor one described experiences of feeling detached from the world and oneself; the factor was thus labeled "Derealization/Derealization." The second factor contained items regarding perceived disruptions of identity and was labeled "Identity Confusion/Alteration." The third factor concerned the presence of memory gaps. This factor was labeled "Amnesia." The model included a cross-loading on item 5 ("Do you feel as if you are watching the situation as an observer or a spectator?"). From a theoretical standpoint, it is sensible that the item taps into both constructs of depersonalization and identity confusion, and was therefore retained (Costello & Osborne, 2005). The mean, standard deviation, and internal consistency of the three extracted factors can be found in Table 3. Post-hoc correlational analysis of the derived factors with the observer subscale resulted in significant associations with Depersonalization/Derealization ($r = .79$, $p < .001$), Identity Confusion/Alteration ($r = .60$, $p < .001$), and Amnesia ($r = .72$, $p < .001$).

Table 2. Factor loadings and communalities based on Principal Axis Factoring with oblimin rotation of the interview CADSS items ($N = 105$).

	Factors			Communality
	Derealization/ Depersonalization	Identity Confusion/ Alteration	Amnesia	
1. Do things seem to be moving in slow motion? (*Wirkte es so, als ob sich alles in Zeitlupe bewegt?*)	**.84**	−.23	−.18	.73
2. Do things seem to be unreal to you, as if you are in a dream? (*Erschienen Ihnen die Dinge unwirklich, so als wären Sie in einem Traum?*)	**.43**	.18	−.27	.56
3. Do you have some experience that separates you from what is happening; for instance, do you feel as if you are in a movie or a play, or as if you are a robot? (*Hatten Sie den Eindruck, dass irgendetwas Sie von dem Geschehen abgegrenzt? Fühlten Sie sich so, als wären Sie in einem Film oder Theaterstück oder als wären Sie ein Roboter?*)	**.35**	.20	−.28	.45
4. Do you feel as if you are looking at things from outside of your body? (*Fühlte es sich so an, als würden Sie die Dinge von einer Position außerhalb Ihres Körpers betrachten?*)	**.69**	.05	.06	.46
5. Do you feel as if you are watching the situation as an observer or a spectator? (*Fühlte es sich so an, als würden Sie die Situation als ein Beobachter oder Zuschauer betrachten?*)	**.38**	.36	−.03	.43
6. Do you feel disconnected from your own body? (*Fühlten Sie sich von Ihrem eigenen Körper abgetrennt?*)	**.71**	.11	−.04	.63
7. Does your sense of your own body feel changed: for instance, does your own body feel unusually large or unusually small? (*Fühlte sich Ihr eigener Körper verändert an? Fühlte sich Ihr Körper zum Beispiel ungewöhnlich groß oder klein an?*)	**.56**	.08	−.12	.46
8. Do people seem motionless, dead, or mechanical? (*Erschienen Ihnen Menschen bewegungslos, wie tot oder maschinell?*)	**.29**	.07	−.03	.13
9. Do objects look different than you would expect? (*Sahen Objekte anders aus als Sie erwarten würden?*)	**.68**	.13	.07	.52
10. Do colors seem to be diminished in intensity? (*Erschienen Ihnen Farben verblasst und in ihrer Intensität reduziert?*)	**.76**	.00	.18	.45
11. Do you see things as if you were in a tunnel, or looking through a wide-angle photographic lens? (*Sahen Sie Dinge so, als wären Sie in einem Tunnel oder so, als würden Sie durch ein Weitwinkelobjektiv schauen?*)	**.69**	−.12	−.16	.54
12. Does this interview seem to be taking much longer than you would have expected? (*Schienen Dinge sehr viel länger zu dauern, als Sie erwartet hätten?*)	**.58**	−.06	−.08	.36
16. Have sounds almost disappeared or become much stronger than you would have expected? (*Sind Geräusche fast verschwunden oder viel lauter geworden als Sie erwartet hätten?*)	**.50**	.03	−.02	.28
18. Does it seem as if you are looking at the world through a fog, so that people and objects appear far away or unclear? (*Erschien es Ihnen so, als würden Sie die Welt wie durch einen Nebel wahrnehmen so dass Menschen und Dinge weit entfernt und undeutlich wirken?*)	**.56**	.17	−.11	.55

(*Continued*)

Table 2. (Continued).

	Factors			Communality
	Derealization/ Depersonalization	Identity Confusion/ Alteration	Amnesia	
20. Do you feel confused about who you really are? (Fühlten Sie sich verwirrt bezüglich der Frage, wer Sie wirklich sind?)	.03	**.68**	−.08	.53
21. Do you feel like there are different parts of yourself which do not fit together? (Fühlte es sich an, als gäbe es verschiedene Anteile Ihres Selbst, die nicht zusammenpassen?)	.03	**.87**	−.02	.80
23. Do you feel like you have more than one identity? (Fühlte es sich so an, als hätten Sie mehr als nur eine Identität?)	−.01	**.83**	.00	.68
14. Have there been things which have happened during this interview that now you can't account for? (Sind während dieses Gespräches Dinge passiert, die Sie sich jetzt nicht mehr erklären können?)	.19	.02	**−.55**	.47
15. Have you spaced out, or in some other way lost track of what was going on during this experience? (Waren Sie geistig weggetreten oder haben irgendwie den Überblick über das Gespräch verloren?)	.30	.09	**−.59**	.73
22. Do you have gaps in your memory? (Haben Sie Erinnerungslücken in Bezug auf unser Gespräch?)	−.09	.07	**−.91**	.79
Eigenvalues	**8.891**	**1.617**	**1.195**	
% of Total Variance	**44.46**	**8.09**	**5.98**	
Total Variance Explained			**58.52%**	

Note. German translations of the CADSS items are in parenthesis.

Reliability and convergent validity

The German version of the CADSS depicted overall good to excellent results regarding its reliability and convergent validity. The total CADSS scale as well as the interview scales presented excellent internal consistency (Cronbach's alpha values are reported in Table 3). The internal consistency of the observer subscale was good. Removal of the three aforementioned interview items resulted in a small increase of the reliability scores for the interview subscale and the total adjusted CADSS scale (Cronbach's α = .95).

Table 3. Descriptive Statistics & Convergent Validity of CADSS Factors.

					Pearson's correlation coefficient	
	No. of Items	M	SD	Cronbach's α	with CDS-S	with FDS-20
Total Scale	28	22.2	19.5	.94	.84**	.77**
Observer Subscale	5	3.7	4.3	.86	.71**	.71**
Original Interview Subscale	23	18.8	15.8	.92	.84**	.76**
Adjusted Interview Subscale	20	17.4	15.3	.93	.86**	.77**
(1) Depersonalization/ Derealization	14	10.8	10.4	.91	.83**	.72**
(1) Identity Confusion/Alteration	3	4.2	4.1	.86	.67**	.67**
(1) Amnesia	3	2.4	2.9	.84	.64**	.56**

Note. CDS-S = Cambridge Depersonalization Scale – State Version; FDS-20 = Dissociative Experiences Scale – German Short Version.
** *p* < .001

The adjusted interview scale depicted highly significant associations with the state version of the German Cambridge Depersonalization Scale (CDS-S; Michal et al., 2004) and with the German version of the Dissociative Experiences Scale (FDS-20; Spitzer et al., 2004). Subsequent correlational analyses of the extracted factors showed that the first factor depersonalization/derealization was strongly related to the CDS-S assessing depersonalization symptoms (see Table 3). The observer scale exhibited significant intercorrelations with trait and state dissociation. The CADSS correlated positively with childhood trauma (CTQ-SF; Klinitzke et al., 2012; adjusted interview scale: $r = .57$, $p < .001$; observer scale: $r = .48$, $p < .001$) and traumatic life events (ETI-TL; Tagay et al., 2007; adjusted interview scale: $r = .31$, $p = .002$; observer scale: $r = .25$, $p = .01$).

Discussion

The present study aimed to validate the German version of the CADSS by identifying within-session dissociative states experienced by a heterogeneous patient sample in clinical settings and to explore the measure's underlying factor structure. The average severity of state dissociation was comparable to the ratings provided for the PTSD sample used in the original validation study (Bremner et al., 1998). The current patient sample further exhibited numerically lower self-reported state depersonalization, but numerically higher trait dissociation scores, compared to previous patient studies (Michal et al., 2013, 2014; Spitzer et al., 2015) and high rates of (childhood) trauma exposure compared to a representative German sample (Häuser et al., 2011; Tagay et al., 2007). Both the interview part and the observer items of the CADSS showed high internal consistency and exhibited promising convergent validity with state and trait self-report scales. Factor analysis of the interview items pointed toward a three-factor structure that accounted for 58.52% of the variance explained, indicative of a multidimensional construct.

Correlational analyses supported the convergent validity of the CADSS. Congruent with our expectation, the interview items exhibited robust associations with the state version of the German Cambridge Depersonalization Scale (Michal et al., 2004), especially the extracted factor of depersonalization/derealization. The results indicated that the clinician-rated assessment corresponded with the patient's subjective ratings regarding state dissociation experienced during a psychotherapy session, indicating high convergent validity. It is further worth noticing that the association with the trait dissociation measure, here numerically above the average reported for a patient sample with dissociative disorders (Spitzer et al., 2015), appeared almost as robust, and was noticeably numerically higher in the current sample ($r = .77$) than the original validation employing the Dissociative Experiencing Scale ($r = .48$; Bremner et al., 1998). The finding may suggest that patients suffering from

more chronic dissociation as indicated by the elevated DES scores also experience more within-session state dissociation. It also merits mentioning that the association found between CADSS-assessed state dissociation and childhood trauma supports the scale's validity as previous meta-analyses have linked exposure to early adversity with increased dissociative experiencing (e.g., Vonderlin et al., 2018).

Surprisingly, the observer items fared much better than expected. They deviated little from the interview items, both in terms of internal consistency and convergent validity. Given the current results, researchers might reconsider their exclusion and future studies should examine their inter-rater reliability again. However, the internal consistency of the interview items was already very high and the addition of observer items only led to incremental increases of the reliability index. It is conceivable that their valid use is dependent on the extensive clinical experience of the rater. Alternatively, a well-established therapeutic relationship (on average, based on 51 therapy sessions in the current sample) might have enabled the clinicians to provide such useful observations. Future research might consider studying the validity of the observer items at an early treatment stage.

With regard to the underlying factor structure of the CADSS, the current investigation presents a multidimensional scale consisting of three factors. The first factor, called Depersonalization/Derealization, consisted of 14 items that collectively describe a sense of separation from everyday experiencing (Holmes et al., 2005). The factor diverges from Bremner et al.'s (1998) original proposal to categorize depersonalization and derealization symptoms on two separate subscales. However, the finding that disrupted perception of one's own body ("Do you feel disconnected from your body?"), sense of self, or the external world ("Do objects look differently than you expect?") falling in one dimension complements the majority previous research on the latent factors of dissociation (for a review, see Černis et al., 2021) and is in line with the adapted DSM-5 conceptualization of Depersonalization Derealization Disorder. The second factor, Identity Confusion/Alteration, is based on three items that assess the potential presence of different identity states. In addition, item 5 ("Do you feel as if you are watching the situation as an observer or a spectator?") also loaded highly on this factor. Cross-loading indicates that the presented factor structure is not clear-cut and that some items share conceptual overlap across dimensions. The third factor Amnesia contains three items assessing memory gaps and thus provides empirical support for the suggestion of such a subscale by Bremner et al. (1998).

One could argue that the uneven item distribution across factors with a predominant focus on derealization and depersonalization experiences – although in line with the original conceptualization of the subscales (Bremner et al., 1998) – highlights an important issue: The CADSS assesses only a specific subset of (clinically relevant) dissociative states and may fail to

comprehensively capture distinct facets of dissociation. Here, other dissociation measures, whose factor structure mirrors a more balanced item distribution across variables (e.g., the Dissociative Symptom Scale; Carlson et al., 2018) or which used a data-driven approach for item generation (e.g., the Černis Felt Sense of Anomaly Scale; Černis et al., 2021), might be better suited to equally cover a range of dissociative symptoms. Still, all extracted factors, including Identity Confusion/Alteration and Amnesia, depicted satisfactory internal consistency and were strongly related to both the self-reported state and trait measure (see Table 3). Independent of each other, they thus appear to already contain high informative value derived from the few selected items. To further increase the stability of the latter two factors, future research should consider to include additional items assessing the latent variables, but yet maintain the instrument's concise format.

A few limitations should be acknowledged. First, the factor analysis may suffer from low statistical power with a subject-to-item ratio of 5:1. Previous research indicated that small samples in EFA could lead to erroneous factor extractions and affect the robustness of findings (Costello & Osborne, 2005). We therefore highly encourage cross-validation studies within larger clinical samples. Second, the sample predominantly consisted of female participants, potentially limiting generalization of the results to male populations. Still, the current findings may provide unique information given the heterogeneity of the clinical sample (see Table 1), which was directly assessed by their respective clinician following a therapy session.

The fact that current administrators were trained therapists specialized in the treatment of trauma-related disorders and in-depth knowledge of their patient's history and clinical status can be regarded both as a strength and a weakness of the present study. On the one hand, it strengthens the CADSS' ecological validity for clinical usage in similar contexts and might have facilitated capturing and classifying the severity of the (often subtle) shifts in patient's individual dissociative phenomenology. On the other hand, it questions the objectivity of the current findings as the level of the clinicians' expertise and therapeutic alliance might have impacted both the patients' responding and clinicians' rating of the answers. The current study cannot account for that and encourages future research to assess and compare inter-rater reliability of experienced clinicians and of users with no or little clinical experience. Possibly, additional training in recognizing dissociative symptoms might be needed for CADSS administrators who underwent less therapeutic training than presumed in our current and previous (Bremner et al., 1998) sample.

Finally, it would be helpful to assess the discriminant validity (as previously demonstrated by Condon and Lynn, 2014) and to extend construct validity by comparison with an established interview instrument, for instance, the SCID-

D (Steinberg, 1994), as the employed self-report questionnaires could be impacted by under- or over-reporting. However, given the strong intercorrelations, there is no concrete evidence for this in the current data set.

To conclude, the German version of the CADSS is a short, structured interview with excellent psychometric properties. It has shown promise for repeated measurements in a wide array of experimental clinical research, e.g., to assess state dissociation elicited by trauma exposure paradigms. We further hope that the validated version of CADSS, translated in the German language, can be of high clinical utility to assess state dissociation in clinical settings based on its concise and clinician-rated format. Overall, the current findings extend empirical support for the preliminary validation by Bremner et al. (1998) of CADSS as a reliable and valid instrument to assess (within-session) state dissociation.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

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

ORCID

Yoki L. Mertens MSc 🆔 http://orcid.org/0000-0002-2760-0896
Judith K. Daniels PhD 🆔 http://orcid.org/0000-0001-6304-2310

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