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Introduction

- The dispositional traits of dissociation (Putnam, 1989) and absorption (Tellegen & Atkinson, 1974) have been associated with the development of posttraumatic symptoms (e.g., Liotti, 2004; Stutman & Bliss, 1985; Weiss et al., 1995).
- Dissociation is a “disruption in the usually integrated functions of consciousness, memory, identity, or perception” (APA, 2000). It has been further described as a state wherein external stimuli, internal stimuli, or both are excluded from consciousness due to a discrepant - rather than unitary - manifestation of cognitive awareness (Erdelyi, 1994; Nemiah, 1991).
- Absorption has been described as a state wherein limited stimuli are focused on, to the exclusion of other stimuli due to a unifying – rather than discrepant – manifestation of cognitive awareness.
- Popularly measured by the Dissociative Experiences Scale (DES; Bernstein & Putman, 1986) and Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974), their psychometric properties and interrelationship remains undefined.
- The present study assessed the psychometric properties of the DES and the TAS with exploratory factor analyses (EFA) and correlational analyses to determine (1) the factor structures of these measures, and (2) to assess the independence of the constructs.

Method

- Participants were undergraduates and community members ($N=841$; 76% women; $Age=21.3$; $SD=5.0$) who completed the DES and TAS as part of other investigations.
- EFA (Osborne, 2008) was performed using DES and TAS item responses with : principal axis factoring with promax rotation and Kaiser normalization; eigenvalues > 1.0 ; items were removed where communalities $< .4$, loadings $\leq .45$, and cross-loadings $\geq .32$.
- Measures
 - The DES (Bernstein & Putman, 1986) is a 28-item self-report instrument assessing depersonalization, derealization, disturbances in memory, awareness, and cognition. It has demonstrated satisfactory construct validity as well as good internal consistency and reliability (reviewed in Carlson & Putnam, 1993). DES item scoring ranges from 0 (never) to 100 (always) in decrements of 10. Scoring was modified for this study to range from 0 (never) to 5 (always). For the current sample total scale alpha was .95.
 - The TAS (Tellegen & Atkinson, 1974) is a 34 item measure assessing the dispositional capacity for deep attentional involvement in a task or stimuli. Items are scored on a scale ranging from 0 (never) to 4 (always). The TAS has demonstrated acceptable test-retest reliability and internal consistency (e.g., Kihlstrom et al., 1989). For the current sample total scale alpha was .95.

Results

- Several items on both the DES (2, 3, 8, 14, 15, 17, 18, 19, 22, 24) and the TAS (1, 2, 3, 5, 6, 12, 14, 17, 19, 20, 21, 22, 23, 25, 26) were significantly different between men and women. The differences were inconsistent in that for some items men scored higher than women and for others the reverse was true. The DES and TAS were not developed with the assumption of significant sex differences and removal of these items facilitated stable factor solutions.
- The best fitting solution for the DES was a 14-item three factor structure accounting for 47.9% of the variance with factors characterized as depersonalization/derealization (13, 11, 12, 28, 7), dissociative amnesia (5, 26, 25, 6, 4), and attentional dissociation (20, 21, 23, 1, see Table 1).
- For the TAS, a 12-item two factor solution accounting for 45.6% of the variance was the best solution with factors characterized as depersonalization (9, 11, 10, 13, 8, 16) and imaginative involvement (32, 28, 18, 4, 31, 7; see Table 2).
- The factor and total scores from the refined DES and TAS items were all found to be moderately to highly correlated ($p < .01$; Cohen, 1988) suggesting that these constructs are intricately related (see Table 3). Subsequent comparisons of the new factor means revealed no sex differences: DES Factor 1, $t(839)=.59$, $p=.55$; DES Factor 2, $t(839)=.39$, $p=.70$; DES Factor 3, $t(839)=1.35$, $p=.18$; TAS Factor 1, $t(839)=.60$, $p=.55$; TAS Factor 2, $t(839)=1.86$, $p=.06$.

Discussion

- Measures assessing the traits of dissociation and absorption have been elaborated conceptually but the factor structures remain uncertain.
- The 14-item 3-factor correlated structure found for the DES parsimoniously replicates the findings of previous studies with non-clinical samples (e.g., Ross et al., 1991; Sanders & Green, 1994; Stockdale et al., 2002).
- It is possible that qualitative or dimensional sex differences exist for these constructs. Continued research is required to assess the meaning and utility of the sex-based differences identified in this study.
- Moderate to high correlations between DES scales and TAS scales suggest strong relationships among these constructs. Indeed, the DES and TAS have in common a factor characterized as depersonalization. Overall, the findings support suggestions that dissociation and absorption are intricately related and may in fact be variants of the same processes (Butler et al., 1996).
- Future investigations to should confirm the refined item content and factor structures for the DES and TAS. Studies exploring the relationship with posttraumatic symptoms, while potentially critical to understanding the disorder, may be impeded until such time as the item content and factor structure for measuring these constructs is agreed upon.

Table 1. DES item descriptives and factor loadings (N = 841)

	Mean	SD	loading
13. The experience of feeling that my body does not belong to me.	.37	.79	.95
11. The experience of looking in a mirror and not recognizing myself.	.33	.71	.76
12. The experience of feeling that other people, objects, and the world around me are not real.	.53	.89	.74
28. I sometimes feel as if I am looking at the world through a fog so that people or objects appear far away or unclear.	.38	.75	.57
7. The experience of feeling as though I am standing next to myself or watching myself do something as if I were looking at another person.	.44	.77	.49
5. The experience of finding new things among my belongings that I do not remember buying.	.54	.84	.80
26. I sometimes find writings, drawings, or notes among my belongings that I must have done but cannot remember doing.	.50	.83	.73
25. I find evidence that I have done things that I do not remember doing.	.72	.90	.62
6. Sometimes I am approached by people that I do not know who call me by another name or insist that I have met them before.	.74	.94	.52
4. The experience of finding myself dressed in clothes that I don't remember putting on.	.28	.63	.48
20. I sometimes sit staring off into space, thinking of nothing, and am not aware of the passage of time.	1.51	1.16	.83
21. I sometimes find that when I am alone I talk out loud to myself.	1.56	1.29	.49
23. I sometimes find that in certain situations I am able to do things with amazing ease and spontaneity that would usually be difficult for me (for example, sports, work, social situations, etc.).	1.32	1.07	.49
1. The experience of driving a car and suddenly realizing that I don't remember what has happened during all or part of the trip.	1.36	1.13	.37

Table 2. TAS item descriptive statistics and factor loadings (N = 841)

	Mean	SD	loading
9. I sometimes "step outside" my usual self and experience an entirely different state of being.	.52	.93	.81
11. Sometimes I experience things as if they were doubly real.	.67	.97	.73
10. Textures -- such as wool, sand, wood -- sometimes remind me of colors or music.	.59	.97	.70
13. If I wish, I can imagine that my body is so heavy that I could not move it if I wanted to.	.51	.91	.57
8. I think I really know what some people mean when they talk about mystical experiences.	.81	1.08	.54
16. It is sometimes possible for me to be completely immersed in nature or in art and to feel as if my whole state of consciousness has somehow been temporarily altered.	.92	1.16	.50
32. Sometimes thoughts and images come to me without the slightest effort on my part.	1.39	1.24	.74
28. I often know what someone is going to say before he or she says it.	1.41	1.08	.63
18. I am able to wander off into my thoughts while doing a routine task and actually forget that I am doing the task, and then find a few minutes later that I have completed it.	1.39	1.25	.61
4. If I stare at a picture and then look away from it, I can sometimes "see" an image of the picture almost as if I were still looking at it.	1.25	1.15	.58
31. At times I somehow feel the presence of someone who is not physically there.	.95	1.12	.56
7. If I wish, I can imagine (or daydream) some things so vividly that they hold my attention as a good movie or story does.	1.54	1.23	.53

Table 2. DES, TAS scale total and discovered factor correlations

	DES total	TAS total	DES 1	DES 2	DES 3	TAS 1
TAS total	.64					
N	841					
DES factor 1	.85	.57				
N	841	841				
DES factor 2	.85	.47	.62			
N	841	841	841			
DES factor 3	.81	.55	.51	.53		
N	841	840	841	841		
TAS factor 1	.57	.91	.58	.44	.42	
N	841	841	841	841	841	
TAS factor 2	.60	.93	.48	.43	.59	.69
N	841	841	841	841	841	841

All correlations significant at $< .01$ level

DES total scale alpha (14 items) = .87
 TAS total scale alpha (12 items) = .89
 DES factor 1: depersonalization/derealization, scale alpha (5 items) = .86
 DES factor 2: dissociative amnesia, scale alpha (5 items) = .80
 DES factor 3: attentional dissociation, scale alpha (4 items) = .66
 TAS factor 1: depersonalization, scale alpha (6 items) = .85
 TAS factor 2: imaginative involvement, scale alpha (6 items) = .80