

Development and validation of a brief measure of pathological dissociation: Laddis/Kira Pathological Dissociation Scale: Initial Psychometrics

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Research Article

Keywords: Pathological dissociation, Complex PTSD, executive function deficits

Posted Date: July 5th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1771383/v1

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Abstract

The study developed the Laddis/Kira screening nine-item measure for pathological dissociation on a longitudinal sample of 228. Exploratory and confirmatory factor analysis found a one-factor structure. The measure had a large correlation with another measure of dissociation establishing its convergent validity, and a negative correlation with the will to exist, live, and survive establishing its divergent validity. It has a large correlation with complex PTSD (CPTSD) and executive function deficits establishing its predictive and criterion validity. It had good reliability and test-retest stability. The measure associated significantly higher with CPTSD compared with the comparable measure of DES-B. The study provided initial evidence of the measure's robust psychometrics.

Introduction

Dissociation refers to a disruption in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior (DSM-5, p. 291). The DSM-5 (APA, 2013) conceptualizes dissociation as a multidimensional construct including amnesia, de-realization, depersonalization, and identity disruption factors. In addition to the disorders in which dissociation is a defining feature (e.g., dissociative amnesia as well as both dissociative and depersonalization disorders), severe dissociation is also a criterion in other disorders as well, such as posttraumatic stress disorder (PTSD) and borderline personality disorder (American Psychiatric Association, 2013), which make dissociation a transdiagnostic phenomenon that needs to be addressed by unique Transdiagnostic interventions (e.g., Ellickson-Larew et al., 2020). A study using network analysis between different disorders confirmed the Transdiagnostic nature of dissociation (Černis et al., 2021). It is important to screen for the Transdiagnostic factors including pathological dissociation are lacking.

Measures proposed to measure dissociation included the Dissociative Experiences Scale (DES (Lyssenko et al., 2017; Bernstein&.Putnam,1986), the DES-Taxon Scale (DES-T) (Waller et al.,1996) the Adolescent DES (A-DES)(Armstrong et al.,1997) the Dissociative Disorders Interview Schedule (DDIS)(Ross et al., 1990) the Clinician-Administered Dissociative States Scale (CADSS) (Bremner et al.,1998) and the Structured Clinical Interview for DSM Dissociative Disorders (SCID-D) (Steinberg, 1994) There are other several measures proposed to measure dissociation the Multidimensional Inventory of Dissociation (Dell, 2006), and its short form(Kate et al., 2021). However, Dell's inventory (218 items with 23 subscales) is too long which made it impractical to use, and its development of a short form (60 items) is still too long to screen for pathological dissociation. While the measurement model differs in the number of its dimension, most studies found a unitary general second-order factor (e.g. Schimmenti,2016). There are two general short measures already developed for dissociation as screening tools, and to be used in research (The Peritraumatic Dissociative Experiences Questionnaire—Self Report (PDEQ-SR; Marmar, et al., 1997, and Brief Dissociative Experiences Scale (DES-B)—Modified, (Dalenberg C, Carlson E, 2010). However, there are no short measures to screen for pathological dissociation. One of the goals of the current study is to develop a short measure for pathological dissociation and use it with another measure

of dissociation to check if the new conceptual and measurement model for stress and trauma will do better in explaining longitudinally the dynamics of trauma and dissociation.

The construction of the scale: The Team of experts in trauma and dissociation researchers consulted the current dissociation theories and hundreds of items of existing dissociation measures. The goal was to construct a concise short screening measure for pathological dissociation. They first chose 12 items that represented, according to their best knowledge and clinical expertise, the phenomena of pathological dissociation. After further discussion, they cut 3 overlapping items and reduced the measure to 9 items.

Methods

Participants that completed times 1 and 2 in the study longitudinal design were (228) two hundred and twenty-eight, ages 18-50 (Mean=21.30, SD=3.47), with 86.8% females. 13.2% were married, 86.4% were single, and 0.4% were divorced. For socioeconomic status (SES), 5.7% indicated that they belong to low SES, 87.3% to middle SES, while 7% reported belonging to high SES. 96.5% were Muslims and 3.5% were Christians. For education, 0.4% have an intermediate level of education, 85.1% have college or university education, and 14.5% have graduate degrees. For work, 88.6% were students, 7% worked in the private sector, 1.8% worked in the public sector, and 2.6% were unemployed.

Procedures We used a longitudinal design. We used 14 attention check questions to determine the response validity. Because the questionnaire was too long, we administered the questionnaire in two separate sessions. In time one, 370 completed the two sessions. After about eight weeks, 299 completed the two sessions in time two. However, 23 participants (about 8%) were eliminated due to attention check failure (50% or over of the attention check questions). Another 31 participants were eliminated because of incomplete data. Two hundred twenty-eight participants completed the two-session questionnaire in both times 1 and time 2. The research team administered the questionnaires to participants from March 2022 to May 2022 in Egypt. We used Google Drive and developed a survey link. Once the participant completed the survey, it was sent anonymously to Gmail and then downloaded to the Excel file. Participation was voluntary with built-in informed consent; each person took approximately 15-20 min for each session. The IRB of the sponsoring University approved the research protocol as part of a cross-cultural study of trauma mental health and executive function – cross-cultural study. The research team decided on the questionnaire and designed the study.

Measures: In addition to the constructed 9-item (Laddis/ Kirs Pathological dissociation scale), we used the following measure

Brief Dissociative Experiences Scale (DES-B)—Modified. Dissociation experience scale DES-B (Dalenberg C, Carlson E, 2010) modified for DSM-5 by C. Dalenberg and E. Carlson.

it is eight items measure that measures the phenomena of dissociative experience, which does not reflect necessarily pathological dissociation

The "will-to-exist- live, -survive and fight" (WTELS-F) Scale long version(Kira et al., 2020b; Kira et al., article submitted for publication). WTELS measure is a 21-item scale that measures different aspects of WTELS. Examples of its items are "I am motivated by a drive to live"; "My will to exist and survive adversity is generally high." Each item to be scored on a 5-point scale: 4 = very strong, 3= strong, 2= neutral, 1=drained/depleted, 0 =extremely depleted/I have no will to survive. Exploratory and confirmatory factor analyses provided evidence of the measure one-factor structure that was strictly invariant across gender, cultural, and religious groups. The study found its test-retest stability coefficient (4 weeks interval) on a sample (N = 34) to be .82 (Kira et al., 2020b). Additionally, the study found that WTELS has good convergent, divergent, and predictive validity. WTELS predicted a decrease in existential anxiety, mental health symptoms, increased emotion regulation (reappraisal), self-esteem, and posttraumatic growth (Kira et al., 2020b). The scale's Cronbach's α in time 1 and in time 2.

Cumulative stressors and traumas scale (CTS-S-36 items; Kira et al, 2008). CST-S was developed to reflect the parameters of the development-based trauma framework (DBTF) (e.g., Kira, 2001; Kira, 2021a, Kira 2021b). The scale was constructed to measure seven types of stressors/ traumas and included three items that measure chronic and main life stressors. The seven types of stressors/ traumas span collective identity traumas (e.g., discrimination and oppression) and personal identity trauma (e.g., early childhood adversities such as child abuse and neglect). They also include identity/achievement trauma (e.g., failed business, fired, and dropping out of school). They also include survival trauma (e.g., exposure to car accidents, combat, and different kinds of disasters). Also, they include attachment trauma (e.g., abandonment by parents), secondary trauma (i.e., indirect trauma impact on others), and gender discrimination.

Additionally, the intersected discrimination subscale includes five items that measure gender discrimination by parents and society, social groups-based discrimination, sexual orientation discrimination, and genocidal discrimination. Also, it measures three types of trauma according to severity; Types I, II, and III. The CST-S assesses cumulative stressors and traumas concerning their occurrence, frequency, type, negative and positive appraisals, and age of happening. However, we used only frequency and occurrence questions in this short survey study. To answer each question on the scale, participants were asked to report their experience with an event (stressor) on a 5-point Likert-type scale (0 = never; 4 = many times). The CST-S includes two overall cumulative stressors and traumas' dose measures: occurrence and frequency. Investigators can calculate subscales for each of the stressor/trauma types. The CST-S has shown good internal consistency (α =.85), test-retest stability (.95 in 4 weeks), and convergent, divergent, and predictive validity in different studies (see Kira, 2021b for review). The scale has been validated and translated into different languages, including Arabic, Polish, Spanish, Turkish, Korean, Burmese, and Yoruba. We used the cumulative occurrence sub-scale, gender

discrimination, and intersected discrimination subscales in the present analysis. The alpha of cumulative traumas occurrence is .95, and .82 for the intersected discrimination subscale in time 1 is 92 and .in time 2.

The Adult Executive Functioning Inventory (ADEXI, Holst & Thorell, 2018) was used to investigate executive functioning deficits. The ADEXI is a 14-item scale that measures working memory deficits (9 items) (e.g., "I have difficulty remembering lengthy instructions" and inhibition deficits (5 items) (e.g., "I tend to do things without first thinking about what could happen"). The participants were asked to rate the statement on a scale from 1 to 5, with "1" indicating that it is definitely not true, and "5" indicating it is definitely true. A higher score indicates higher deficits in working memory and inhibition and address the limitations of other rating instruments of executive functioning that often include items overlapped with ADHD symptom levels. This instrument has proven to discriminate well between adults with ADHD and controls (Holst & Thorell, 2018). Alpha for the total scale was .87 and .80 for working memory and .70 for inhibition in time 1, and .88, 82, and 73 times 2.

International Trauma Questionnaire ITQ (Cloitre et al., 2018). The ITQ measures and diagnose complex PTSD (CPTSD) and PTSD according to the ICD-11 criteria. ITQ comprises 18 items that assess avoidance, re-experiencing, the sense of presented threat, and disturbances in Self-Organization (DSO) clusters that were unique to CPTSD. Additionally, the scale includes two questions that ask the participant to identify his/ her main trauma/s. ITQ employs algorithms that help reach the potential diagnosis of CPTSD or PTSD. The measure, also, provides the scoring for CPTSD and PTSD that display symptom severity. Various studies showed that the measure has robust psychometrics (e.g., Roberts et al., 2018; Karatzias, 2017). The Arabic version of the measure showed adequate psychometrics in Arabic populations (Vallières et al., 2018). In the current research, PTSD has an α of .91, and CPTSD has an α of .95 in time 1, and in time 2.

Statistical analysis: We analyzed the data using IBM-SPSS 28, and Amos 28. We computed frequencies, descriptions, and correlations between the variables. We performed an exploratory factor analysis of the pathological dissociation items on the time 1 participants (N=228) and the confirmatory factor analysis on the time 2 participants (N=228). We conducted alpha reliability for all scales for times 1 and 2. We conducted test-retest associations between times one and 2 on the pathological dissociation scale. We conducted structural equation modeling to examine models that identify the effects of cumulative stressors and traumas (CTS), and type III continuous traumatic stressors on pathological dissociation, executive function deficits, complex PTSD, and PTSD. Further, Following Byrne (2012), the SEM modes were assessed to confirm an adequate fit to the data. The criteria for adequate model fit were a non-significant chi-square (χ^2), chi-square/degrees of freedom (χ^2/d .f. > 5), comparative fit index (CFI) values > .90, and root-mean-square error of approximation(RMSEA) values < .06 (Weston & Gore, 2006). We used a bootstrapping method with 10,000 bootstrap samples to test the significance of direct, indirect, and total effects and 95% bias-corrected confidence intervals (95% CI) for each variable. To streamline the results, we modified the model by deleting the non-significant paths. Further, to check the nonlinear associations'

hypothesis between dissociation, executive function, and cumulative stressors and traumas. The goal was to explore if the nonlinear models provide a better fit for the data, we utilized curve-estimation regression to examine the nonlinear (quadratic and cubic) and linear associations among the variables.

Results

Construct validity: Exploratory factor analysis using principal axis factoring yielded one factor that accounted for 47.832 % of the variance. Table (1) provides the factor loadings on each item, its communality, and mean and standard deviation. Confirmatory factor analysis confirmed the unitary factor structure. The model fitted well with the data (Chi Square=29.088, d.f.=18, P=.047, CFI=.992, RMSEA=.037). All items loaded significantly on the latent variable. See Figure 1 for details.

Table (1) Factor loading, mean and standard deviation, and communiaities of each item of the pathological dissociation scale

Items	Factor	Mean	Communalities
	Loading	(SD)	
3. Do you or others notice that sometimes	.697	1.06(1.41)	.486
you become somehow different from your			
ordinary self, e.g., in your manners, ideas,			
abilities, and purposes?			
7. Do you ever experience your body or your	.682	.63(1.19)	.465
emotions as not yours, not in your control, or			
experience the world and people around you as			
not real, or in a reality separate from yours?			
4. Do you get absorbed with much emotion	.665	.78(1.32)	.443
and urgency in understanding what went wrong			
earlier to the extent that you lose track of what			
matters here and now?			
2. Do you sometimes discover having done	.664	.69(1.21)	.441
odd things without memory of doing them, like			
having arrived at a certain place, done damage			
to an object or yourself, or changed your			
appearance (e.g., changed your hairstyle, what			
you are wearing, cosmetics)?			
9. Do you imagine someone talking to you or	.651	.77(1.27)	.424
hearing a voice that condemns you, insults you,			
directs you to punish yourself or wants you to			
die, or thinks you are telling yourself to do so?			
6. Do you sometimes drift into a trance, i.e.,	.649	.46(.97)	.421
becoming unaware of the present and what			
would ordinarily matter to you, and without the			
will to respond, and without memory of what you			
were thinking or doing			
8. Do you, sometimes, fail to remember	.644	.81(1.15)	.415

important events from the immediate past, e.g.,			
much of what someone has just said or whether			
you had your breakfast?			
1. Do you feel uncertain or confused about	.640	.79(1.29)	.409
who you really are, or disconnected from your			
purpose in life? Do you sometimes feel detached			
from your actions, doing things as if you are			
uncertain about having reason to do them?			
5. Do you suffer a temporary change in	.441	.21(.73)	.263
bodily function (e.g., blindness, paralysis, seizure			
attacks, etc.), for which medical professionals			
cannot find reasons or explanations?			

Convergent, divergent, Criterion and predictive validity: The correlation between Laddis/ Kirs pathological dissociation scale and DES-B dissociation scale was .56, p<.000, which indicated good convergent validity. It had a medium to large correlation (.43,p<.000) with WTELS-F, which indicated good divergent validity. The measure had a large association with CPTSD (.58, p<.000) and medium to large correlations with cumulative stressors and traumas (.47,p<.000), type III traumas (.46,p<.000), inhibition deficits(.44,p<.000) and working memory deficits ((.39,p<.000) which indicated good predictive and Criterion validities. Further, Laddis / Kira's Pathological dissociation scale had a large size correlation (.58, p<.000) with CPTSD which further validates its characterization as pathological dissociation. It had a medium to high size correlation with cumulative trauma (.47, p<.000), type III trauma (.46, p<.000), and inhibition deficits (.44, p<.000). It had a medium-size correlation with working memory deficits (.39, p<.000), and type II trauma (.35, p<.000). It had a small to medium size correlation with type I trauma (.29, p<.000).

DES-B dissociation scale had a medium to high size correlation with CPTSD (.47, p<.000), medium-size correlation with cumulative trauma (.37, p<.000), and medium-size correlation with type III trauma (.38, p<.000), and small size correlation with type II trauma (.24, p<.000), and type I trauma(.25, p<.000). However, it had a medium to high size correlation with inhibition deficits (.49, p<.000) and working memory (.44, p<.000). Table () presents the correlations between the main variables.

Variable	1	2	3	4	5	6	7	8	9	10
1. Laddis/Kira	1									
Dissociation_Scale										
2. DES-B	.56***	1								
Dissociation Scale										
3. CPTSD	.58***	.47***	1							
4. Working Memory	.39***	.44***	.46***	1						
deficits										
5. Inhibition	.44***	.49***	.48***	.71***	1					
Deficits										
6. TypeI Traumas	.29***	.25***	.26***	.09*	.18***	1				
7. TypeII Traumas	.35***	.24***	.29***	.13**	.18***	.58***	1			
8. TypeIII Traumas	.46***	.38***	.39***	.26***	.31***	.59***	.74***	1		
9. Cumutive	.47***	.37***	.42***	.23***	.31***	.76***	.84***	$.94^{***}$	1	
Trauma										
10. WTELS-F	43***	32***	46***	43***	31***	08	23***	28***	26***	1

Notes. * p <.05, ** p <.01, *** p <.001

Test-retest stability and internal consistency. Alpha reliability was .86. Test-retest stability between times 1 and 2 (12 weeks in between) was .54 which indicated medium stability.

Conclusion

The short measure seems to have a good construct, convergent, divergent, predictive, and Criterion validity and performed better than the DES-B in predicting CPTSD, which makes it a good screening good measure for pathological dissociation. However, here there is a need to use it in a clinical sample and establish cut-off scores in future research.

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Declarations

Conflicting Interests: The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Figures



Figure 1

Confirmatory factor analysis of the Laddis/Kira pathological dissociation scale