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Global functioning and disability in dissociative disorders

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Abstract

Dissociative disorders are frequent comorbid conditions of other mental disorders. Yet, there is controversy about their clinical relevance, and little systematic research has been done on how they influence global functioning. Outpatients and day care patients (N=160) of several psychiatric units in Switzerland were assessed with the Structured Clinical Interview for DSM-IV Axis I Disorders, Structured Clinical Interview for DSM-IV Dissociative Disorders, Global Assessment of Functioning Scale, and World Health Organization Disability Assessment Schedule-II. The association between subjects with a dissociative disorder (N=30) and functional impairment after accounting for non-dissociative axis I disorders was evaluated by linear regression models. We found a proportion of 18.8% dissociative disorders (dissociative amnesia=0%, dissociative fugue=0.6%, depersonalization disorder=4.4%; dissociative identity disorder=7.5%, dissociative disorder-not-otherwise-specified=6.3%) across treatment settings. Adjusted for other axis I disorders, subjects with a comorbid dissociative identity disorder or dissociative disorder-not-otherwise-specified-I had a median global assessment of functioning score that was 0.86 and 0.88 times, respectively, the score of subjects without a comorbid dissociative disorder. These findings support the hypothesis that complex dissociative disorders, i.e., dissociative identity disorder and dissociative disorder-not-otherwise-specified-I, contribute to functional impairment above and beyond the impact of co-existing non-dissociative axis I disorders, and that they qualify as “serious mental illness”.

Keywords: Quality of care; comorbidity; outpatients; psychiatry in Europe

1. Introduction

According to a new definition proposed by Spiegel and colleagues for DSM-V, dissociation is a “disruption of and/or discontinuity in the normal, subjective integration of one or more aspects of psychological functioning, including - but not limited to - memory, identity, consciousness, perception, and motor control. In essence, aspects of psychobiological functioning that should be associated, coordinated, and/or linked are not... Dissociative symptoms are characterized by (a) unbidden and unpleasant intrusions into awareness and behavior, with accompanying losses of continuity in subjective experience: (i.e., ‘positive’ dissociative symptoms); and/or (b) an inability to access information or to control mental functions that normally are readily amenable to access or control: (i.e., ‘negative’ dissociative symptoms’).” (Spiegel et al., 2011, p. 826)

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) lists four diagnoses under the category dissociative disorders (DD). *Dissociative amnesia* (DA) refers to episodes of a serious subjective loss of memory, often occurring in the context of stressful or traumatic life events. In a *dissociative fugue* (DF), individuals abruptly travel away from home and show a partial or complete adoption of a new identity and an inability to remember important aspects of their life. Both of these types of DDs are considered as transient disorders with acute onset and often spontaneous recovery (Ross, 2009). *Depersonalization disorder* (DPD) is marked by chronic or recurrent feelings of unreality or strangeness regarding one’s body, self, behavior, or environment (Simeon et al., 2003). Subjects with a DPD characteristically report that when they experience depersonalization/derealization they have problems in certain activities such as following a conversation or keeping focused on a task. Individuals with a *dissociative identity disorder* (DID) experience themselves as having more than one distinct identity or personality, which either share or compete for control over behavior. Some identities have a certain lack of conscious awareness of others. As a consequence of switching between different personality states, persons with a DID may have

recurrent amnesia in daily life lasting for minutes, hours or even days, experienced as “time loss”. *Dissociative disorder-not-otherwise-specified* (DDNOS) refers to various forms of dissociation that are not fully covered by any of the specific DDs. Some authors classify cases that are similar to DID but lacking insufficient criteria for a full DID diagnosis (e.g. when there is no amnesia between distinct identities) as DDNOS - category I (DDNOS-I) (Steinberg, 1994). DID and DDNOS-I have been conceptualized as complex DDs, because they are characterized by recurrent dissociative intrusions into every aspect of executive functioning and sense of self, that distinct them from 'simpler' DDs, i.e., DA, DF, and DPD (Dell, 2006; 2009).

Numerous studies in the last two decades have revealed that DDs are relatively frequent conditions in psychiatric populations. The median outpatient prevalence is 8.6% and the median inpatient prevalence is 10.2%, according to studies from North America, Europe and Asia (overview in (Dell, 2009)). DDs are often comorbid conditions, occurring particularly in conjunction with anxiety, mood, and personality disorders (Dell, 1998; Johnson et al., 2006; Rodewald et al., 2011). Despite their frequency of occurrence in psychiatric populations, the clinical relevance of DDs is unclear. In clinical practice, they are rarely diagnosed and rarely considered in treatment planning (Foote et al., 2006; Ginzburg et al., 2010). Some clinicians even question the diagnostic validity of certain types of DDs (Pope et al., 1999; Ginzburg et al., 2010). One approach to evaluating the clinical relevance of DDs is to determine their impact on daily functioning. Some clinicians experienced in the treatment of DDs have noted that many of their patients, particularly with DID and DDNOS-I, have both considerable comorbidity and low levels of functioning (Kluft, 1999; Van der Hart et al., 2006). This is in line with previous studies that found a high comorbidity and an extensive psychiatric treatment history in DID subjects (Putnam et al., 1986; Ross et al., 1989; Boon & Draijer, 1993; Ellason et al., 1996; Dell, 1998), as well as a strong association with self-harming

behavior and suicidality (Foote et al., 2008). However, there is a need for systematic research on the functional impact of DDs.

In this study, we sought to determine whether DDs are associated with impaired functioning in daily life. We expected to find lower global functioning and higher disability scores in psychiatric subjects with a comorbid DD compared to subjects with other mental disorders but without a DD. To test this hypothesis, we assessed dissociative and non-dissociative psychopathology through structured interviews in a sample of psychiatric outpatients and day care patients.

2. Methods

2.1. Subjects and Procedure

All subjects between 18 and 65 years with sufficient fluency in the German language who were in treatment (three and more sessions) during 1/2009 to 12/2010 were eligible for participation. Subjects were recruited from two public psychiatric outpatients units, one private practice, and two psychiatric day care units, all located in the counties of St. Gallen or Zurich in Switzerland. Exclusion criteria included acute psychosis, acute suicidal ideation, substance abuse with acute intoxication or withdrawal, mental retardation, and psychiatric disorders due to an underlying medical condition.

Enrolled subjects were assessed by trained interviewers (with a B.Sc. or a M.Sc. degree). The study protocol was approved by the institutional review board of the county of St. Gallen, Switzerland. All subjects provided written informed consent. Study participation was compensated by CHF 100 (equivalent to approximately US\$ 100). Sociodemographic data and axis I diagnoses are presented in Table 1.

2.2. Measurements

Diagnoses were ascertained with the Structured Clinical Interview for DSM-IV Axis I Disorders [SCID-I (First et al., 1997)] and the Structured Clinical Interview for DSM-IV

Dissociative Disorders [SCID-D-R, (Steinberg, 1994; Gast et al., 2000)]. The SCID-D-R is a semi-structured interview for the diagnosis of a DSM-IV DD. The categorical diagnosis of a DD is based on the dimensional assessment of five dissociative symptoms ‘amnesia’, ‘depersonalization’, ‘derealization’, ‘identity confusion’, and ‘identity alteration’ on a 4-point-Likert scale (1=none, 2=mild, 3=moderate, 4=severe). The interviewer rates the severity of each of the five dissociative symptoms according to specific behaviors and experiences reported by the patient as well as the observation of dissociative symptoms during the interview. Reliability and validity of the SCID-D-R is good to excellent (Steinberg, 1989-1992).

Global level of functioning was measured by the Global Assessment of Functioning Scale [GAF (Hilsenroth et al., 2000)], a single-item expert rating scale for evaluating current overall psychological, social, and professional functioning on a continuum from psychological sickness to health. The GAF scale values range from 1 to 100, representing the hypothetically sickest person to the hypothetically healthiest. A GAF score above 70 represents no more than minimal or transient symptoms without relevant impairment in social or professional functioning. A score between 61 and 70 designates mild psychopathology or mild impairment, between 51 and 60 moderate symptoms or functional impairment, and below 51 severe psychopathology and disability. Functional impairment due to physical disorders is disregarded in the evaluation of the GAF score. The GAF exhibits very high interrater reliability (intraclass correlation coefficient=0.92, Spearman-Brown corrected) (Hilsenroth et al., 2000).

Global level of disability was ascertained by the interviewer-administered version of the World Health Organization (WHO) Disability Assessment Schedule II (WHODAS II) (World Health Organization, 2000) that contains 36 questions covering six domains of assessment. These are based on the International Classification of Functioning, Disability and Health (World Health Organization, 2001) that classifies impairments in body functions and

structure; activity limitations; participation restrictions; and environmental factors caused by mental or physical illness. A 5-point rating scale was used; the subject rated the level of difficulty experienced as none, mild, moderate, severe, or extreme with higher scores reflecting higher functional impairment. According to the WHODAS II manual, the interviewers merely recorded subject's ratings. Beside the summary score, the WHODAS II provides domain scores for the life areas 'understanding and communicating' (cognition); 'getting around' (mobility); 'self-care' (attending to one's hygiene, dressing, eating and staying alone); 'getting along with people' (interpersonal interactions); 'life activities' (domestic responsibilities, work); and 'participation in society' (joining in community activities). The WHODAS II has demonstrated sound psychometric properties (Chopra et al., 2004; McKibbin et al., 2004; Kutlay et al., 2011); interrater reliability for the summary score was found to be high (intraclass correlation coefficient=0.93, 95% CI: 0.91–0.95).

2.3. Data Analysis

Inter-rater reliability for the diagnosis of the five DSM-IV DDs according to the SCID-D-R between the assessors and the first author was calculated as Fleiss kappa (Fleiss et al., 1969) including an adjusted bootstrap confidence interval, based on $M = 1000$ bootstrap replications, on all subjects who permitted videotaping their SCID-D-R interview ($N=84$).

Descriptive statistics included frequencies and percentages for categorical data and, since our continuous variables were all not normally distributed, median and interquartile range (IQR) for continuous data. Fisher's exact tests were used to compare categorical data between groups. The Kruskal-Wallis test was used to compare continuous data between groups. The Mann-Whitney rank-sum test was used to compare continuous data between two groups. P-values of post hoc pairwise comparisons were Bonferroni-Holm corrected. The between-groups effect was quantified using the Hodges-Lehmann estimator, which is the location estimate that is consistent with the Mann-Whitney test (Hollander & Wolfe, 1999).

This estimator is the median of all possible differences in outcomes between a subject in the first and a subject in the second group and does not necessarily equal the difference of the group medians. Correlations between continuous variables were analyzed using Spearman's rank correlation. A confidence interval for the correlation coefficient was computed using Fisher's z-transformation. For proportions, we computed confidence intervals according to Wilson's method. All confidence intervals were computed at a confidence level of 95%, all tests were applied two-tailed, and a significance level of 0.05 was used.

To generate linear regression models we proceeded as follows: Since when modeling the response variables, especially the subscores, residuals were not sufficiently normally distributed, especially for very small values and specifically values of 0, we transformed them in order to better meet the assumptions for the tests on the parameters in a linear regression model. We set every value ≤ 4 to the value of 4 for all responses, where the constant 4 was chosen such that the histograms of the log-transformed response variables looked approximately symmetric. Then, we took the logarithm of this modified variable. In order to get parameter estimates on the original scale we re-transformed initial estimates for the log-response by exponentiating them. Due to truncation at 4, conclusions should not be drawn for response values below, say, 10. However, this did not apply to any subject in the study. Profile likelihood confidence intervals were computed for the parameter estimates.

3. Results

3.1. Enrollment of Subjects

The records of 374 subject candidates who fulfilled the inclusion criteria during the study period 1/2009 to 12/2010 were reviewed. Of these, 62 (16.6%) could not be enrolled due to the presence of an exclusion criterion (mental retardation 25, acute psychosis 23, underlying medical condition 8, acute suicidal ideation 3, intoxication or withdrawal 3). The remaining 312 subject candidates were invited to participate. Of these 136 (43.6%) declined,

yielding a pool of 176 recruited subjects. Recruited subjects did not significantly differ from decliners regarding gender (60.8% vs. 56.6% females, $p=0.5$), age (median=34.0 vs. 41.5 years, $p=0.05$), and nationality (81.3% vs. 82.4% Swiss, $p=0.9$), suggesting representativeness of our sample. Finally, data from 16 recruited subjects (9.1% of the 176) were excluded from the data analysis due to incomplete participation or doubtful validity of the results (e.g., suspected dissimulation or difficulties in understanding the questions) as judged by the interviewer after discussion with the first author, yielding a final sample size of 160 subjects.

3.2. Frequency and Comorbidity of Dissociative Disorders

Among the final sample of 160 subjects, 30 subjects (18.8%; 95% CI=13.5%-25.5%) were diagnosed with a DD (0 DA [0%]; 1 DF [0.6%]; 7 DPD [4.4%]; 12 DID [7.5%]; 10 DDNOS-I [6.3%]). Twenty two of the total 30 subjects diagnosed with a DD (73.3%), received a diagnosis of a complex DD (i.e., DID, DDNOS-I). Inter-rater reliability for the diagnosis of the five DSM-IV dissociative disorders according to the SCID-D-R was high (Fleiss' kappa = 0.90, 95% CI = 0.73 – 1.00, $n = 84$). The proportion of DDs did not differ significantly between treatment settings ($p=0.5$). Subjects with a DD were more often females than Non-DD subjects. DD subjects had significant more comorbid axis I disorders (Range=1-6; Median=3) compared to Non-DD subjects (Range=0-7; Median=1; $p<0.001$). DDNOS-I and DID subjects had a higher total number of comorbid axis I disorders and more comorbid anxiety disorders than Non-DD subjects. DDNOS-I subjects had more comorbid affective disorders than DPD and Non-DD subjects (Table 1).

3.3. Measures of Global Functioning and Disability

Descriptive GAF and WHODAS II data in subjects with a DD and subjects without a DD are presented in Table 2. As seen in Figure 1, the median GAF score differed significantly between Non-DD, DPD, DDNOS-I, and DID subjects (Kruskal-Wallis $H=13.72$, $df=1$, $p<0.001$). DDNOS-I subjects had a significantly lower median GAF score than DPD

(Hodges-Lehmann estimator=15.0; 95% CI=8.0-23.0; $p=0.001$) and Non-DD subjects (Hodges-Lehmann estimator=11.0; 95% CI=5.0-17.0; $p=0.002$). DID subjects had a significantly lower median GAF score than DPD (Hodges-Lehmann estimator=18.0; 95% CI=14.0-24.0; $p=0.001$) and Non-DD subjects (Hodges-Lehmann estimator=13.0; 95% CI=7.0-19.0; $p<0.001$).

The median WHODAS II Summary Score also differed significantly among Non-DD, DPD, DDNOS-I, and DID subjects ($p=0.008$); p -values for post-hoc pairwise comparisons, however, did not survive correction for multiple tests ($ps>0.06$). The moderate correlation between GAF and WHODAS II Summary Scores in the total sample (Spearman correlation=-0.42; 95% CI=-0.54--0.29; $p<0.001$) partially supports the criterion validity of the two scales for measuring global functioning (GAF) and disability (WHODAS II).

Adjusted for gender, age, and the presence of Non-DD axis I disorder categories (Table 3), subjects with a DDNOS-I or DID had a median GAF score that was 0.88 (95% CI=0.78-0.98; $p=0.03$) and 0.86 (95% CI=0.76-0.96; $p=0.01$) times the score of subjects without a DD. The presence of a DPD had no significant influence on the GAF score ($p=0.21$). Neither DPD, DDNOS-I, nor DID had a significant influence on the WHODAS Summary Scores after adjusting for gender, age, and the presence of Non-DD axis I disorder categories ($ps>0.33$). In secondary analyses, none of the WHODAS domain scores was significantly influenced by DPD, DDNOS-I, or DID after adjusting for multiple tests (data not presented).

4. Discussion

The aim of our study was to investigate whether DDs are associated with global functioning and disability among psychiatric outpatients and day care patients. Our results suggest that DID and DDNOS-I (i.e., complex DDs), but not DPD contribute to functional impairment above and beyond the impact of other non-dissociative axis I disorders.

The proportion of 18.8% DD that we ascertained in our sample is comparable to previous findings in corresponding treatment settings in the US (Graves, 1989; Lussier et al., 1997; Foote et al., 2006), Turkey (Sar et al., 2000), Finland (Lipsanen et al., 2004), and China (Xiao et al., 2006), thereby supporting the cross-cultural validity of DDs. All of our DD subjects had at least 1, and on average 3, comorbid axis I disorders. In correspondence with other studies (Johnson et al., 2006; Rodewald et al., 2011), the most frequent comorbid conditions were affective and anxiety disorders.

In line with a previous general population study by Johnson et al. (Johnson et al., 2006) in adults, we observed a significant relationship between the presence of a DD, specifically DID and DDNOS-I, and lower global functioning as measured by the GAF. Our study improved upon the findings of Johnson et al., by employing rigorous diagnostic characterization, including an in-person SCID-D-R interview for every subject enrolled. In contrast, Johnson et al. first administered a self-report screening instrument, viz., the Dissociative Experience Scale-Taxon [DES-T (Waller et al., 1996)], followed in subjects who passed the screening by selected questions from the SCID-D-R. However, several authors (Friedl et al., 2000; Foote et al., 2006; Rodewald et al., 2006) have questioned the validity of the application of a preliminary self-rating cut-off score prior to a diagnostic DD interview out of the concern that this practice leads to false-negative cases. In addition, the interviews in the study of Johnson et al. were conducted by telephone, precluding the direct observation of dissociative signs as called for in the SCID-D-R.

The median GAF score of DID subjects in our sample (i.e., 41 out of a possible 100) was the same as the mean score found in the Johnson et al. study. We found a 7 point lower median GAF score (i.e., 44) in DDNOS-I subjects, and a 16 point higher median score (i.e., 59) in DPD subjects compared to the corresponding mean score in the Johnson et al. study. This discrepancy might be explained by the difference in diagnostic techniques, by the different types of populations the samples were drawn from, by the different gender

distribution of the subjects with DD diagnoses, and/or by different forms of DDNOS diagnoses found in the two studies. We observed a 14% and 12% lower estimated GAF score in subjects with versus without a comorbid DID and DDNOS-I, respectively. This difference is of sufficient magnitude to be of clinical relevance. Moreover, the median GAF scores of 41 and 44 we found for DID and DDNOS-I subjects, respectively, suggest that each of these disorders qualifies as a “serious mental illness” (Kessler et al., 2003) with respect to functional impairment. In contrast, no significant contribution to functional impairment was found for DPD subjects. This result suggests that dissociative problems involving memory and identity are more detrimental to functioning than are problems with depersonalization and derealization. These data provide evidence supporting the conceptualization of DID and DDNOS-I as being closely related complex DDs (Dell, 2009), which are distinctly more symptomatic and impairing than 'simpler' DDs. Not surprisingly, other strong predictors for lowered global functioning and disability in our sample were affective disorders, psychotic disorders, and anxiety disorders, which is in agreement with the findings from a European-wide epidemiological study (Alonso et al., 2004).

A possible reason for the non-significant result regarding the influence of DD on the WHODAS II Summary Score when adjusted for multiple tests and comorbid mental disorders is that the WHODAS II also covers disability in life activities that are strongly related to physical morbidity (e.g., “standing for long periods such as 30 minutes”), resulting in a contamination of the WHODAS II’s validity for measuring psychologically based disability. Moreover there might be a discrepancy between the clinician rating provided by the GAF and the self-rating provided by the WHODAS II. For example, the interviewer might be more inclined to rate higher functional impairment in subjects with a DD, whereas DD subjects themselves might be inclined to underreport disability.

Several limitations need to be noted. First, the interviewers were not blinded regarding the presence of a DD when evaluating global functioning using the GAF. Second, physical

causes for disability that might have contaminated the WHODAS II ratings were not comprehensively assessed; nevertheless, the exclusion of all subjects who received disability benefits due to a physical disorder (N=6) did not substantially change our results (data not shown). Third, we did not collect data on treatment history; treatment might have an impact on the coping abilities of DD patients. Fourth, the generalization of our findings to all persons with a DD in the population is compromised by the fact that our sample consisted of psychiatric patients undergoing treatment. There may be relatively high functioning persons with a DID in the community with less health care utilization (Kluft, 1999). Fifth, we did not statistically control for the presence of axis II disorders, which may influence GAF and WHODAS-II scores. It is proposed, however, that axis I and axis II comorbidity might be an integral aspect of DID (Ellason et al., 1996). From this perspective, controlling for comorbidity may result in an underestimation of the association between DID and functional impairment. Sixth, our results may not apply to the dissociative disorders of movement and sensation according to the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) (World Health Organization, 2010), which are classified in DSM-IV under conversion disorders. Seventh, in DID subjects, the results of self-rating scales and interviews may be influenced by the specific dissociative part of the personality that was dominant at the time of the assessment. Finally, although our study did not include the measurement of self-harming behavior, this should be considered in future studies.

Our data provide important clarification regarding the clinical relevance of DDs, especially when a DD is a complex DD (which was the case in 73% of patients with significant dissociative symptoms in this study). Given the substantial adverse impact on functioning, complex DDs must be regarded as severe mental illnesses that need to be addressed in treatment planning. This includes the careful consideration of comorbid dissociative pathology even when patients present for the treatment of non-dissociative

complaints. Specific therapeutic approaches that target the comorbid dissociative disorder may be useful in helping to remedy dysfunction and improving the treatment outcome of these patients. Such approaches may include the development of emotion regulation and grounding skills (Cloitre et al., 2002; Cloitre et al., 2010), cognitive-behavioral techniques (Hunter et al., 2003; Hunter et al., 2005), or work with the patient's experience of identity confusion and alteration (Van der Hart et al., 2006; International Society for the Study of Trauma and Dissociation, 2011).

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Conflict of interest

None.

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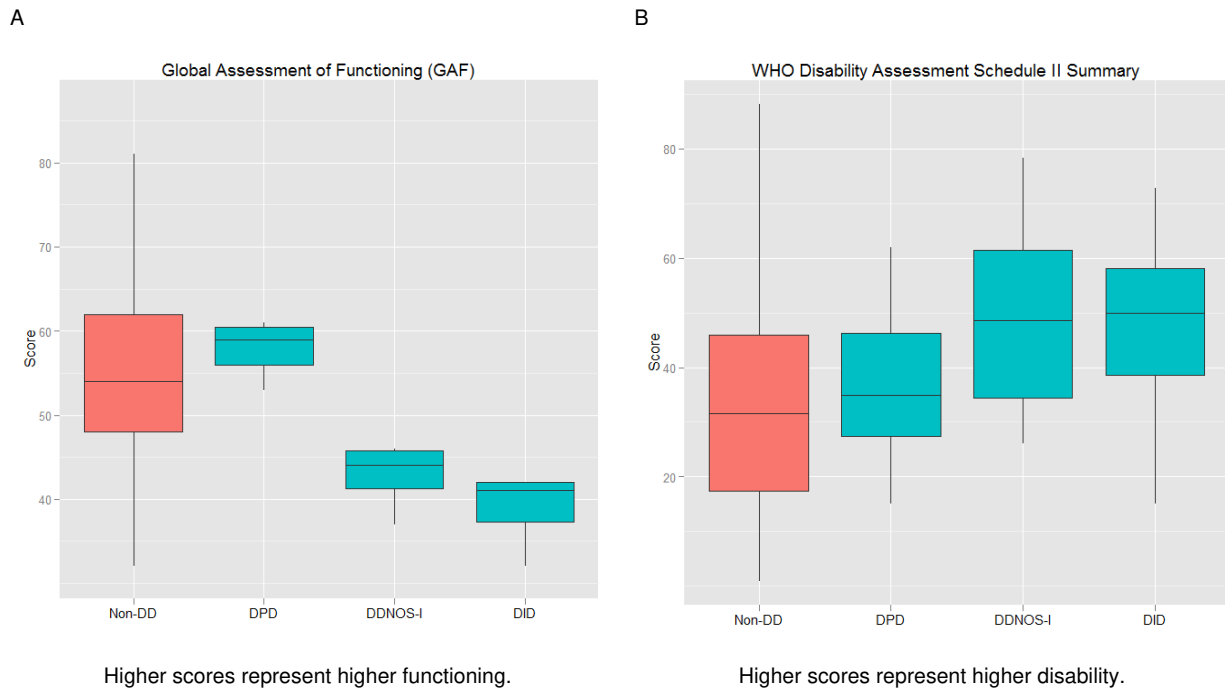


Fig. 1. Boxplots of Global Assessment of Functioning scores (A) and WHO Disability Assessment Schedule II summary scores (B) in subjects without a dissociative disorder and subjects with a depersonalization disorder (N=7), dissociative disorder-not-otherwise-specified-I (N=10), and dissociative identity disorder (N=12). Omnibus test on Global Assessment of Functioning scores: $p < 0.001$, post hoc between group comparisons: DDNOS-I, DID < Non-DD, DPD, $p_s < 0.05$, Bonferroni-Holm corrected. Omnibus test on WHO Disability Assessment Schedule II summary scores: $p = 0.008$, post hoc between group comparisons not significant after correction for multiple testing.

The bottom and top of the boxes represent the lower and upper quartiles, respectively; the line within the box represents the median; the whiskers extend to either the minimum or maximum observed value, or the point that is 1.5 box heights away from the lower quartile, whichever is larger.

WHO: world health organization; Non-DD: no dissociative disorder; DPD: depersonalization disorder; DID: dissociative identity disorder; DDNOS-I: dissociative disorder-not-otherwise-specified-I

Table 1

Sociodemographics and Axis I Comorbidity of Subjects With a Dissociative Disorder (N=30) and Subjects Without a Dissociative Disorder (N=130)

	No dissociative disorder (N=130)		Depersonalization disorder (N=7)		Dissociative disorder-not- otherwise-specified-I (N=10)		Dissociative identity disorder (N=12) ^a		Total (N=160)		Analysis	
	N	%	N	%	N	%	N	%	N	%	Omnibus p ^b	Pairwise comparisons (p<0.05) ^c
Female	80	61.6	7	100.0	10	100.0	11	91.7	107	67.3	0.001	DD>Non-DD ^d
Swiss nationality	97	74.6	5	71.4	8	80.0	5	41.7	115	71.9	0.11	-
Primary source of income												
Own earnings	34	26.1	1	14.3	1	10.0	2	16.7	38	23.8	0.71	-
Earnings of partner, parents, or relatives	16	12.3	0	0.0	3	30.0	1	8.3	20	12.5	0.31	-
Retirement payments	3	2.3	0	0.0	0	0.0	0	0.0	3	1.9	1.00	-
Disability payments due to a mental disorder	22	16.9	2	28.6	3	30.0	6	50.0	33	20.6	0.02	-
Disability payments due to a physical disorder	5	3.8	0	0.0	0	0.0	1	8.3	6	3.8	0.71	-
Public welfare	30	23.1	3	42.9	2	20.0	1	8.3	36	22.5	0.40	-
Unemployment benefits	7	5.4	0	0.0	1	10.0	1	8.3	10	6.2	0.58	-
Other, e.g. savings	13	10.0	1	14.3	0	0	0	0	14	8.8	0.47	-
Axis I Diagnoses												
Affective disorders	59	45.4	1	14.3	9	90.0	8	66.7	78	48.8	0.005	DDNOS-I-> Non-DD, DP
Psychotic disorders	5	3.8	0	0.0	0	0.0	0	0.0	5	3.1	1.00	-
Substance use disorders	10	7.7	2	28.6	1	10.0	4	36.4	17	10.7	0.01	-
Anxiety disorders	54	41.5	6	85.7	10	100.0	11	91.7 ^e	81	50.9	<0.001	DDNOS-I, DID-> Non-DD
Somatoform disorders	12	9.2	0	0.0	1	10.0	2	16.7 ^e	15	9.4	0.59	-
Eating disorders	13	10.0	2	28.6	3	30.0	1	8.3 ^e	19	11.9	0.10	-
Adjustment disorder	5	3.8	1	14.3	0	0.0	0	0.0	6	3.8	0.40	-
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Omnibus p ^b	Pairwise comparisons (p<0.05) ^c
Age (years)	34.5	19.0	27.0	4.0	30.5	18.3	31.5	21.3	32.0	19.5	0.05	-

Education (years)	12.0	3.0	12.0	3.0	13.5	4.3	13.5	2.8	12.0	3.0	0.36	-
Number of axis I diagnoses	1.5	1.0	2.6	2.5	2.8	1.0	2.8	1.0	1.7	1.8	<0.001	DDNOS-I, DID> Non-DD

^a One subject with a dissociative identity disorder diagnosis reported to be intersex.

^b Fisher's exact tests were used for comparing diagnostic groups on categorical variables; Kruskal-Wallis tests were used for continuous variables.

^c Fisher's exact tests were used for post hoc pairwise comparisons of diagnostic groups on categorical variables; Mann-Whitney rank-sum tests were used for continuous variables; p-values are Bonferroni-Holm corrected.

^d Because there were only females with a DP and a DDNOS-I, tests could not be performed for these categories.

^e Data from one subject with a dissociative identity disorder diagnosis were not available.

IQR: interquartile range; Non-DD: no dissociative disorder; DD: dissociative disorder; DPD: depersonalization disorder; DID: dissociative identity disorder; DDNOS-I: dissociative disorder-not-otherwise-specified-I

Table 2

Global Assessment of Functioning Scores and WHO Disability Assessment Schedule II Summary and Dimensional Scores in Subjects With a Dissociative Disorder (N=30) and Subjects Without a Dissociative Disorder (N=130)

	No dissociative disorder (N=130)		Depersonalization disorder (N=7)		Dissociative disorder-not- otherwise-specified-I (N=10)		Dissociative identity disorder (N=12) ^a		Total (N=160)		Analysis	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Omnibus p ^a	Pairwise comparisons (p<0.05) ^b
Global Assessment of Functioning	54.00	14.00	59.00	4.50	44.00	4.50	41.00	4.75	53.00	16.00	<0.001	DDNOS-I, DID< Non-DD, DP
WHO Disability Assessment Schedule II												
Summary	31.25	28.54	34.91	18.79	48.66	26.97	50.00	19.50	33.96	28.80	0.008	-
Understanding and communicating	25.00	30.00	30.00	25.00	50.00	20.00	55.00	17.50	30.00	30.00	<0.001	DDNOS-I, DID> Non-DD
Getting around	12.50	35.94	31.25	34.38	25.00	32.81	18.75	15.62	18.75	34.38	0.34	-
Self-care	10.00	20.00	20.00	10.00	30.00	37.50	35.00	17.50	10.00	20.00	<0.001	DID>Non-DD
Getting along with people	33.33	50.00	33.33	33.33	50.00	50.00	66.67	18.75	33.33	54.17	0.09	-
Life activities	40.00	50.00	60.71	53.93	65.36	26.07	70.00	53.04	42.86	51.43	0.02	-
Participation in Society	45.83	33.33	37.50	18.75	58.33	23.96	64.58	23.96	50.00	35.42	0.03	-

^a Kruskal-Wallis tests were used for comparing diagnostic groups on continuous variables.

^b Mann-Whitney rank-sum tests were used for post hoc pairwise comparisons of diagnostic groups; p-values are Bonferroni-Holm corrected

IQR: interquartile range; Non-DD: no dissociative disorder; DD: dissociative disorder; DPD: depersonalization disorder; DID: dissociative identity disorder; DDNOS-I: dissociative disorder-not-otherwise-specified-I

Table 3

Regression Analysis Summaries for Distinct Types of Dissociative Disorders, Other Axis-I Disorders and Sociodemographic Variables Predicting Global Assessment of Functioning Scores and WHO Disability Assessment Schedule II Summary Scores

Variable	Global Assessment of Functioning					WHO Disability Assessment Schedule II Summary					
	B	Exp(B)	95% CI Exp(B)	t	p	B	Exp(B)	95% CI Exp(B)	t	p	
Depersonalization Disorder	0.09	1.09	0.95-1.25	1.27	0.21	0.27	1.31	0.76-2.23	0.98	0.33	
Dissociative disorder-not-otherwise-specified-I	-0.13	0.88	0.78-0.98	-2.25	0.03	0.07	1.07	0.68-1.68	0.29	0.77	
Dissociative Identity Disorder	-0.16	0.86	0.76-0.96	-2.62	0.01	0.16	1.18	0.75-1.85	0.71	0.48	
Affective Disorder	-0.10	0.91	0.86-0.96	-3.59	<0.001	0.61	1.84	1.49-2.29	5.62	<0.001	
Psychotic Disorder	-0.47	0.63	0.54-0.73	-6.08	<0.001	0.68	1.98	1.10-3.58	2.29	0.02	
Substance Disorder	-0.01	0.99	0.90-1.08	-0.28	0.78	-0.08	0.93	0.65-1.32	-0.43	0.67	
Anxiety Disorder	-0.11	0.90	0.85-0.96	-3.47	0.001	0.33	1.39	1.10-1.75	2.78	0.01	
Somatiform Disorder	-0.08	0.92	0.84-1.01	-1.84	0.07	0.06	1.06	0.75-1.51	0.35	0.73	
Eating Disorder	-0.01	0.99	0.91-1.08	-0.19	0.85	0.02	1.02	0.74-1.41	0.13	0.90	
Adjustment Disorder	-0.01	0.99	0.86-1.14	-0.10	0.92	0.39	1.48	0.86-2.57	1.42	0.16	
Sex (female)	0.02	1.02	0.96-1.08	0.52	0.60	0.35	1.41	1.12-1.78	2.96	0.004	
Age	0.001	1.00	0.998-1.003	0.50	0.62	0.01	1.01	0.999-1.017	1.72	0.09	
$R_{adj}^2 = .35$ (N=157)					$R_{adj}^2 = .33$ (N=157)						