

# Dissociation: Factor Structure and the Role of Trauma Among Treatment-Seeking Adolescents

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**Objective:** Research examining the factor structure of the Adolescent Dissociative Experiences Scale (A-DES) has yielded mixed findings. This study sought to further clarify the factor structure of the A-DES among youth with histories of exposure to multiple traumas and adversities. **Method:** We conducted a factor analysis of the A-DES using data from 1,157 treatment-seeking adolescents with histories of trauma exposure in order to expand understanding of dissociation's construct validity and provide the first attempt at post hoc analysis of trauma-impacted adolescents. **Results:** A bifactor CFA model fit the data best and identified a strong general factor, supporting a unidimensional latent structure. Only the general dissociation factor was associated with cumulative trauma exposure, operationalized as the number of different types of exposure endorsed on the Trauma History Profile (THP), but this association was small. **Conclusions:** The study findings point toward a unidimensional conceptualization of dissociation. A developmental psychopathology framework is recommended for future research, allowing a nuanced and integrated approach to understanding dissociation and increasing generalizability across adolescents.

### Clinical Impact Statement

This study examined the construct validity of dissociation in trauma-impacted adolescents. Results indicated that dissociation is related to trauma, and in contrast to recent research, was unidimensional in presentation or experience. Further research is needed to examine the context of dissociation to a greater depth, believed possible by applying a developmental or age-specific lens.

**Keywords:** dissociation, A-DES, trauma, adolescents, CFA

It is generally accepted that dissociation is a normal part of the human experience that begins to attenuate in adolescence (e.g., Kluft & Loewenstein, 2007). Dissociation is more likely to be observed among individuals who develop psychopathology, illustrated by significantly higher rates of dissociation among clinical samples (23% to 45%; e.g., Silberg, 1998) in comparison to community samples (1.5% to 4.9%; APA, 2013; Martínez-Taboas et al., 2006). The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed. [DSM-5]; American Psychiatric Association, 2013), the International Statistical Classification of Diseases and Related Health Problems–11 (ICD-11; World Health Organization, 2018),

and more nuanced approaches of dissociation researchers (e.g., Spiegel et al., 2011), broadly characterize dissociation as a complex, multifaceted phenomenon impacting one's cognitive, emotional, and physiological experience. Three main deficiencies in the knowledge base contribute to a lack of construct specificity of dissociation, including inconsistent findings regarding its latent structure, limited research of younger populations, and a lack of attention to the role of trauma despite a consistent link between trauma and dissociation.

### Validation and Latent Structure of Dissociation

A lack of specificity in dissociation's characterization is perhaps most strongly impacted by conflicting findings regarding the nature of the construct. The latent structure of dissociation has been most readily studied with the use of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), a self-report measure of dissociation for adults generally shown to have a three-factor structure, although it is based on a theoretical four-factor model (e.g., Ross et al., 1995). Adapted from the DES's four-factor foundation, the A-DES (Armstrong et al., 1997) is the most widely used self-report measure of dissociation for adolescents aged 13 to 17 years.

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Validation analysis of the A-DES has been conducted using clinical samples. This research consistently demonstrates that adolescents diagnosed with dissociative disorders score significantly higher on the A-DES than nonclinical samples (Smith & Carlson, 1996) and youth who have affective, conduct, and other clinical disorders (e.g., Zoroglu et al., 2002), but about the same as youth with psychotic disorders (Smith & Carlson, 1996). Youth with histories of trauma demonstrate a greater severity of dissociative symptoms on the A-DES than their nontraumatized counterparts (Armstrong et al., 1997; Kisiel & Lyons, 2001). In addition, earlier age of onset, greater severity, and longer chronicity of traumas and adversities are associated with greater severity of dissociation (Macfie et al., 2001). Although dissociation may be a potential coping mechanism for some youth by lessening felt emotional distress related to trauma (e.g., McCanlies et al., 2017), multiple traumas/adversities and chronic dissociation are associated with emotional, behavioral, and cognitive regulation problems (Greeson et al., 2011), highlighting the importance of understanding dissociation in trauma-impacted youth.

Research examining the factor structure of the A-DES has been conducted almost exclusively with community-based populations and has yielded inconsistent results. One large community sample study found a three-factor structure (Yoshizumi et al., 2010), while several studies have found a single factor structure (e.g., Muris et al., 2003). Most recently, Schimmenti (2016) evaluated the psychometric properties of the A-DES translated in Italian in a community sample and found a best-fitting single-factor structure. This inconsistency, paired with a lack of examination of the A-DES factor structure among clinical and trauma-impacted samples, strongly indicates additional validation and latent structure analysis of the A-DES.

### Kerig et al. (2016)

One of the few examinations of the latent structure of the A-DES among trauma-impacted adolescents was conducted by Kerig and colleagues (2016). This study conducted a confirmatory factor analysis (CFA) of the A-DES among a sample of 784 adolescents in juvenile detention who had high rates of trauma exposure (96% endorsed lifetime exposure to multiple traumas ( $M = 6.76$  trauma types;  $SD = 3.89$ )). A three-factor model comprising depersonalization or derealization (DD), dissociative amnesia (DA), and loss of conscious control (LCC), was found to fit the data best. Logistic regression examining associations between the A-DES factors and psychopathology demonstrated that the DD factor delineated those who did and did not meet the criteria for PTSD, as well as those with PTSD who did and did not meet criteria for the dissociative subtype of PTSD. This was an important expansion of the dissociation literature suggesting it is a multidimensional construct for those with high traumatization.

Kerig et al.'s (2016) work requires replication and expansion to address apparent issues with elucidating dissociation's dimensionality. Although a three-factor model best fit the data, factor correlations for the total sample were very high, ranging from .88 to .95, raising questions regarding the degree to which the dissociation constructs were distinct in this instance. This is also in alignment with the issue arising from the findings of Briere, Weathers, et al. (2005) who studied the Multiscale Dissociation Inventory (Briere, 2002) and found a high degree of correlation among

factors still showing as distinct in a community sample. Although the population had a very high rate of trauma exposure, Kerig et al. (2016) did not examine trauma as a predictor of dissociation, limiting findings pertaining to dissociation's latent structure.

### Trauma's Relationship With Dissociation

Conflicting theoretical viewpoints and findings regarding the role of trauma in the etiology of dissociation contribute to limited understanding of how trauma and dissociation are related to one another. Some conceptualize trauma exposure as a defining characteristic or etiology of dissociation (e.g., Dalenberg et al., 2012), whereas others (e.g., Lynn et al., 2014) view it as one possible etiological factor contributing to the development of dissociation, along with individual-level characteristics such as response to trauma experience and predispositional/biological factors (e.g., McLaughlin et al., 2013). Moreover, the fantasy model of dissociation (e.g., McNally, 2003) postulates that trait-level fantasy proneness and suggestibility mediate the relationship between dissociation and trauma reporting (e.g., Giesbrecht et al., 2010) such that fantasy proneness accounts for trauma. However, research also demonstrates that fantasy proneness, cognitive failures, absorption, suggestibility, inhibited information processing, dissociation, and amnesia are not necessarily related constructs, and their relationships do not negate a direct relationship between trauma and dissociation (e.g., Bremner et al., 2010).

Given the limitations of the stated trauma models of dissociation, others propose an integrated model in which trauma is one potential etiological factor in dissociation development, while understanding that its development involves a range of risk factors and mechanisms that interact. For example, Boyd et al. (2018) completed correlation and mediation analyses to better understand the complex relationship between trauma, dissociation, and functional impairment among psychiatric patients. Dissociation emerged as the strongest correlate of functional impairment, but trauma type, cumulative trauma, individual-level factors, and dissociative type and frequency of symptoms contributed to the presentation of dissociation and related psychosocial impairment. Neurobiological research, also lending to an integrated model, is beginning to provide insight into the function of dissociation and biological grounding in its relationship to trauma, and more predominantly, the role of trauma in eliciting dissociation for some people. Such studies provide evidence that dissociation has roots in adaptation, particularly in response to stress (e.g., Lanius et al., 2010). However, models of dissociation related to trauma traditionally draw from dissociation's early association with "defenses" and psychoanalytic theory (e.g., Janet, 1907/1920), such as Putnam (1991) who opined that dissociation has an analgesic and detachment effect, allowing for alleviation of distress. Ultimately, these evident disparities between models of dissociation in the context of trauma in the literature appear to necessitate a reexamination of dissociation's construct validity.

### The Current Study

The current evidence base examining dissociation's latent structure presents inconsistent findings—some studies support a four-factor structure, whereas others point toward a one-factor structure. In addition, despite recognition that trauma is an etiologic

factor for dissociation, little attention has been paid to the integration of trauma history and dissociation's latent structure. This study extends research on dissociation's construct validity by (a) further examining the nature (i.e., latent structure) of the A-DES through factor analyses and (b) examining dimensions of participants' trauma exposure history as predictors of dissociation in a clinical sample of adolescents with high exposure to multiple types of traumatic events and adversities.

First, to explore the nature of dissociation, we replicated Kerig et al.'s (2016) best-fitting three-factor structure of dissociation and decomposed the variance between the factors to identify commonalities and uniqueness. We hypothesized that (Hypothesis [H] 1a) the three-factor model would be replicated, and (H1b) bifactor confirmatory factor analysis (CFA) would result in a strong general factor accounting for most of the variance among A-DES items, consistent with a unidimensional conceptualization of dissociation. Second, to explore the predictors of dissociation, we analyzed the associations between the dissociation factors identified in the best-fitting CFA model and dimensions of participants' trauma exposure quantified as established in the literature. This included total number of different trauma types endorsed, total number of trauma types of each of the clusters identified by Hodgdon et al. (2019) in a network analysis (see THP), and exposure to sexual trauma (abuse and assault). Based on the findings of Briere, Weathers, et al. (2005), we expected that (H2a) participants' trauma exposure would be associated with endorsed dissociation experiences, but this association would be small. We also expected that (H2b) different trauma exposure types would be differentially related to the dissociation dimensions.

## Method

### Participants

The study sample was comprised of 1,157 treatment-seeking adolescents between 12 and 18 years of age ( $M = 15.74$ ,  $SD = 1.46$ ), 526 (45.5%) of whom were male and 46.2% were White. Participants received a range of care including residential, outpatient services, and community-based services through a large non-profit behavioral health provider in the United States specializing in the treatment of trauma-impacted clients across a broad range of socioeconomic statuses. Treatment issues and targeted symptoms varied, including intervention for depression, posttraumatic stress, behavioral problems, and general behavioral and family dysfunction. Primary referral sources included school districts, child welfare, other providers recommending specialty trauma services, and self-referrals. On average, the sample reported exposure to 3.95 ( $SD = 2.60$ , range = 0–12) different trauma types, with 91.4% endorsing at least one trauma/adverse event. The five most common types of trauma experienced were separation/placement disruption (58.7%), neglect (48.5%), psychological maltreatment (47.7%), physical abuse (38.3%), and impaired caregiving (38.1%).

### Measures

Trauma exposure was assessed using the THP (Pynoos et al., 2014; Steinberg et al., 2004), a lifetime trauma screen assessing exposure to 20 trauma types occurring between the ages of 1 and 20 in increments of 1 year. Trauma types assessed include

interpersonal (psychological, sexual, and physical abuse; neglect; impaired caregiving; and domestic violence exposure) and noninterpersonal (natural disaster, accidents, medical trauma, exposure to war/terrorism) trauma. For a full list of definitions of each trauma type assessed by the THP, please see Briggs et al. (2013). For each event, exposure was coded by the participant's primary clinician, who gathered information from multiple sources. These included the following: participant self-report, caregiver/case worker report, and record review using four response options for expediency (yes, no, suspected, unknown). "Suspected" was used when there was sufficient information to suggest an event occurred but disagreement between reporters (e.g., caregiver and child), or when there was an unsubstantiated official report of child maltreatment. Longitudinal research has shown that distinctions between substantiated and unsubstantiated child welfare reports do not predict either developmental outcomes (Hussey et al., 2005) or further risk of maltreatment (Kohl et al., 2009). Therefore, "yes" and "suspected" were collapsed to indicate positive endorsement, and "no" and "unknown" were collapsed to indicate negative endorsement, resulting in a dichotomous (yes/no) variable for lifetime exposure for each trauma type. For further information regarding coding parameters, please refer to Hodgdon et al. (2019). Although there are no psychometric evaluations of the THP, it is widely used in research of treatment-seeking populations, including youth, and is noted to have high content validity (e.g., Briggs et al., 2013; Pynoos et al., 2014). In a recent network analysis of trauma and adversity types from the THP (Hodgdon et al., 2019), the following four clusters emerged: (a) overt individual-level trauma (psychological maltreatment, physical abuse, physical assault, and sexual assault), (b) environmental family trauma (neglect, impaired caregiving, forced displacement), (c) environmental community trauma (exposure to domestic, school, community, extreme interpersonal violence), and (d) acute trauma (medical trauma, traumatic loss, injury/accident). These clusters showed differential predictive utility for psychosocial outcomes and psychological symptoms and were used in the present study for analysis utilizing trauma exposure.

Dissociation was measured using the A-DES (Armstrong et al., 1997) completed by the clinician in collaboration with the participant. The A-DES contains a total of 30 items across four domains of non-normative dissociation rated on an 11-point Likert-type scale (0 = *never*, 10 = *always*). The four domains of dissociation include the following: experiences of dissociative amnesia (seven items), depersonalization and derealization (12 items), absorption and imaginative involvement (six items), and passive influence (five items). The Total A-DES score is based on the mean of all item scores. Four or above on the A-DES signifies pathological dissociation (Kisiel & Lyons, 2001). Subscale scores are based on the mean of all item scores within the domain, with higher mean scores signifying higher dissociation. The A-DES is considered psychometrically sound and has good internal consistency (Cronbach's  $\alpha \geq .90$ ; e.g., Armstrong et al., 1997; Muris et al., 2003; Zoroglu et al., 2002). Cronbach's alpha for the current study was .93 for the total A-DES. Moreover, average score on the A-DES was 2.05 ( $SD = 1.86$ ), very similar to the mean of 1.94 reported by Kerig et al.'s (2016) sample of adolescents who experienced high levels of trauma exposure, with 16.3% of the sample scoring four or higher, the cut-off indicating pathological dissociation. The A-DES average score was significantly associated with the total, Cluster 1, and Cluster 4 variables derived from the THP; however,

although significant, these associations were small ( $r = .09, .10,$  and  $.07,$  respectively).

## Procedure

At initial assessment, adolescents consented to quality improvement activities as part of their clinical care and were informed that de-identified data would be utilized in research. Participants were informed they could decline participation or refuse to complete any or all measures without impact to treatment. The Justice Resource Institute Institutional Review Board provided approval for the current data reanalysis project. Measures were administered within 30 days of intake.

## Data Analysis Plan

The primary study hypotheses were tested using the following multivariate statistical procedures with Mplus (Version 8.1; Muthén & Muthén, 1998–2017). Several study variables, including A-DES items and trauma exposure variables, exhibited substantial right-skewed distributions. Therefore, a robust maximum likelihood estimator (MLR) was used for all analyses. This estimator produces standard errors and a chi-square test statistic that are robust to non-normality. Confirmatory factor analyses (CFAs) were conducted to explore the latent structure of dissociation as measured by the A-DES to test H1a. In addition to traditional CFAs, bifactor models (Rodriguez et al., 2016) were evaluated to further investigate the common and unique components of the dissociation factors to test H1b. Structural equation modeling was used to test H2a, including associations between trauma exposure and the factors of the best-fitting CFA model. Trauma exposure variables were added to the best-fitting CFA model as a predictor of dissociation factors to test H2b.

## Results

### H1: Latent Structure of the A-DES

To ensure the reliability and replicability of the CFAs, we adopted a “cross-validation” approach (Brown, 2015; Byrne, 2012), by randomly splitting the sample into two equal subsamples. Initial CFAs were conducted on the first sample (test sample) with the second sample (confirmation sample) to examine whether the factor structure and parameter estimates of the test sample were replicated. For the test sample, the three-factor model with DD, DA, and LCC factors fit the data better than the one-factor model,  $\Delta\chi^2(3) = 84.02, p < .01$ . The four-factor model produced a warning that the covariance matrix was not positive definite. This occurs when at least one of the variables can be expressed as a linear combination of the others and in this case likely occurred because of the high correlation among factors (ranging from .93 to .99). Therefore, the four-factor model was not considered.

The three-factor bifactor model fit the data better than the three-factor model,  $\Delta\chi^2(27) = 99.99, p < .001$ , with the goodness of fit indicators for the bifactor model falling in the adequate to very good range,  $\chi^2(375) = 845.40, p < .001$ , root mean squared error of approximation (RMSEA) = .047, comparative fit index (CFI) = .910, Tucker–Lewis index (TLI) = .895, standardized root mean squared residual (SRMR) = .043. An examination of the standardized factor loadings

revealed that the general dissociation factor accounted for 85.5% of the common variance among items, with the specific DD, DA, and LCC factors accounting for 7.3, 3.7, and 3.5%, respectively. Such a dominant general dissociation factor is consistent with a unidimensional construct (Rodriguez et al., 2016). Table 1 presents the standardized factor loadings for the three-factor bifactor model.

These results were replicated in the confirmation sample, as the three-factor model with DD, DA, and LCC factors fit the data better than the one-factor model,  $\Delta\chi^2(3) = 51.37, p < .01$ . The four-factor model produced a warning that the covariance matrix was not positive definite, which once again likely occurred because of the high correlation among factors (range = .90–.99). Therefore, the four-factor model was not considered. The three-factor bifactor model fit the data better than the three-factor model,  $\Delta\chi^2(27) = 93.81, p < .001$ , with the goodness of fit indicators for the bifactor model also falling in the adequate to very good range,  $\chi^2(375) = 886.54, p < .001$ , RMSEA = .048, CFI = .899, TLI = .883, SRMR = .044. An examination of the standardized factor loadings revealed that the general dissociation factor accounted for 87.0% of the common variance among items, with the specific DD, DA, and LCC factors accounting for 6.2, 4.0, and 2.8%, respectively. Again, such a dominant general dissociation factor is consistent with a unidimensional construct. Table 1 also presents the standardized factor loadings for the three-factor bifactor model. The best-fitting three-factor bifactor model is depicted in Figure 1.

### H2: Associations Between A-DES CFA Factors and Trauma Exposure

Table 2 depicts the bivariate associations between the A-DES factors from the three-factor bifactor model and trauma exposure. The general dissociation factor was positively associated with Total Trauma type count and the THP Clusters 1 (overt forms at the individual level) and 4 (acute forms), suggesting greater cumulative trauma exposure was associated with higher levels of the general dissociation factor. However, DD was negatively associated with Cluster 3 (community-level trauma), suggesting that higher levels of Cluster 3 traumas were associated with lower levels of the specific DD factor. Although significant, the associations between trauma and the general and specific A-DES factors were notably small. The LCC and DA specific factors were not significantly associated with any of the trauma exposure variables.

Results of the analyses specifically focusing on sexual trauma indicated that sexual maltreatment was significantly positively associated with the general dissociation factor ( $r = .13, p < .001$ ), significantly negatively associated with the LCC factor ( $r = -.13, p = .042$ ), and not significantly associated with the DD ( $r = -.02, p = .686$ ) and DA ( $r = -.08, p = .282$ ). Sexual assault was significantly and positively associated with the general dissociation factor ( $r = .09, p = .011$ ) and the DD ( $r = .17, p < .001$ ) but not significantly associated with LCC ( $r = -.06, p = .382$ ) nor DA ( $r = -.06, p = .386$ ). Only sexual maltreatment ( $b = .26$ , critical ratio [ $cr$ ] = 2.97,  $\beta = .12, p = .003$ ), but not sexual assault ( $b = .15, cr = 1.47, \beta = .06, p = .142$ ), remained significantly associated with the general dissociation factor when both were entered simultaneously as predictors. Sexual maltreatment was significantly and negatively associated with the DD factor ( $b = -.25, cr = -2.09, \beta = -.11, p = .037$ ), while sexual assault was significantly and positively associated with the DD factor ( $b = .53, cr = 4.13, \beta = .21, p < .001$ ) with both entered as predictors. Neither sexual maltreatment ( $b = -.23, cr =$

**Table 1***Standardized Factor Loadings for the Adolescent Dissociative Experiences Scale (A-DES)*

A-DES Item	Standardized factor loadings			
	DD	DA	LCC	General
Item 1			.19/.29*	.40*/.45*
Item 2		.21/.36		.53*/.55*
Item 3			.04*/.07*	.68*/.67*
Item 4			.60/.41	.64*/.56*
Item 5			.29*/.31	.67*/.65*
Item 6	.11/.09*			.73*/.70*
Item 7		.30*/.12		.71*/.69*
Item 8		.50/.43		.67*/.62*
Item 9	.44/.25*			.57*/.55*
Item 10	.07*/.07*			.57*/.57*
Item 11			.06*/.02*	.51*/.53*
Item 12			-.10*/.14*	.66*/.65*
Item 13	.13/.33			.59*/.59*
Item 14		.15/.20		.74*/.71*
Item 15		.26*/.34		.68*/.66*
Item 16	.34/.21			.70*/.72*
Item 17	.07*/-.01*			.42*/.39*
Item 18		.14/-.03*		.72*/.71*
Item 19			.07*/-.04	.64*/.64*
Item 20	-.03*/-.04*			.65*/.64*
Item 21	.15/.15			.71*/.69*
Item 22		.14/.24*		.65*/.66*
Item 23	.22/.11			.70*/.69*
Item 24		.08*/-.06*		.74*/.78*
Item 25	.28*/.29*			.59*/.67*
Item 26	-.03*/.05*			.65*/.63*
Item 27			.03*/-.09*	.71*/.67*
Item 28	.22/.10*			.41*/.43*
Item 29	.50/.34			.59*/.64*
Item 30	.45/.61		c	.64*/.62*

Note. DD = dissociation/derealization; DA = dissociative amnesia; LCC = loss of conscious control; General = general dissociation factor.

\*  $p < .05$ .

-1.77,  $\beta = -.11$ ,  $p = .077$ ) nor sexual assault ( $b = .14$ ,  $cr = -1.12$ ,  $\beta = -.06$ ,  $p = .265$ ) was significantly associated with the LCC factor when both were included as predictors. Likewise, neither sexual maltreatment ( $b = -.22$ ,  $cr = -1.43$ ,  $\beta = -.10$ ,  $p = .153$ ) nor sexual assault ( $b = -.09$ ,  $cr = -.41$ ,  $\beta = -.04$ ,  $p = .680$ ) was significantly associated with the DA factor when both were included as predictors. Similar to the associations between trauma and the general and specific A-DES factors, the significant associations between sexual trauma and the dissociation factors were small. Finally, in a model that included sexual maltreatment, sexual assault, and an interaction (product) predicting each dissociation factor indicated no significant interactions ( $ps$  all  $> .454$ ).

## Discussion

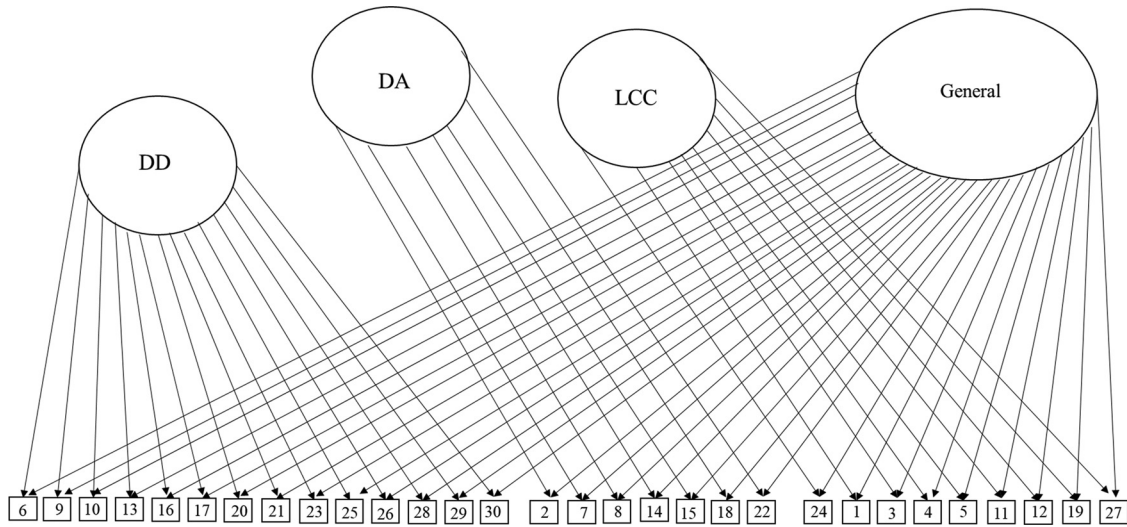
The *DSM-5* (APA, 2013) conceptualizes dissociation as a multidimensional construct including amnesia, derealization, depersonalization, and identity disruption factors. The development of the A-DES (Armstrong et al., 1997); the most widely used measure of adolescent dissociation, was guided by a four-factor model (absorption and imaginative involvement, amnesia, depersonalization/derealization, and passive influence). In perhaps the most thorough investigation of the A-DES's latent structure, Kerig et al.'s (2016) CFA analyses found that a three-factor model, with DD, DA, and LCC factors, best fit the data in a sample of adolescents ( $n = 784$ ) who reported high trauma

exposure. The current study was the first effort to implement post hoc analyses on initial dissociation factor structure in highly trauma impacted adolescents.

## Latent Structure of the A-DES

Initial CFAs indicated a best-fitting three-factor model, thereby supporting a preliminary multidimensional conceptualization of dissociation and alignment with Kerig et al.'s (2016) findings in a similar sample. However, post hoc bifactor analyses which were not completed by Kerig et al. (2016) suggested a better-fitting dominant general dissociation factor consistent with a unidimensional construct, as hypothesized. Perhaps the most interesting finding from the CFA model was the strength of the general factor at 85.5% and 87.0% of the common variance among A-DES items. Rodriguez et al. (2016) suggested that a general factor accounting for 80% of the common variance among items is consistent with a unidimensional latent structure. In other words, these findings indicate that the specific factors do not account for meaningful variance when accounting for the general factor. This supports that (a) it is legitimate to sum (and average) all the A-DES items to create an overall dissociation score, and (b) there is likely little utility in creating subscale scores, as this provides no additional meaningful information. Although this finding conflicts with the predominant contemporary approach to dissociation (e.g., Briere, Weathers, et al., 2005), one very recent study evaluating the

**Figure 1**  
Best-fitting Bifactor CFA Model



*Note.* Circles indicate latent variables/factors. Boxes indicate measured variables (i.e., A-DES items and single headed arrows represent directional relationships. Variance of factors was estimated but left out of the figure to increase clarity of presentation. Similarly, measured variable error terms were included in the analyses, but not depicted in the figure to improve clarity of presentation. General = general dissociation factor; DD = derealization/depersonalization; LCC = loss of conscious control; DA = dissociative amnesia.

factor structure of the Dissociative Experiences Scale–II (DES-II) in a community Italian sample of adults demonstrated a best-fitting unidimensional structure utilizing the Rasch measurement model as a post hoc tool (Saggino et al., 2020).

**Associations Between A-DES CFA Factors and Trauma Exposure**

Another important finding was further support for trauma being one potential etiological factor for dissociation, not a “causal” factor

as some theorists still perpetuate. Adding trauma exposure variables to the three-factor bifactor model indicated small but statistically significant associations between dissociation and trauma exposure, corroborating Briere, Scott, et al.’s (2005) findings. The general dissociation factor was positively associated (albeit a relatively weak association) with cumulative trauma exposure ( $r = .10$ ) as operationalized by the number of different types of trauma endorsed. It was also specifically associated with overt/acute forms of trauma at the individual level (i.e., THP Clusters 1 and 4) but not Clusters 2 and 3, which provides greater potential contextualization, as it necessitates

**Table 2**  
Bivariate Associations Between the A-DES Factors From the Three-Factor Bifactor Model and the Trauma History Variables

Variable		General	DD	LCC	DA
Total	<i>r</i>	.10**	-.03	-.04	-.09
	<i>cov</i>	0.27	-0.08	-0.1	-0.25
	<i>cr</i>	2.79	-0.52	-0.53	-1.03
Cluster 1	<i>r</i>	.11**	.01	-.06	-.10
	<i>cov</i>	0.16	0.01	-0.09	-0.14
	<i>cr</i>	2.66	0.11	-0.72	-0.61
Cluster 2	<i>r</i>	.04	-.05	.02	-.03
	<i>cov</i>	0.04	-0.06	0.03	-0.03
	<i>cr</i>	1.18	-1.11	0.373	-0.41
Cluster 3	<i>r</i>	-.02	-.10*	-.12	-.04
	<i>cov</i>	-0.02	-0.07	-0.08	-0.03
	<i>cr</i>	-0.7	-2.02	-1.94	-0.76
Cluster 4	<i>r</i>	.08*	.07	.02	-.07
	<i>cov</i>	0.05	0.04	0.01	-0.05
	<i>cr</i>	1.99	1.33	0.4	-1.12

*Note.* General = general dissociation factor; DD = derealization/depersonalization; LCC = loss of conscious control; DA = dissociative amnesia; Total = total trauma type count; Cluster 1 = Trauma History Profile Cluster 1 (overt forms at the individual level); Cluster 2 = Trauma History Profile-Cluster 2 (environmental forms at the family level); Cluster 3 = Trauma History Profile Cluster 3 (environmental forms at the community level); Cluster 4 = Trauma History Profile-Cluster 4 (acute forms); *cr* = critical ratio; *cov* = covariance.  
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

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the question, why are certain forms of trauma specifically associated with dissociation and others not?

The positive association between cumulative trauma exposure and dissociation adds to the existing evidence that a greater degree of trauma exposure is positively associated with dissociation (e.g., Briere, Weathers, et al., 2005; Hodgdon et al., 2019). The small association between the general dissociation factor and trauma exposure is at odds with scholars who conceptualize exposure to trauma as the defining characteristic of dissociation (e.g., Dalen-berg et al., 2012) and supports a more nuanced and multifactorial view that includes dissociation as one possible etiological factor contributing to the development of dissociation (e.g., Lynn et al., 2014). This lends to an integrated or perhaps better contextualized as multidimensional trauma model of dissociation, even if dissociation is unidimensional as a presentational construct. Finally, results focusing on sexual trauma indicated that sexual maltreatment and assault were positively associated with the general dissociation factor when entered independently as predictors, but only sexual maltreatment remained associated with the general dissociation factor when the two were entered simultaneously as predictors. Previous research demonstrates that sexual abuse and violence are associated with more pathological outcomes (e.g., Putnam et al., 2013) and particularly correlated with dissociation (e.g., Vonderlin et al., 2018).

### Limitations

There were limitations associated with the study. It is questionable whether some of the results would generalize to a nontreatment seeking sample. For instance, 91.4% of the sample endorsed at least one childhood or adolescent trauma/adverse event listed on the THP. This restricts the range of trauma exposure; therefore, the association between trauma exposure and dissociation may have been attenuated in the current study. Moreover, retrospective data is prone to biases that are well-established in self-report specific to dissociation, trauma, and even the link between the two (Merckelbach & Muris, 2001). As these limitations were also present in Kerig et al.'s (2016) study, this may have contributed to the degree of similarity between the studies' outcomes for preliminary latent structure. Additionally, there may have been qualitative differences between adolescents receiving different levels of care, leading to sample specific biases. Moreover, Bonifay et al. (2017) recently expressed concerns about the use of bifactor models in psychopathology research namely that the meaning of specific factors of bifactor models is often difficult to interpret. For instance, what is the meaning of DD when all the variance due to the common dissociation factor is removed? This is particularly germane to the current study with the emergence of such a strong general dissociation factor. The meaning of specific factors can only be ascertained when a clear, theoretically meaningful pattern of associations emerge between specific factors and external correlates (such as trauma exposure in this study). Unfortunately, a consistent, coherent, and interpretable pattern of associations with the specific DD, LCC, and DA factors did not emerge.

### Clinical Utility of Unidimensionality

Approaching dissociation in the trauma population from a unidimensional perspective means that assessment and testing can be streamlined for those who do in fact endorse dissociative symptomatology.

However, results supporting that trauma is only one possible etiological factor of dissociation, necessitates screening for dissociation for all treatment-seeking adolescents. This is particularly important given the apparent sensitivity of that age range for dissociation development and all we still have left to learn about dissociation's etiology and function. We cannot assume that those with high trauma exposure are dissociative, and we cannot assume that those without trauma are protected against such psychopathology. Although more exploratory in nature, another possible utility of approaching dissociation in those with trauma from a unidimensional perspective is that one can place less clinical focus on "what kind" of dissociation is present (considering that impeded cognitive integration spans presentations), and more on both context (i.e., the developmental psychopathological meaning of the dissociation) and functional adaptiveness or maladaptiveness. Theoretically, this would allow for a more idiopathic and developmentally sensitive approach to assessment and intervention for adolescents with complex trauma or high trauma exposure, moving toward the gold standard approach of clinical evaluation valuing the combination of standardization and flexibility (e.g., Rocchio, 2020). It would also allow for a more malleable approach to dissociation's course and presentation, taking into consideration the developmental psychopathological understanding: what may begin as a defensive strategy could become an automatic, entrenched response to stress over time, with repetition and ongoing anticipation of violation.

### Future Considerations

Demographic characteristics of the participants (e.g., gender, race, and ethnicity) were not examined as part of the current study and are an important consideration for future work, considering well-established disparities in dissociation (Douglas, 2009) and trauma exposure (López et al., 2017) by race in adolescence. Moreover, research with a community sample, which would produce more variability in trauma exposure and psychosocial adjustment, is indicated. Incorporating longitudinal data in both treatment-seeking and community samples would allow for the elucidation of the developmental component of dissociation (as potentially arising from trauma or not), through examination of trajectories of dissociation over time. As research demonstrates that different trauma types and ages of trauma onset may result in different psychosocial outcomes, and that some children and adolescents who experience potentially traumatic events do develop psychopathology and others do not (e.g., Teicher & Samson, 2013), completing further CFA analyses of the A-DES is important. Specifically, adding psychosocial outcomes and age at intake/trauma onset may serve to provide additional information concerning dissociation's dimensionality and the utility of the A-DES across populations.

### Conclusions

The present study further highlights the divergent research findings with dissociation, including now the latent structure of dissociation in adolescents with high traumatization. Applying a developmental psychopathology framework to this research would allow for better understanding of vulnerabilities, function, and trajectories of dissociation, achieved through further analysis incorporating the role of age and psychosocial outcomes. Most researchers likely agree that dissociation is a cognitive mechanism, and many in the trauma field staunchly believe that trauma is at least one possible trigger for

dissociative experience, whether as a “defense” or for its emotional regulation properties. However, its adaptive or maladaptive nature depends on the individual, its chronicity, and the sensitivity to which it is triggered. Therefore, it may be that dissociation is unidimensional as a presentational construct, but its development and function are multidimensional, highly contextually driven, and best understood as in flux in accordance with biological and psychological reorganizations that occur across development and in the presence of internal and external influences.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.
- Armstrong, J. G., Putnam, F. W., Carlson, E. B., Libero, D. Z., & Smith, S. R. (1997). Development and validation of a measure of adolescent dissociation: The Adolescent Dissociative Experiences Scale. *Journal of Nervous and Mental Disease*, 185(8), 491–497. <https://doi.org/10.1097/00005053-199708000-00003>
- Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, 174(12), 727–735. <https://doi.org/10.1097/00005053-198612000-00004>
- Bonifay, W., Lane, S. P., & Reise, S. P. (2017). Three concerns with applying a bifactor model as a structure of psychopathology. *Clinical Psychological Science*, 5(1), 184–186. <https://doi.org/10.1177/21677026166657069>
- Boyd, J. E., Protopopescu, A., O’Connor, C., Neufeld, R. W. J., Jetly, R., Hood, H. K., Lanius, R. A., & McKinnon, M. C. (2018). Dissociative symptoms mediate the relation between PTSD symptoms and functional impairment in a sample of military members, veterans, and first responders with PTSD. *European Journal of Psychotraumatology*, 9(1), 1463794 <https://doi.org/10.1080/20008198.2018.1463794>
- Bremner, J. D. (2010). Cognitive processes in dissociation: Comment on Giesbrecht et al. (2008). *Psychological Bulletin*, 136(1), 1–6. <https://doi.org/10.1037/a0018021>
- Briere, J. (2002). *Multiscale Dissociation Inventory*. Psychological Assessment Resources.
- Briere, J., Scott, C., & Weathers, F. (2005). Peritraumatic and persistent dissociation in the presumed etiology of PTSD. *The American Journal of Psychiatry*, 162(12), 2295–2301. <https://doi.org/10.1176/appi.ajp.162.12.2295>
- Briere, J., Weathers, F. W., & Runtz, M. (2005). Is dissociation a multidimensional construct? Data from the Multiscale Dissociation Inventory. *Journal of Traumatic Stress*, 18(3), 221–231. <https://doi.org/10.1002/jts.20024>
- Briggs, E. C., Fairbank, J. A., Greeson, J. K., Payne, C. M., Steinberg, A. M., & Amaya-Jackson, L. M. (2013). Links between child and adolescent trauma exposure and service use histories in a national clinic-referred sample. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5(2), 101–109. <https://doi.org/10.1037/a0027312>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Press.
- Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.
- Dalenberg, C. J., Brand, B. L., Gleaves, D. H., Dorahy, M. J., Loewenstein, R. J., Cardena, E., Frewen, P. A., Carlson, E. B., & Spiegel, D. (2012). Evaluation of the evidence for the trauma and fantasy models of dissociation. *Psychological Bulletin*, 138(3), 550–588. <https://doi.org/10.1037/a0027447>
- Douglas, A. N. (2009). Racial and ethnic differences in dissociation: An examination of the dissociative experiences scale in a nonclinical population. *Journal of Trauma & Dissociation*, 10(1), 24–37. <https://doi.org/10.1080/15299730802488452>
- Giesbrecht, T., Lynn, S. J., Lilienfeld, S. O., & Merckelbach, H. (2010). Cognitive processes, trauma, and dissociation—Misconceptions, misrepresentations: Reply to Bremner (2010). *Psychological Bulletin*, 136(1), 7–11. <https://doi.org/10.1037/a0018068>
- Greeson, J. K. P., Briggs, E. C., Kisiel, C. L., Layne, C. M., Ake, G. S., III, Ko, S. J., . . . Fairbank, J. A. (2011). Complex trauma and mental health in children and adolescents placed in foster care: Findings from the National Child Traumatic Stress Network. *Child Welfare*, 90(6), 91–108. <https://pubmed.ncbi.nlm.nih.gov/>
- Hodgdon, H. B., Suvak, M., Zinoviev, D. Y., Liebman, R. E., Briggs, E. C., & Spinazzola, J. (2019). Network analysis of exposure to trauma and childhood adversities in a clinical sample of youth. *Psychological Assessment*, 31(11), 1294–1306. <https://doi.org/10.1037/pas0000748>
- Hussey, J. M., Marshall, J. M., English, D. J., Knight, E. D., Lau, A. S., Dubowitz, H., & Kotch, J. B. (2005). Defining maltreatment according to substantiation: Distinction without a difference? *Child Abuse & Neglect*. *The International Journal*, 29(5), 479–492. <https://doi.org/10.1016/j.chiabu.2003.12.005>
- Janet, P. (1920). *The major symptoms of hysteria*. Macmillan Publishing. (Original work published 1907). <https://doi.org/10.1037/10008-000>
- Kerig, P. K., Charak, R., Chaplo, S. D., Bennett, D. C., Armour, C., Modrowski, C. A., & McGee, A. B. (2016). Validation of the factor structure of the adolescent dissociative experiences scale in a sample of trauma-exposed detained youth. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(5), 592–600. <https://doi.org/10.1037/tra0000140>
- Kisiel, C. L., & Lyons, J. S. (2001). Dissociation as a mediator of psychopathology among sexually abused children and adolescents. *The American Journal of Psychiatry*, 158(7), 1034–1039. <https://doi.org/10.1176/appi.ajp.158.7.1034>
- Kluft, R. P., & Loewenstein, R. J. (2007). Dissociative disorders and depersonalization. In G. O. Gabbard (Ed.), *Gabbard’s treatment of psychiatric disorders* (4th ed.). American Psychiatric Publishing.
- Kohl, P. L., Jonson-Reid, M., & Drake, B. (2009). Time to leave substantiation behind: Findings from a national probability study. *Child Maltreatment*, 14(1), 17–26. <https://doi.org/10.1177/1077559508326030>
- Lanius, R. A., Vermetten, E., Loewenstein, R. J., Brand, B., Schmahl, C., Bremner, J. D., & Spiegel, D. (2010). Emotion modulation in PTSD: Clinical and neurobiological evidence for a dissociative subtype. *The American Journal of Psychiatry*, 167(6), 640–647. <https://doi.org/10.1176/appi.ajp.2009.09081168>
- López, C. M., Andrews, A. R., Chisolm, A. M., de Arellano, M. A., Saunders, B., & Kilpatrick, D. G. (2017). Racial/ethnic differences in trauma exposure and mental health disorders in adolescents. *Cultural Diversity & Ethnic Minority Psychology*, 23(3), 382–387. <https://doi.org/10.1037/cdp0000126>
- Lynn, S. J., Lilienfeld, S. O., Merckelbach, H., Giesbrecht, T., McNally, R. J., Loftus, E. F., Bruck, M., Garry, M., & Malakataris, A. (2014). The trauma model of dissociation: Inconvenient truths and stubborn fictions. Comment on Dalenberg et al. (2012). *Psychological Bulletin*, 140(3), 896–910. <https://doi.org/10.1037/a0035570>
- Macfie, J., Cicchetti, D., & Toth, S. L. (2001). Dissociation in maltreated versus nonmaltreated preschool-aged children. *Child Abuse & Neglect: The International Journal*, 25(9), 1253–1267. [https://doi.org/10.1016/S0145-2134\(01\)00266-6](https://doi.org/10.1016/S0145-2134(01)00266-6)
- Martínez-Taboas, A., Canino, G., Wang, M. Q., García, P., & Bravo, M. (2006). Prevalence and victimization correlates of pathological dissociation in a community sample of youths. *Journal of Traumatic Stress*, 19(4), 439–448. <https://doi.org/10.1002/jts.20144>
- McCanlies, E. C., Sarkisian, K., Andrew, M. E., Burchfiel, C. M., & Violanti, J. M. (2017). Association of peritraumatic dissociation with symptoms of depression and posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 9(4), 479–484. <https://doi.org/10.1037/tra0000215>



- McLaughlin, K. A., Koenen, K. C., Hill, E. D., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Trauma exposure and posttraumatic stress disorder in a national sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(8), 815–830. <https://doi.org/10.1016/j.jaac.2013.05.011>
- McNally, R. J. (2003). *Remembering trauma*. Harvard University Press.
- Merckelbach, H., & Muris, P. (2001). The causal link between self-reported trauma and dissociation: A critical review. *Behaviour Research and Therapy*, 39(3), 245–254. [https://doi.org/10.1016/S0005-7967\(99\)00181-3](https://doi.org/10.1016/S0005-7967(99)00181-3)
- Muris, P., Merckelbach, H., & Peeters, E. (2003). The links between the Adolescent Dissociative Experiences Scale (A-DES), fantasy proneness, and anxiety symptoms. *Journal of Nervous and Mental Disease*, 191(1), 18–24. <https://doi.org/10.1097/01.NMD.0000044441.79471.49>
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide* (8th ed.).
- Putnam, F. W. (1991). Dissociative phenomena. In A. Tasman (Ed.), *Annual review of psychiatry* (pp. 159–174). American Psychiatric Association.
- Putnam, K. T., Harris, W. W., & Putnam, F. W. (2013). Synergistic childhood adversities and complex adult psychopathology. *Journal of Traumatic Stress*, 26(4), 435–442. <https://doi.org/10.1002/jts.21833>
- Pynoos, R. S., Steinberg, A. M., Layne, C. M., Liang, L. -J., Vivrette, R. L., Briggs, E. C., Kisiel, C., Habib, M., Belin, T. R., & Fairbank, J. A. (2014). Modeling constellations of trauma exposure in the National Child Traumatic Stress Network core data set. *Psychological Trauma: Theory, Research, Practice, and Policy*, 6(Suppl. 1), S9–S17. <https://doi.org/10.1037/a0037767>
- Rocchio, L. M. (2020). Ethical and professional considerations in the forensic assessment of complex trauma and dissociation. *Psychological Injury and Law*, 13, 1–11. <https://doi.org/10.1007/s12207-020-09384-9>
- Rodriguez, A., Reise, S. P., & Haviland, M. G. (2016). Evaluating bifactor models: Calculating and interpreting statistical indices. *Psychological Methods*, 21(2), 137–150. <https://doi.org/10.1037/met0000045>
- Ross, C. A., Ellason, J. W., & Anderson, G. (1995). A factor analysis of the dissociative experiences scale (DES) in dissociative identity disorder. *Dissociation*, 8(4), 229–235. <https://www.apa.org/pubs/databases/psycinfo>
- Saggino, A., Molinengo, G., Rogier, G., Garofalo, C., Loera, B., Tommasi, M., & Velotti, P. (2020). Improving the psychometric properties of the dissociative experiences scale (DES-II): A Rasch validation study. *BMC Psychiatry*, 20, Article 8. <https://doi.org/10.1186/s12888-019-2417-8>
- Schimmenti, A. (2016). Psychometric properties of the Adolescent Dissociative Experiences Scale in a sample of Italian adolescents. *Journal of Trauma & Dissociation*, 17(2), 244–257. <https://doi.org/10.1080/15299732.2015.1064507>
- Silberg, J. L. (1998). *The dissociative child: Diagnosis, treatment, and management* (2nd ed.). Sidran Press.
- Smith, S., & Carlson, E. (1996). Reliability and validity of the Adolescent Dissociative Experiences Scale. *Dissociation*, 9(2), 125–129.
- Spiegel, D., Loewenstein, R. J., Lewis-Fernandez, R., Sar, V., Simeon, D., Vermetten, E., Cardena, E., & Dell, P. F. (2011). Dissociative disorders in DSM–5. *Depression and Anxiety*, 28(9), E17–E45. <https://doi.org/10.1002/da.20874>
- Steinberg, A. M., Brymer, M. J., Decker, K. B., & Pynoos, R. S. (2004). The University of California at Los Angeles Post-traumatic Stress Disorder Reaction Index. *Current Psychiatry Reports*, 6(2), 96–100. <https://doi.org/10.1007/s11920-004-0048-2>
- Teicher, M. H., & Samson, J. A. (2013). Childhood maltreatment and psychopathology: A case for ecophenotypic variants as clinically and neurobiologically distinct subtypes. *The American Journal of Psychiatry*, 170(10), 1114–1133. <https://doi.org/10.1176/appi.ajp.2013.12070957>
- Vonderlin, R., Kleindienst, N., Alpers, G. W., Bohus, M., Lyssenko, L., & Schmahl, C. (2018). Dissociation in victims of childhood abuse or neglect: A meta-analytic review. *Psychological Medicine*, 48(15), 2467–2476. <https://doi.org/10.1017/S0033291718000740>
- World Health Organization. (2018). *International statistical classification of diseases and related health problems (11th ed.)*. <https://icd.who.int/browse11/l-m/en>
- Yoshizumi, T., Hamada, S., Kaida, A., Gotow, K., & Murase, S. (2010). Psychometric properties of the Adolescent Dissociative Experiences Scale (A-DES) in Japanese adolescents from a community sample. *Journal of Trauma & Dissociation*, 11(3), 322–336. <https://doi.org/10.1080/15299731003786454>
- Zoroglu, S. S., Sar, V., Tuzun, U., Tutkun, H., & Savas, H. A. (2002). Reliability and validity of the Turkish version of the adolescent dissociative experiences scale. *Psychiatry and Clinical Neurosciences*, 56(5), 551–556. <https://doi.org/10.1046/j.1440-1819.2002.01053.x>

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