Research Paper

Validity and reliability of the revised Polish online and pen-and-paper versions of the Dissociative Experiences Scale (DESR-PL)

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ABSTRACT

Objective. – This study tests psychometric properties of the Polish Dissociative Experiences Scale (DESR-PL) with a revised scoring system and its capacity, alongside its short form (DESR-T), to screen for dissociative disorders. Both pen-and-paper (p&p) and online forms were tested.

Method. – Validity and reliability were examined in a sample of 540 participants in non-clinical (n = 289) and clinical (n = 251) groups, who completed the tests p&p (n = 60) or online (n = 480). The clinical group included 21 patients with dissociative (conversion) disorders, and people with other disorders. The Exploratory Factor Analysis with Principal Component Analysis method of parameter estimation without rotation confirmed unidimensionality of p&p and online versions of DESR-PL and DESR-T.

Results. – Reliability of both versions was corroborated by a Cronbach’s alpha coefficient (DESR-PL: online > .931 p&p > .937; DESR-T: online > .783 p&p > .797). The cutoff score maximising sensitivity and specificity for dissociative (conversion) disorders was 71.5 in DESR-PL (sensitivity of 71.43% and specificity of 91.82%) and 16.5 in DESR-T (sensitivity of 76.19% and specificity of 92.73%). People with dissociative disorders had significantly (p < .001) higher scores in DESR-PL and DESR-T than patients with other disorders and non-clinical participants (criterion validity). Both DESR-PL and DESR-T strongly correlated with SDQ-20 and PSDQ-5.

Conclusions. – DESR-PL administered p&p or online proved to be reliable tools for measuring the levels of dissociation as a continuum between normal experiences and pathological symptoms. DESR-T has similar psychometric properties and can be used effectively for the screening of dissociative disorders.

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1. Background

1.1. Dissociative experiences versus dissociative symptoms

Dissociation is one of the most ambiguous concepts in modern psychology and psychiatry, referring to different phenomena and used inconsistently. Cardena (1994) notes that various authors use this term to denote:

- semi-independent mental modules or systems;
- alterations in consciousness;
- a defence mechanism.

In the first case, they assume the existence of partially or totally independent mental systems, unintegrated with conscious memory, identity or will. Understood thus, dissociation encompasses phenomena characteristic of complex dissociative disorders (e.g., amnesia) but also other normal experiences, e.g.: peripheral awareness or automatic behaviour while driving and focusing on a conversation with a passenger, the hypnotic phenomenon of a hidden observer marked by the ability to contact some experiences which the conscious mind is not aware of, or inconsistency between behaviours and perceptions and introspective verbal report. The second use of the term relates to changes in consciousness typical of depersonalisation and derealisation, when one feels disconnected or disengaged in relation to oneself or one’s surroundings. Depersonalised individuals feel detached from their bodies, emotions or mental process as if these were not real or did not belong to them, experience themselves as if they were robots or automatons, have distorted bodily sensations (e.g., not feeling pain, hunger, cold). In derealisation states, they
perceive the external world as strange, unreal, resembling a dream or a film. Depersonalisation and derealisation can be experienced at times by healthy people due to substance use, extreme exhaustion or stress, as well as patients with a variety of disorders, e.g., personality disorders, anxiety disorders, PTSD or dissociative disorders (Simeon & Abugel, 2006). Finally, some authors refer to dissociation meaning a defence mechanism. This, however, brings about even more confusion because the notion of defence mechanisms comes from the psychoanalytic framework, while dissociation relates to the dynamic psychiatry of Pierre Janet (1901, 1907). Nevertheless, the term is used in psychoanalytic writings in a wide range of meaning: Freud sometimes used the term repression and dissociation indistinctly (Cardena, 1994); Klein, Heimann, Isaacs, and Riviere (1956) and Otto Kernberg (1985) use it interchangeably with ‘splitting’, whereas Philip Bromberg (2013) builds a whole new psychoanalytic paradigm based on dissociation.

Furthermore, some classify as dissociation multiple phenomena on a continuum between normal and pathological experiences and assume that the difference between healthy individuals and those with a dissociative disorder is only quantitative (Putnam, 1993). Looking from this perspective, apart from intrusive memories, amnesia, and hearing voices, dissociative experiences also include absorption, depersonalisation and derealisation. All these can be measured using tools such as the Dissociative Experiences Scale (Bernstein & Putnam, 1986). Although this over-inclusion of various mental phenomena into the dissociation category leads to a certain dissolution of the concept and losing its original meaning, it is still popular in Anglo-Saxon countries, especially in America and Australia. In Europe, however, psychotraumatology seems more influenced by the theory of the structural dissociation of the personality (Nijenhuis, 2015; van der Hart, Nijenhuis, & Steele, 2006; van der Hart, Nijenhuis, Steele, & Brown, 2004), strongly inspired by the writings of Pierre Janet. In this theory, dissociation is viewed as a permanent division of self, resulting from trauma and pathology, unlike alterations in consciousness observed in both healthy individuals and those with mental illness.

1.2. Somatoform Psychoform and Symptoms

Two main categories of dissociative symptoms are described in literature: psychoform and somatoform. The former relates to mental processes, e.g., memory, perception of reality, thinking. Although clinicians initially limited their understanding of dissociation only to these psychic phenomena, there also exist sensorimotor aspects of trauma-related experiences, called somatoform dissociation (Nijenhuis, 2000). Both psychoform and somatoform dissociation includes negative symptoms (loss of perception or of control) and positive symptoms (intrusions or interruptions). Negative somatoform symptoms include the loss of proprioceptual, visual, auditory, gustatory, and olfactory perception, or loss of control over motor responses. Positive somatoform symptoms involve reactivation of state-dependent or trauma-associated responses and are exemplified by: localised pain, involuntary movements without neurological cause, sensation of smell and taste without a stimulus (Nijenhuis, 2015; van der Hart et al., 2006; Waller et al., 2001). These symptoms can be measured by the Somatoform Dissociation Questionnaire (SDQ-20, Nijenhuis, 2000, 2010; Pietkiewicz, Helka, & Tomalski, 2018). Examples of the negative psychoform symptoms include: amnesia, some forms of depersonalisation, derealisation, and loss of knowledge or skills. Positive psychoform symptoms include: intrusion of emotions/thoughts/memories or hearing voices (commenting, arguing or commanding). These are the symptoms measured by the instrument presented in this study.

1.3. Screening for dissociative disorders

Identifying dissociative symptoms is vital because many patients with dissociative disorders use healthcare for a long time, but their trauma-related symptoms are often unrecognised and not adequately treated. Therefore having reliable and simple tools available to healthcare providers could improve diagnostics of dissociative disorders in Poland.

It has already been mentioned that, for some authors, dissociation relates to various phenomena on a continuum between normal experiences and pathological symptoms. There are instruments measuring these phenomena, e.g., Dissociative Experiences Scale (DES, Bernstein & Putnam, 1986) and elevated scores indicate the probability of a dissociative disorder. DES has been used in multiple studies over decades, and has become globally popular among clinicians and researchers. While its authors identified a three-factor structure of their instrument: one detecting the feeling of depersonalisation/derealisation, one associated with amnesia, and one relating to absorption and imaginative involvement (Bernstein & Putnam, 1986), different items were later considered as components of these factors (Carlson et al., 1991). Three factors were also confirmed in other studies in both healthy and clinical samples (Darves-Bornoz, Deguine, & Gailland, 1999; Ross, Ellason, & Anderson, 1995; Ross, Joshi, & Currie, 1991; Stockdale, Gridley, Balogh, & Holtgraves, 2002). There were also researchers who found a unidimensional structure of DES (Fischer & Elnitsky, 1990; Holtgraves & Stockdale, 1997), those who identified two factors (Olsen, Clapp, Parra, & Beck, 2013), or even four: 1. depersonalisation/derealisation, 2. absorption, 3. moderate memory disturbances, and 4. memory disturbances (Espiritu Santo & Abreu, 2009) or 1. absorption/derealisation, 2. depersonalisation, 3. segment amnesia, and 4. in situ amnesia (Ray & Faith, 1995).

In order to have a brief screening tool for dissociative disorders, Waller, Putnam and Carlson (1996) identified eight items derived from DES, best distinguishing pathological dissociation class, and created the Dissociative Experiences Scale Taxon (DES-T). However, in the assessment of its diagnostic accuracy, Leavitt (1999) found DES-T to be sensitive for only the most extreme forms of dissociative pathology. Modestin and Erni (2004) also provide evidence that even high DES-T scores cannot be equated with the presence of a dissociative disorder. Further studies measuring this tool in both clinical and healthy samples would provide more evidence about its psychometric properties.

While the item scores in DES and DES-T range from 0 to 100, during a conference presentation Dalenberg and Carlson (2010) suggested that a new and better scoring system should be applied to describe how frequently reported experiences occur. They propose scores ranging from 0 = ‘Never’ to 5 = ‘At least once a week’. The new scoring system appears more useful for clinical use because it is more precise. Unfortunately, no studies testing the suggested scoring have been published. It is also worth mentioning that many websites provide DES as an online tool but no studies have been found to compare the psychometric characteristics between the online and pen-and-paper forms.

The somatic aspects of dissociative experiences are measured by a separate tool, the Somatoform Dissociation Questionnaire (SDQ-20, Nijenhuis, Spinhowen, van Dyck, van der Hart, & Vanderlinden, 1996) developed in the Netherlands. It contains 20 items describing a variety of positive and negative somatoform symptoms frequently reported by patients with dissociative disorders. The total score in this test ranges from 20 to 100. Somatoform dissociation distinguished between people with Major Dissociative Identity Disorder (DID) who obtained mean scores between 30 and 60, and people with minor DID (OSDD) who
scored between 40 and 50 in SDQ-20. A significant degree of somatofom dissociation (30–40) was also found in people who met the DSM criteria for PTSD, dissociative disorders of movement and sensation (conversion disorders), and eating disorders, especially in patients who reported traumatisation. People with other mental disorders and the general population often reported scores below 30. Nijenhuis (2015) says that the cutoff for the screening of dissociative disorders in DSM-IV is > 28. The same cutoff point was identified in a study validating the Polish version of this instrument (Pietkiewicz et al., 2018). Abbreviated five-item versions of SDQ-20 to screen for dissociative disorders were also created in Dutch SDQ-5, (Nijenhuis et al., 1997) or Polish (PSDQ-5, Pietkiewicz et al., 2018), and they had good psychometric properties, unlike other short versions that instrument tested in German (Mueller-Pfeiffer et al., 2010) or Spanish (Gonzalez-Vazquez et al., 2017).

So far, only one clinical tool measuring somatoform dissociation has been validated in Poland (Pietkiewicz et al., 2018) and no instruments to assess psychoform symptoms. The objective of this study was to develop DESR-PL & DESR-T, which are Polish versions of DES and DES-T with a revised scoring system, and to test these tools in the traditional pen-and-paper and online forms. This will aid further research into dissociative phenomena and increase recognition and diagnostics of dissociative disorders in this country. Administration of an online version will be convenient for larger epidemiological studies and handy for screening purposes in some groups. In this paper, we shall test three hypotheses in relation to both instruments:

- $H_1$. The levels of dissociative experiences will be significantly higher in the mixed-clinical group than non-clinical;
- $H_2$. Patients diagnosed with a dissociative disorder will have significantly higher scores than those with other diagnoses;
- $H_3$. There will be a positive correlation between the levels of dissociative experiences measured with DESR-PL and DESR-T and somatoform dissociation measured with SDQ-20.

Additionally, we will control possible age effect on the DESR and DESR-T scores. We will also try to compare scores obtained using these instruments in different clinical groups, where some degree of somatoform symptoms can be expected.

2. Methods

2.1. Participants

Participants representing the non-clinical group were recruited using university mailing lists and social media. The mixed-clinical group was recruited from people using mental health institutions. Most of them had already been diagnosed by psychiatrists and treated for a variety of disorders. Diagnosis was made according to ICD-10. There were also people with dissociative symptoms who were still undergoing diagnostics. Participants received envelopes with questionnaires or were referred to a website dedicated to the validation project which contained an online version of the questionnaires. They could participate anonymously, except those in the clinical group whose diagnosis required confirmation. Participants could also choose whether or not to provide their contact information (telephone or email) if they wanted to receive feedback. They were encouraged to enrol in the study by the fact that they could have a free-of-charge consultation with a mental health professional. We recorded the time each questionnaire was opened and submitted, excluding cases where the duration was obviously too short, suggesting it had been impossible to read all items with comprehension and to choose answers.

In total, there were 289 participants in the non-clinical group (73.3% women, $M_{age} = 34.417$, $SD_{age} = 10.359$) and 251 in the clinical group (84.9% women, $M_{age} = 34.242$, $SD_{age} = 9.666$). In the non-clinical group, 264 filled in online questionnaires and 25 used pen and paper (p&p). In the clinical group, there were 216 online and 35 p&p participants. The ratio of p&p versus online in the clinical group was slightly higher than in the non-clinical group ($\chi^2(1,540) = 3.811$, $p = .051$), because p&p was preferred by therapists referring patients. There were more women in the clinical group, compared to non-clinical ($\chi^2(1,540) = 10.415$, $p = .001$). The percentages of women who participated online (78.2%) and those using p&p (81.7%) were similar ($\chi^2(1,540) = .373$, $p = .541$). There were no significant age differences in the non-clinical and clinical groups and between online and p&p versions. In the clinical group, 46 patients had anxiety disorders, 25 depression, 21 dissociative disorders, 13 borderline personality disorder, 14 bipolar disorder, 12 PTSD, and there were 120 with other diagnostic categories or still undergoing diagnostic treatment (further referred to as ‘mixed-clinical’). Among dissociative patients, 12 had complex dissociative disorders (three met criteria of F44.81 Dissociative identity disorder and nine of F44.89 Specified dissociative and conversion disorders), seven had F44.7 Conversion disorder with mixed symptom presentation, there was one with F44.4 Conversion disorder with motor symptom or deficit and one with F44.5 Conversion disorder with seizures or convulsions.

2.2. Instruments

2.2.1. DESR-PL and DESR-T characteristics

The Dissociative Experiences Scale Revised (DESR) is a self-report questionnaire measuring the level of dissociation conceptualised as a continuum between normal experiences and pathological psychoform symptoms. It provides 28 statements and asks participants to indicate how frequently listed situations occur in their lives, e.g. #3 “Some people have the experience of finding themselves in a place and having no idea how they got there”. While it contains all the items from the original DES, the scoring system has been modified in DESR. The responses are scored with an eight-point scale, ranging from ‘0 = never’ to ‘7 = once a day or more’. DESR-PL contains eight items derived from the original DES (#3, #5, #7, #8, #12, #13, #22, #27), which were found most predictive of dissociative disorders and used in DES-T (Waller et al., 1996) for quick, preliminary screening. Unlike DES-T, DESR-PL uses a revised scoring system, like the one in DESR. The total score in both instruments is calculated by summing up item scores, and ranges from 0 to 196 in DESR-PL and from 0 to 56 in DESR-T.

2.2.2. Translation and cross-cultural adaptation of DESR-PL

The English version of DESR-PL was individually translated by a psychiatrist and two psychologists experienced in the field of dissociation, who were all proficient in English (C2 Level). The team compared their translations and discussed them in terms of similarities and differences. No significant differences were found and they consensually produced one master translation, which was then reviewed by six uneducated individuals to check whether all items were clear and understandable. A back translation was then produced by another interpreter and compared with the original version of the questionnaire. The instruction and all items were found consistent with the original.

2.2.3. Online version of DESR-PL

The online version of DESR-PL was designed alongside the pen-and-paper form. The online system measured the time between opening and submitting a questionnaire and checked that all questions were answered (if a participant overlooked any question,
he or she would be prompted to respond to it). The functionality of the online system was fully checked before the study began.

2.2.4. Online version of SDQ-20 and PSDQ-5
SDQ-20 and PSDQ-5 (containing five items derived from SDQ-20, namely: #5, #11, #13, #14, and #20) are self-report questionnaires measuring the severity of somatoform dissociation. Participants were asked about different physical symptoms or body experiences present in the past year. Their responses were scored with a 5-point Likert scale, ranging from ‘1 = this applies to me NOT AT ALL’ to ‘5 = this applies to me EXTREMELY’. Participants were additionally asked if the experience was connected to any physical disease diagnosed by a physician and, if their answer was positive, to describe what that was. The total score in both instruments was calculated by summing up item scores, and ranged in SDQ-20 from 20 to 100 and in PSDQ-5 from 5 to 25. Item scores were not adjusted for indicated physical disease if any of these instruments were used for research purposes. Both instruments have very good psychometric properties. Reliability of both versions was corroborated by a Cronbach’s alpha coefficient (SDQ-20 > .84, PSDQ-5 > .74). The cutoff score maximizing sensitivity and specificity for dissociative (conversion) disorders was 29.5 in SDQ-20 (sensitivity of 95.0% and specificity of 75.6%) and 7.5 in PSDQ-5 (sensitivity of 95.0% and specificity of 65.9%). Both tests administered online prohibit incomplete answers.

2.2.5. Participant’s profile
Another tool in this study contained socio-demographic data (age, gender, educational background, marital status, etc.) and the experience of using mental healthcare in the past or present, reasons for doing so, diagnosis (if known), pharmacotherapy (if applied), the use of substances which affect consciousness, and the frequency of getting drunk with alcohol.

2.2.6. The Trauma & Dissociative Symptoms Interview (TADS-I)
TADS-I (Boon & Mattheus, 2017) was used with people referred by local psychiatrists for specialised diagnostics of dissociative symptoms, who agreed to participate in a structured clinical interview. In Poland, there are no golden standards for diagnosing dissociative disorders. TADS-I provides comprehensive information about a variety of dissociative symptoms and alternations of consciousness, which are helpful for a differential diagnosis. Interviews were video-recorded and assessed by three healthcare professionals experienced in the dissociation field, who discussed each case and consensually came up with a diagnosis based on ICD-10.

2.3. Procedure
Following the approval of the local University Board for Research Ethics, information about the validation project was published on a dedicated website (http://www.e-psyche.eu) and disseminated using university mailing lists and leaflets distributed by mental health professionals. Information contained a description of the aims, procedure, and rules for participation. It described issues related to privacy, withdrawal from the study, how answering questions may affect mood, trigger memories or associations, and potential benefits. Participation required accepting the policy and signing the informed consent form in an online or p&p version. Participants first completed a questionnaire with socio-demographic questions, experience in using mental healthcare, and substance use, followed by DESR-PL and SDQ-20 and additional instruments measuring dissociative symptoms and potentially traumatizing events. These additional tools are currently being validated and will not be described in this paper. DESR-T and PSDQ-5 were not administered separately but their results were calculated based on full versions of corresponding instruments during the statistical analysis.

2.4. Data analysis
The analysis involved ANOVA and non-parametric tests¹ to examine group differences in DESR-PL scores (Mann-Whitney U test for the comparison of two groups, and Kruskal-Wallis H test for comparison of more than two groups). The Chi-squared test was also used to examine the prevalence of elevated scores in DESR-PL in both clinical and non-clinical groups, and among patients with different diagnoses. In order to assess construct validity, we calculated rho Spearman correlation between DESR-PL, DESR-T, SDQ-20 and PSDQ-5. Criterion validity was determined by the differences in DESR-PL mean scores in various groups. Reliability of DESR-PL was assessed by internal consistency using Cronbach’s alpha (Cronbach, 1951). To analyse DESR-PL dimensionality, we performed principal components factor analysis without rotation and confirmatory factor analysis (CFA). Statistical analyses were performed using IBM SPSS Statistics 24.0 for Windows. The level of significance was set at 0.05 (two-tailed). There were no missing data in this study.

3. Results
3.1. Factor analysis for DESR-PL (P&P and Online)
To explore the dimensional structure of DESR-PL, we conducted an Exploratory Factor Analysis (EFA) with the Principal Component Analysis (PCA) method of parameter estimation without rotation. The analyses were conducted separately for the p&p and online versions.¹ A single-factor solution for DESR-PL emerged with a good matrices indicator both for p&p (K-M-O = .747; Bartlett sphericity χ² (df = 378) = 1219.191, p < .001) and online tests (K-M-O = .903; Bartlett sphericity χ² (df = 378) = 3041.305, p < .001). Scree plots for p&p and online tests confirm a one-factor solution (Fig. 1). Results of the PCA yielded a one-factor solution accounting respectively for 39.0% of the total variance for p&p and 34.0% for online.

We additionally performed CFA using AMOS to compare three models: 1. one-factor model, 2. three-factors model, and 3. a hierarchical model with three subordinate factors (original DES subscales) and one-upper-level-factor. Best results were obtained using the last of these models.

3.2. Reliability of the Polish p&p and online versions of DESR-PL
The internal reliability of the p&p and online versions of DESR-PL was analysed through Cronbach’s alpha. The instrument presented very good internal consistency (p&p: α = .937; online: α = .931).

3.3. Validation of DESR-PL
Because the results of factor and reliability analyses are satisfactory and very similar for both p&p and online versions, further DESR-PL validation will be conducted using data combined from both versions.

¹ Non-parametric tests were used due to the abnormal distribution of DESR-PL and DES-T scores (highly positive skew and significant result of K-S test).
² EFA was computed using half of online responses and the other half was used in CFA. Datasets were split randomly but the same ratio between men and women, non-clinical and clinical participants, and specific diagnoses was kept in both groups.
In order to determine the most suitable cutoff point to screen for dissociative disorders using DESR-PL, we compared the results against the diagnoses of 131 participants who had been clinically assessed. The best cutoff score, which maximised sensitivity and specificity, was 71.5. At this point, the scale showed 71.43% sensitivity and 91.82% specificity. The positive predictive value was 62.5%, the negative predictive value was 94.39%, and accuracy was 88.55% (Table 1).

The distribution of total results in DESR-PL differs from the normal distribution. Therefore, we present the results of both ANOVA and non-parametric tests (Mann-Whitney U test for the comparison of two groups and Kruskal-Wallis H test for comparison of more than two groups).

First, we compared general DESR-PL scores obtained in the clinical and non-clinical groups (Table 2). As might be expected, results in the clinical group were significantly higher than in the non-clinical (F(1,1540) = 53.638, p < .001, η² = .091; Z = −6.736, p < .001). We then explored the percentage of people in both groups who obtained scores over 71.5 in DESR-PL. According to our expectations, the ratio of scores above 71.5 in DESR-PL in the clinical group was over three times higher than in the non-clinical group (χ² (1,1540) = 17.224, p < .001). It is notable that less than 15% of participants in the clinical group had scores indicating a dissociative disorder. The dispersion of DESR-PL results were higher in the clinical group than among non-clinical participants, probably due to the fact that the clinical group included patients with dissociative disorders and other conditions, where dissociative symptoms were not present. Over 4% of the non-clinical group had the general DESR-PL score indicating a dissociative disorder but, because they had not consulted a mental health professional or used mental health facilities, they were classified into the non-clinical group.

In the second step, we compared the DESR-PL scores obtained by participants with different diagnoses (Table 3). As might be expected, we observed significant differences regarding both mean results (F(7,540) = 21.498, p < .001, η² = .220; χ² (7,540) = 77.924, p < .001) and the frequency of diagnostic results above 71.5 (χ² (7,540) = 119.571, p < .001). In particular, people with dissociative disorders obtained the highest mean results—significantly higher in the Scheffe test (p ≤ 0.05) than people from other groups and 71.4% of them had scores indicating a dissociative disorder level (DESR-PL > 71.5). Representatives of the non-clinical group and patients with depression had the lowest results. Almost one-third of borderline patients obtained results above 71.5. People in this group had generally higher scores than participants from the non-clinical group (p < .001) and with depression (p < .003) or from the mixed-clinical group (p = .083). However, our groups representing a particular disorder were quite small, so these results must be interpreted with caution. Moreover, participants from the mixed-clinical group scored higher than those from the non-clinical group (p < .001).

### 3.4. Factor analysis for the p&p and online versions of DESR-T

An Exploratory Factor Analysis (EFA) with the Principal Component Analysis (PCA) method of parameter estimation without rotation was also used to explore the dimensional structure of DESR-T. As with DESR-PL, the analyses were conducted separately for the p&p and online versions. A single-factor solution for DESR-T emerged with a satisfactory matrices indicator both for

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**Table 1**

Dissociative disorders, according to DESR-PL and diagnoses (Reference test = TADS-I (ICD-10) for the optimal cutoff point (DESR-PL > 71.5)).

<table>
<thead>
<tr>
<th>Diagnostic test</th>
<th>Dissociative disorder</th>
<th>Non-dissociative disorder</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (DESR-PL &gt; 71.5)</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Negative (DESR-PL &lt; 71.5)</td>
<td>6</td>
<td>101</td>
<td>107</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>110</td>
<td>131</td>
</tr>
</tbody>
</table>

| Sensitivity (95% CI), % | 71.43 (47.82; 88.72) |
| Specificity (95% CI), % | 91.82 (85.04; 96.19) |
| PPV (95% CI), % | 62.50 (45.73; 76.72) |
| NPV (95% CI), % | 94.39 (85.52; 97.07) |
| Accuracy (95% CI), % | 88.55 (81.82; 94.45) |

PPV: Positive Predictive Value; NPV: Negative Predictive Value.

**Table 2**

The descriptive statistics for DESR-PL for the clinical and non-clinical participants.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Mean rank</th>
<th>Sum of rank</th>
<th>% above 71.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>251</td>
<td>40.74</td>
<td>30.84</td>
<td>319.02</td>
<td>80075.00</td>
<td>14.30</td>
</tr>
<tr>
<td>Non-clinical</td>
<td>289</td>
<td>24.77</td>
<td>19.19</td>
<td>222.59</td>
<td>65995.00</td>
<td>4.20</td>
</tr>
<tr>
<td>Total</td>
<td>539</td>
<td>32.16</td>
<td>26.48</td>
<td></td>
<td></td>
<td>8.90</td>
</tr>
</tbody>
</table>

**Table 3**

The descriptive statistics for DESR-PL depending on the diagnosis.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Mean rank</th>
<th>Sum of rank</th>
<th>% above 71.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-clinical</td>
<td>289</td>
<td>24.77</td>
<td>19.19</td>
<td>228.25</td>
<td>130.14</td>
<td>4.20</td>
</tr>
<tr>
<td>Dissociative disorders</td>
<td>21</td>
<td>83.62</td>
<td>39.20</td>
<td>468.14</td>
<td>71.40</td>
<td>71.40</td>
</tr>
<tr>
<td>Borderline</td>
<td>13</td>
<td>52.54</td>
<td>30.07</td>
<td>391.77</td>
<td>30.80</td>
<td>30.80</td>
</tr>
<tr>
<td>Depression</td>
<td>25</td>
<td>28.16</td>
<td>16.08</td>
<td>269.82</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td>14</td>
<td>47.29</td>
<td>29.00</td>
<td>368.25</td>
<td>7.10</td>
<td>7.10</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>46</td>
<td>37.76</td>
<td>22.21</td>
<td>327.92</td>
<td>6.50</td>
<td>6.50</td>
</tr>
<tr>
<td>PTSD</td>
<td>12</td>
<td>37.50</td>
<td>16.29</td>
<td>344.38</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mixed-clinical</td>
<td>120</td>
<td>35.28</td>
<td>29.69</td>
<td>283.61</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td>419</td>
<td>32.16</td>
<td>26.50</td>
<td></td>
<td></td>
<td>8.90</td>
</tr>
</tbody>
</table>
p&p (K-M-O = .755; Bartlett sphericity $\chi^2 (df = 378) = 152.177$, p < .001) and online tests (K-M-O = .813; Bartlett sphericity $\chi^2 (df = 378) = 937.447$, p < .001). As shown in Fig. 2, the scree plots confirm a one-factor solution. Results of the PCA yielded a one-factor solution accounting respectively for 41.812% of the total variance for p&p and 40.94% for online.

### 3.5. Reliability of the p&p and online versions of DESR-T

The internal reliability of the p&p and online versions of DESR-T was analysed again through Cronbach’s alpha. The instrument presented satisfactory internal consistency (p&p: $\alpha = .797$; online: $\alpha = .7$).

### 3.6. Validation of DESR-T

Because factor and reliability analyses were satisfactory and congruent in p&p and online groups, we followed the same procedure used earlier in our assessment of DESR-PL, and combined data from both groups. The most suitable cutoff point to screen for dissociative disorders using DESR-T was determined by comparing its results against diagnoses of 131 participants in the clinical group. The best cutoff score was 16, maximising sensitivity (76.19%) and specificity (89.73%). The positive predictive value was 66.67%, the negative predictive value was 95.33%, and the accuracy was 90.08% (Table 4). Because the distribution of DESR-T total results differs from the normal distribution, we used the ANOVA and non-parametric tests (Mann-Whitney U test for the comparison of two groups and Kruskal-Wallis H test for comparison of more than two groups).

Again, we started with comparing general DESR-T scores in the clinical and non-clinical groups (Table 5). As expected, the clinical group had significantly higher scores than non-clinical ($F (1,540) = 64.664, p < .001, \eta^2 = .107; Z = -7.746, p < .001$). We then explored the percentage of people in both groups whose DESR-T score was higher than 16. As expected, the ratio of scores above that level in the clinical group was almost seven times higher than non-clinical ($\chi^2 (1,540) = 28.179$, p < .001). It should be stressed that less than 15% of participants in the clinical group had scores indicating a dissociative disorder. The dispersion of DESR-T results was twice as high in this group as in non-clinical. As mentioned earlier, this can be explained by the diagnostic diversity in our clinical group.

Over 2% of non-clinical participants had a DESR-T score which indicated a dissociative disorder but we could not classify them as clinical, because they had not been subjected to any clinical assessment.

The second step involved comparing DESR-T scores of participants with different diagnoses (Table 6). According to expectations, there were significant differences in both mean results ($F (7,540) = 31.147, p < .001, \eta^2 = .291; \chi^2 (7,540) = 100.380, p < .001$) and the frequency of diagnostic results above 16 points ($\chi^2 (7,540) = 159.240, p < .001$). In particular, people with dissociative disorders obtained the highest mean results (significantly higher in the Scheffe test ($p < .02$) than people from other groups) and 76.2% of them had scores indicating a dissociative disorder level (DESR-T > 16). However, 23% of people with borderline and a few bipolar patients also obtained results above 16. As in DESR-PL, non-clinical participants and patients with depression had the lowest results. The former group had lower DESR-T scores than borderline ($p < .001$), mixed-clinical

---

### Table 4

Dissociative disorders, according to DESR-T and diagnosis (Reference test = TADS-I (ICD-10) for the optimal cutoff point (DESR-T > 16)).

<table>
<thead>
<tr>
<th>Diagnostic test</th>
<th>Dissociative disorder</th>
<th>No dissociative disorder</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (DESR-PL &gt; 16)</td>
<td>15</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Negative (DESR-PL ≤ 16)</td>
<td>6</td>
<td>102</td>
<td>107</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>110</td>
<td>131</td>
</tr>
<tr>
<td>Sensitivity (95% CI), %</td>
<td>76.19 (52.83; 91.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specificity (95% CI), %</td>
<td>92.73 (86.17; 96.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPV (95% CI), %</td>
<td>66.67 (49.61; 80.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPV (95% CI), %</td>
<td>95.33 (90.45; 97.77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy (95% CI), %</td>
<td>90.08 (83.63; 94.61)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PPV: Positive Predictive Value; NPV: Negative Predictive Value.

---

### Table 5

The descriptive statistics for DESR-T for the clinical and non-clinical participants.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Mean rank</th>
<th>Sum of rank</th>
<th>% above 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>251</td>
<td>7.75</td>
<td>8.63</td>
<td>325.66</td>
<td>81741.50</td>
<td>14.30</td>
</tr>
<tr>
<td>Non-clinical</td>
<td>289</td>
<td>3.08</td>
<td>4.50</td>
<td>222.59</td>
<td>64328.50</td>
<td>2.10</td>
</tr>
<tr>
<td>Total</td>
<td>540</td>
<td>7.75</td>
<td>8.63</td>
<td></td>
<td></td>
<td>7.80</td>
</tr>
</tbody>
</table>

---

### Table 6

The descriptive statistics for DESR-T depending on the diagnosis.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Mean rank</th>
<th>% above 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-clinical</td>
<td>289</td>
<td>3.078</td>
<td>4.49</td>
<td>222.59</td>
<td>2.10</td>
</tr>
<tr>
<td>Dissociative disorders</td>
<td>21</td>
<td>21.24</td>
<td>10.54</td>
<td>481.33</td>
<td>76.20</td>
</tr>
<tr>
<td>Borderline</td>
<td>13</td>
<td>12.54</td>
<td>7.85</td>
<td>429.42</td>
<td>23.10</td>
</tr>
<tr>
<td>Depression</td>
<td>25</td>
<td>2.96</td>
<td>2.94</td>
<td>245.54</td>
<td>0</td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td>14</td>
<td>8.36</td>
<td>7.49</td>
<td>350.79</td>
<td>14.30</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>46</td>
<td>6.83</td>
<td>6.36</td>
<td>334.66</td>
<td>6.50</td>
</tr>
<tr>
<td>PTSD</td>
<td>12</td>
<td>6.67</td>
<td>4.40</td>
<td>362.75</td>
<td>0</td>
</tr>
<tr>
<td>Mixed-clinical</td>
<td>120</td>
<td>6.27</td>
<td>8.02</td>
<td>293.78</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td>419</td>
<td>5.25</td>
<td>7.12</td>
<td></td>
<td>7.80</td>
</tr>
</tbody>
</table>
Table 7
Correlation (rho Spearman) between DESR-PL, DESR-T, SDQ-20, PSDQ-5, and Age separately for the non-clinical (n=289) and clinical groups (n=250).

<table>
<thead>
<tr>
<th>Group</th>
<th>Variable</th>
<th>1. DESR-PL</th>
<th>2. DESR-T</th>
<th>3. SDQ-20</th>
<th>4. PSDQ-5</th>
<th>5. Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-clinical</td>
<td></td>
<td>1. DESR-PL</td>
<td>2. DESR-T</td>
<td>3. SDQ-20</td>
<td>4. PSDQ-5</td>
<td>5. Age</td>
</tr>
<tr>
<td></td>
<td>1. DESR-PL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. DESR-T</td>
<td>.771***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. SDQ-20</td>
<td>.543**</td>
<td>.509***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. PSDQ-5</td>
<td>.499**</td>
<td>.490**</td>
<td>.813***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Age</td>
<td>-.269**</td>
<td>-.137**</td>
<td>-.163***</td>
<td>-.013**</td>
<td>.1</td>
</tr>
<tr>
<td>Clinical</td>
<td></td>
<td>1. DESR-PL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. DESR-T</td>
<td>.856**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. SDQ-20</td>
<td>.631**</td>
<td>.623**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. PSDQ-5</td>
<td>.576**</td>
<td>.579**</td>
<td>.878***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|          | 4. Age   | -.271**   | -.273**   | -.172**   | -.102**   | .544***

** p < .01, *** p < .001.

(p = .002) or patients with anxiety disorders (p = .034). Borderline participants also had higher scores than participants with depression (p = .003) and in the mixed clinical group (p = .083). Nevertheless, a limited number of participants representing a particular diagnostic group suggest that these results should be interpreted with caution.

3.7. Correlating DESR-PL and DESR-T with SDQ-20, PSDQ-5, and Gender Differences

The total scores in DESR-PL and DESR-T were also examined in relation to the levels of somatofrom dissociation measured with SDQ-20 and PSDQ-5, and age. We performed rho Spearman correlation separately for non-clinical and clinical groups (Table 7). Both SDQ-20 and PSDQ-5 total scores correlated with DESR-PL and DESR-T levels. This correlation was stronger in the clinical than in the non-clinical group. There was significant but weak negative correlation between age and DESR-PL and DESR-T.

No gender differences were observed in DESR-PL (F (1,540) = 1.605, p = .206) or DESR-T (F (1,540) = .069, p = .792) results.

4. Discussion

The aim of this study was to verify psychometric properties of the Polish translation of the Dissociative Experiences Scale (Bernstein & Putnam, 1986) with a revised scoring system (DESR-PL), administered online and p&p. Secondly, we also measured the capacity of this instrument alongside its short form (DESR-T) to screen for dissociative disorders.

The principal component factor analysis (PCA) revealed that DESR-PL had a unidimensional structure, which confirms that all items in this instrument consistently describe a single dimension—dissociation—perceived as a spectrum between normal experiences and pathological symptoms. A single factor solution was also confirmed in other studies (Fischer & Elnitsky, 1990; Holmgren & Stockdale, 1997). Although DESR-PL explores only mental experiences, it examines various aspects of dissociative phenomena, e.g.: depersonalisation and derealisation, amnesia, or absorption. For this reason, some authors of the original tool identified three factors (Bernstein & Putnam, 1986). Other researchers also found three factors, but did not necessarily connect them with the same set of questions, or they termed these factors differently (Darves-Bornoz et al., 1999; Ross et al., 1995; Ross et al., 1991; Stockdale et al., 2002). Alternative factor structures are also described in literature. For example, Olsen et al. (2013) compared three of their studies and claimed there were only two main factors referring to typical or less typical dissociative experiences (e.g., feeling as though one’s body is not one’s own) but no other examples of a two-factor structure could be found. Furthermore, there were even four factors in two studies, splitting the amnesia factor into two different forms of memory disturbances (Espirito Santo & Abreu, 2009; Ray & Faith, 1995). No matter how many factors were distinguished by various authors, all of them reflect different phenomena associated with dissociation, as a broad category including normal experiences and pathological symptoms.

DESR-PL has very good reliability corroborated by a Cronbach’s alpha coefficient in both online and p&p versions, and capacity to screen for dissociative disorders (sensitivity of 71.43% and specificity of 91.82%), although it contains items describing pathological symptoms alongside normal experiences in healthy individuals.

People whose total score exceeds 72 points should be encouraged to discuss their answers with a healthcare professional trained in the dissociative field. It is likely they will qualify for a specialised clinical assessment of dissociative symptoms to determine whether a dissociative disorder is present and, if so, what diagnostic category best describes the clinical presentation. DESR-PL strongly correlated with SDQ-20; in our dissociative group, where more than half had complex dissociative disorders, it confirms that people with these conditions often experience a mixture of psychoform and somatoform symptoms (Nijenhuis, 2015).

The short instrument, DESR-T, also presented a one-factor solution and good reliability in both versions. The main advantage is that it contains only eight items derived from DESR-PL and effectively captures pathological symptoms, characteristic of complex dissociative disorders. Its capacity to discriminate severe cases was very good (sensitivity of 76.19% and specificity of 92.73%). It can therefore be recommended for screening purposes in mental healthcare, especially for childhood trauma survivors and patients with long and unsuccessful treatment history, where false-negative cases of dissociative disorders can be present. For example, 26.5% of 102 DID cases examined by Putnam, Guroff, Silberman, Barban, & Post (1986) and 40.8% out of 236 in the study of Ross, Norton, and Wozney (1989) had previously been misdiagnosed and treated for schizophrenia. On the other hand, it should also be stressed that some people may aggravate symptoms and score high in DESR-T. Modestin and Ermi (2004) warn that high results in the taxon scale should not be equated with the existence of a dissociative disorder. The same rule applies to all screening instruments designed to capture the most characteristic symptoms, so that an in-depth assessment can then be recommended.

Comparisons between DESR-PL and DESR-T scores obtained from non-clinical participants and those with different diagnoses in the clinical group, and high correlations with SDQ-20 and PSDQ-5 confirm good criterion validity of tested instruments. However, because we had a limited number of people with confirmed diagnoses (especially dissociative), further testing of these tools is required.

Interestingly, we observed high scores above the cutoff point in 33 people: 12 non-clinical, 12 mixed-clinical, four borderline, three anxiety disorder and one bipolar. Two-thirds of them also reported elevated levels of somatoform dissociation in SDQ-20. There were also 26 cases who scored above the cutoff point in DESR-T but had not been diagnosed with a dissociative disorder. 80% of them also had elevated scores (above the cutoff point) in SDQ-20. It is possible that among those people there were unrecognised cases of dissociative disorders.

5. Limitations

There are a few limitations to our study. First, we had a limited number of people representing various diagnostic categories. There were only 21 participants with dissociative disorders among people referred by psychiatrists for a differential diagnosis. Poor referral can be explained by the fact that dissociative disorders are
rarely diagnosed by Polish psychiatrists. Somatoform symptoms are identified more often and classified as conversion disorders, but giving a diagnosis of a complex dissociative disorder (especially what DSM classifies as DID) is very rare. Further studies using both instruments in the clinical population and in various sub-groups are thus encouraged.

Moreover, there were no alternative tools measuring psychoform symptoms, which could be correlated with DESR-PL or DESR-T. Although we compared the results with SDQ-20, designed to assess somatoform dissociation levels, this choice is justified because both psychoform and somatoform symptoms coexist in complex dissociative disorders. Patients referred for an in-depth assessment of dissociative symptoms were examined using the structured clinical interview (TADS-I, Boon & Matthess, 2017), suitable for a diagnostic diagnosis according to ICD-10. However, this tool is still being subjected to a validation process. The reason for employing it is that there are no golden standards to diagnose dissociative disorders in Poland. The structured interview SCID-D (Steinberg, Cicchetti, Buchanan, & Hall, 1993), commonly used to explore dissociative pathology, relates to DSM-IV. Neither is this psychiatric classification used in Poland, nor does there exist a translation of SCID-D. Our team could only guarantee research rigour and reliability (interrater agreement) by video-recording interviews and having them assessed separately by three healthcare professionals who were trained in trauma-related disorders. Together, the team agreed upon appropriate diagnoses.

6. Conclusions

This study evaluates psychometric properties of the Polish translation of the Dissociative Experiences Scale with a revised scoring system (DESR-PL), designed for online or p&p administration. A brief screening instrument (DESR-T) containing only eight items derived from the DESR-PL is also verified. Current findings show that DESR-PL and DESR-T are both satisfactory, whatever applied in a traditional or online form. DESR-PL can be successfully used in research and clinical practice to measure the levels of dissociation, conceptualised as multiple phenomena on a continuum between normal and pathological experiences, mostly psychoform. For the purpose of screening for complex dissociative disorders, the short instrument DESR-T can be convenient and equally effective. Administration of this tool in healthcare can help identify dissociative symptoms and refer patients for further diagnostics.

Ethical considerations

Ethical clearance was granted by the University Committee for Research Ethics at the Katowice Faculty of Psychology, SWPS University of Social Sciences and Humanities. Informed consent was obtained in paper or online form from all participants.

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Disclosure of interest

The authors declare that they have no competing interest.

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References


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