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Validation of the self-report questionnaire DIP-Q in diagnosing DSM-IV personality disorders: a comparison of three psychiatric samples

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The DSM-IV section of the DSM-IV and ICD-10 Personality Questionnaire (DIP-Q) was used to screen for personality disorders in 448 subjects from three clinical samples (general and forensic psychiatric patients and candidates for psychotherapy) and a sample of 139 healthy volunteers. Differences between the samples with regard to patterns of personality pathology in relation to concurrent Axis I disorders and sociodemographic variables were analysed. The prevalence of personality disorders according to DIP-Q was 14% among the healthy volunteers, compared to 59% in the general psychiatric sample, 68% in the forensic psychiatric sample and up to 90% among psychotherapy candidates. Moreover, from a dimensional perspective (i.e. the number of fulfilled Axis II criteria), all clinical groups differed significantly from the control group in all specified personality dimensions and clusters. Dimensional DIP-Q cluster scores also discriminated significantly between the three clinical samples. Unexpectedly, the odds ratio for an Axis II disorder was nearly five times higher among psychotherapy applicants than among general psychiatric patients, independent of concomitant Axis I disorders, gender or age. The strongest association between DIP-Q score and Axis I disorders was found for depressive disorders, which more than doubled the odds ratio for a personality disorder diagnosis. This association could result from high true comorbidity, but could also be due to the fact that a concomitant depressive state can increase self-reported personality difficulties. The high prevalence among psychotherapy candidates may to some extent reflect help-seeking exaggeration of problems. These are aspects to consider when using the DIP-Q, which overall appears to discriminate well between different samples.

Key words: personality disorder; self-report questionnaire; comorbidity

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Introduction

Personality disorders in clinical populations have attracted considerable interest during the last decade due to the assumption that personality pathology is a comorbidity factor that negatively affects the severity and prognosis of most Axis I disorders. The presence of a personality disorder is also known to interfere negatively with pharmacological and psychotherapeutic treatment.

Axis II in DSM-IV (1) specifies sets of criteria for 10 personality disorders organized as clinical entities. The concept of personality refers to enduring patterns of behaving, thinking, relating and perceiving, and the definition stresses early onset and pervasiveness. When personality traits are inflexible and maladaptive, and cause significant functional impairment or subjective distress, they constitute a personality disorder.

The classification of personality disorders presents considerable difficulties because of the vast range and complexity of behaviour and traits, and also because of the lack of natural boundaries between attributes of normal and pathological

traits. Controversial features of the DSM system are the categorical, 'all-or-none', personality disorder diagnoses (2), the overlap between personality disorders, and the criteria which operate on a high level of inference. Diagnosing personality disorders is also a far more complicated process than the mere counting of fulfilled criteria. The clinician also has to take into account the course of the disorder, any concurrent physical or psychiatric disorder, and whether the symptoms are traits or exponents of a state.

Subsequent to the introduction of diagnostic criteria with the DSM system in 1980, numerous assessment instruments have been developed. The main types of instruments are structured interviews and self-report questionnaires. Both interviews and questionnaires have good inter-rater reliability, although the level of agreement between questionnaire and interview is lower than that between two interview methods (3). A common feature of questionnaires is their tendency to over-diagnose personality disorders (4–6). However, as the level of sensitivity is high throughout, and as self-reports are easily administered, they are useful as screening instruments. Questionnaires also have the advantage of being free from systematic interviewer bias.

Epidemiological surveys have yielded prevalence estimates of personality disorder in the general population of about 10%. A study by Reich et al. (7) has highlighted a conceptual problem in this context, as the mere fulfilment of criteria above cut-off yielded a prevalence of 28.9% in the general population, and when a distress criterion corresponding to the general criterion of Axis II was added, the prevalence decreased to 11.1%. Among psychiatric in-patients the prevalence of personality disorders is high (8, 9), and in an out-patient study by Bodlund et al. (10) the prevalence of personality disorders was found to be 49%. Concomitant clinical Axis I syndromes were frequent, as were multiple personality disorders, particularly among patients with anxiety and affective disorders. In other out-patient studies, the prevalence has been reported to range between 60% and 80% (11, 12).

Several studies have shown that a personality disorder has a negative effect on course and response to treatment of a concomitant Axis I disorder, and that co-occurrence is common between personality disorders, depressive syndromes and anxiety disorders (13–15). Patients suffering from depression or anxiety tend to describe themselves as having more abnormal personality traits on self-report questionnaires than they would report during periods of remission (12, 16). The possible extent of the interrelationships between Axis I and Axis II disorders, and which should be regarded as the initial disorder, are both still the subject of lively debate.

The aim of the present study was to explore the validity of personality diagnosing by means of a new self-report questionnaire, the DSM-IV and ICD-10 Personality Questionnaire (DIP-Q). For this purpose three different clinical samples and a sample of healthy volunteers were examined. Differences in the prevalence of Axis II disorders according to DIP-Q between and within the populations, comorbidity between Axis I and Axis II disorders and other interrelated factors, such as gender, age, level of functioning (GAF score) and clinical group characteristics presumed to influence the outcome and validity of the self-report instrument are analysed, in an attempt to contribute to a better understanding of the limitations and strengths of self-reports for diagnosing personality disorders.

Material and methods

Subjects

The study included three clinical samples (n=448): a general psychiatric sample, a forensic psychiatric sample and a sample of psychotherapy applicants. A group of healthy volunteers (n=139) served as a reference group.

General psychiatric sample. A total of 137 patients (58% women and 42% men) with a mean age of 37.3 years (SD=12.0, range 18–63 years) were selected to cover a wide range of clinical settings, namely psychiatric out-patients (22%) and in-patients (78%), including 52 patients hospitalized after a suicide attempt, and seven patients recruited from an in-patient assessment unit for sleep disorders. After they had given informed consent, the patients were assessed by means of clinical diagnostic interviews with regard to Axes I, II and V (GAF) according to DSM-IV. All of the subjects completed the DIP-Q in connection with the interview.

Forensic psychiatric sample. A total of 217 consecutive subjects of forensic psychiatric examinations (7% women and 93% men) with an average age of 35.5 years (SD=10.3, range 16–62 years) were selected. In Sweden, forensic psychiatric examinations are requested by the courts when individuals charged with serious crimes are suspected of having committed them while under the influence of a mental disorder. The examinations are extensive, and usually involve custody at a forensic psychiatric unit for up to 4 weeks of observations, psychological tests, and thorough social and medical evaluations.

The conclusions of the final forensic psychiatric report determine whether the statutes on legal insanity in the Criminal Code apply. The DIP-Q in this group was administered in conjunction with the forensic team psychologists' personality assessments. The subsequent convictions were approximately distributed as follows: homicide in 20%, assault in 35%, sex crimes in 14% and arson in 10% of cases.

Sample of psychotherapy applicants. A total of 94 patients (81% women and 19% men) with a mean age of 34.2 years (SD=8.1, range 21–58 years) were recruited from the Stockholm Comparative Psychotherapy Study (COMPASS), a project primarily designed to accumulate a database for studying patient and treatment characteristics in psychotherapy. The sample in this study consisted of patients applying for public financial support for psychotherapy in central Stockholm. In order to qualify for inclusion in the COMPASS project, criteria had to be fulfilled for medical-psychiatric problems of a certain severity, and for the probability of being suitable for psychotherapy. The DIP-Q was one of the instruments used in the COMPASS evaluation.

A total of 25 patients from the clinical samples were excluded from the study because of missing data, invalid test protocols or florid psychosis, severe cognitive impairment and/or language difficulties making the subject ineligible for the DIP-Q.

Group of healthy volunteers. A total of 139 individuals (69% women and 31% men), of mean age 28.0 years (SD=8.1, range 18–55 years), representing 90% of the students in four classes at a college for medical care, agreed to participate and completed the DIP-Q.

Instruments

The DIP-Q is an 140-item, self-report questionnaire for the assessment of all 10 DSM-IV and all eight ICD-10 personality disorders (17). Only the DSM-IV entities are included in this study. The DIP-Q items consist of brief statements reflecting the main aspect of the corresponding criterion, and the respondent is asked to score the statement as true or false. Aspects of the general criterion for personality disorders are also evaluated by means of a 5-item impairment and distress scale (the ID scale) and a self-report version of the Global Assessment of Functioning (GAF) scale. The GAF self-report version, which is based on the original 0–100 scale (1), has been developed and evaluated by Bodlund et al. (18). A categorical diagnosis requires that the number of criteria for the specific personality disorder should reach the threshold specified by the DSM-IV manual, and that a score of ≥ 2 is reached on the ID scale, or that the score on the GAF self-report scale is <70. A dimensional score is given by the proportion of fulfilled criteria for each personality disorder diagnosis, and this is not influenced by the ID or GAF ratings. The time stipulated for completing the DIP-Q is approximately 20 min. The scoring is best performed by computer.

The DIP-Q has been validated by comparison of DIP-Q results with data obtained from a structured clinical interview involving a clinical sample of 138 individuals (6). On the DSM-IV cluster level, agreement was acceptable (Cohen's kappa, 0.45–0.63), the overall sensitivity was high (0.84), and the specificity for the instrument was 0.77. When dimensional scores for each cluster of personality disorders were compared, the self-report and interview correlation was found to be high ($ICC_{2,1}$=0.60–0.78).

Statistical analysis

Parametric statistics were calculated using Student's *t*-test. For non-parametric distributions of diagnoses and disorders over groups, Chi-square tests with df=1 (2×2 contingency) were used. Significant differences refer to a *P*-value of <0.05. The data analysis was further supplemented with multivariate analyses using logistic regression with DIP-Q diagnosis (i.e. personality disorder/no personality disorder) as the dependent variable. The covariates further described in the Results section were first fitted into models one at a time, and then in combinations of pairs, triples, quadruples, and so on, as the data set was explored for confounders and interactions.

Results

Clinical diagnoses

The most prevalent Axis I disorders in the general psychiatric sample were depression (33%), sleep disorder (18%) and anxiety disorders (15%). Psychotic states were seen in 7% of the subjects, 5% had a bipolar disorder, 7% had adjustment disorder and 1% showed alcohol/drug abuse. Sleep disorders were common, mainly due to the selection of the population. Only 8% had an Axis II diagnosis alone, while a large proportion of the patients were found to have both Axis I and Axis II disorders. Depression and anxiety disorders were over-represented among female subjects, and psychotic disorders and alcohol and drug addiction were over-represented among male subjects.

In the forensic psychiatric group, 8% of the subjects suffered from schizophrenia, and 18% had other psychotic syndromes (including six patients with bipolar disorder). Furthermore, 12% had a depression, 8% had anxiety disorders, and the prevalence of alcohol/drug abuse or dependence was as high as 32%. Both Axis I and II diagnoses were seen in 55% of the subjects, and only 8% had an Axis II diagnosis alone.

Among the psychotherapy applicants, 56% had depression and 14% had anxiety disorders. None of the patients were diagnosed with schizophrenia, but 3% had other psychotic syndromes (including two individuals with bipolar disorder). As many as 18% of this population were clinically assessed as having only a personality disorder diagnosis.

In the entire study population (n=448) significant sex differences were demonstrated with regard to over-representation of depression in women and over-representation of alcohol/drug abuse and 'other psychoses' among men.

Clinical Axis II evaluation showed that 55% of the total population had a personality disorder. Since the clinicians involved did not consistently use the same methods for diagnosing personality disorders in the three study groups, comparisons between groups and against self-reports were judged not to yield meaningful data.

Table 1. Prevalence of personality disorder diagnoses according to DIP-Q self-report in three different psychiatric populations and in healthy volunteers

DIP-Q diagnoses	General psychiatric patients (n=137) (%)	Forensic psychiatric patients (n=217) (%)	Applicants for psychotherapy (n=94) (%)	Healthy volunteers (n=139) (%)
Any personality disorder (PD)	59	68	90	14
Cluster A	40	56	62	6
Paranoid	34	48	53	3
Schizoid	14	16	10	1
Schizotypal	27	39	38	3
Cluster B	43	51	64	8
Antisocial	10	29	5	0
Borderline	41	45	64	6
Histrionic	4	7	7	1
Narcissistic	7	15	8	1
Cluster C	53	55	81	10
Avoidant	39	34	52	4
Dependent	18	18	31	0
Obsessive-compulsive	38	41	62	9
Mean number of PD[a]	2.33	2.95	3.31	0.28
Mean self-rated GAF score	58	54	51	82

[a] Mean number of personality disorders among subjects with at least one such disorder.

DIP-Q diagnoses

Personality disorders according to DIP-Q (Table 1) were found in 59% of the general psychiatric sample, and were fairly equally distributed between the three clusters. The most common types were paranoid personality disorder (34%) in cluster A, borderline personality disorder (41%) in cluster B, and avoidant personality disorder (39%) in cluster C.

Among the forensic psychiatric patients, 68% of subjects fulfilled the criteria for at least one personality disorder according to the DIP-Q self-report. The most common personality disorders were paranoid (48%), borderline (45%), obsessive-compulsive (41%) and schizotypal personality disorder (39%).

In the sample of applicants for psychotherapy, 90% of subjects fulfilled the criteria for at least one personality disorder according to the DIP-Q. The most common personality disorders were borderline (64%), obsessive-compulsive (62%), paranoid (53%) and avoidant (52%) personality disorders.

Among the healthy volunteers, 14% of subjects had at least one personality disorder according to the DIP-Q. Cluster C personality disorders were most prevalent (10%).

Multiple Axis II diagnoses were common in all three clinical populations, where the number of personality diagnoses per subject ranged between 2.3 and 3.3.

DIP-Q Axis II diagnoses, especially cluster B and C personality disorders, were significantly more prevalent among the women. Female subjects also tended to have higher scores on the ID scale and lower self-rated GAF scores. These sex differences cannot be reliably interpreted in view of the markedly skewed sex distribution between the clinical groups.

Figure 1 shows, from a dimensional perspective (i.e. the number of fulfilled Axis II criteria according to the DIP-Q, both in total and for each cluster), the differences between the groups.

GAF was evaluated both by experts and by subject self-report. The mean self-rated GAF was 82 in the control group and 55 among the patients. In general, the patients rated themselves significantly (about 10%) lower than the experts' evaluation. This was seen both in the general psychiatric sample and among applicants for psychotherapy, but not among the forensic psychiatric patients. In the general psychiatric sample the patients' self-rated GAF scores were significantly higher than in the other two groups.

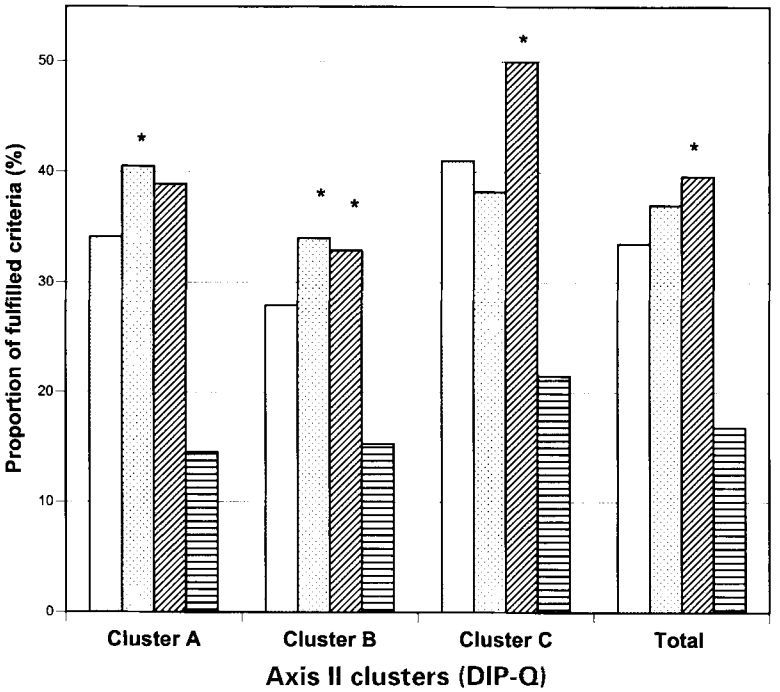


Fig. 1. Proportion of fulfilled Axis II criteria (clusterwise and in total) according to DIP-Q in three clinical populations and in healthy volunteers. *Significantly ($P<0.01$) higher than in the general psychiatric sample. □=general psychiatry ($n=137$); ▨=forensic psychiatry ($n=217$); ▨=psychotherapy applicant ($n=94$); ▤=healthy volunteers ($n=139$).

Comorbidity and factors influencing the DIP-Q results

In order to scrutinize the problem of comorbidity between Axes I and II and to gain a better understanding of the marked group differences on the DIP-Q, especially the divergence shown by the applicants for psychotherapy, we analysed plausible interrelated data to estimate the extent to which Axis I disorders belonging to a specific sample, gender and age predicted or contributed to DIP-Q Axis II diagnoses. As a first step, we stratified the DIP-Q results for each Axis I disorder, and we found that a high prevalence of personality disorders, in all three clusters, was significantly associated with depressive states. The fact that the patient had a sleep disorder was statistically associated with a low prevalence of personality diagnoses. Furthermore, we found that 'other' (than schizophrenic) psychotic disorders were also associated with a low frequency of personality disorder in clusters B and C.

As a second step, we performed a logistic regression analysis with DIP-Q personality disorder diagnosis as the dependent variable, for further exploration of components associated with a DIP-Q diagnosis. Four of the factors suggested by the preliminary results (based on univariate statistical methods) were postulated to affect the DIP-Q score, namely gender, age, Axis I disorder and sample specificity (i.e. general psychiatry, forensic psychiatry or psychotherapy applicants). Five major Axis I disorders were coded as dummy variables, and two dummy variables indicated low age (<28 years) and high age (>43 years), referring to the lower and upper quartile, respectively.

Table 2 shows the results of the logistic regression analysis (expressed as adjusted odds ratios for the DIP-Q diagnosis). Although female gender was related to personality disorder on the DIP-Q, this effect was to a great extent eliminated after controlling for group-belonging. The same was true for age. Further analyses focused on exploring the differences in the DIP-Q results across the study groups. The logistic regression analysis showed that depressive disorder was a very strong predictor of positive findings on the DIP-Q, and depressive disorders were indeed common (56% prevalence) in the group of psychotherapy applicants. However, when controlling for depressive disorders, the forensic psychiatric subjects and the psychotherapy applicants were still twice and five times as likely, respectively, to receive a personality disorder diagnosis as the subjects in the general psychiatric sample. Table 2 also indicates tendencies towards an increased probability of an Axis II diagnosis in connection with anxiety disorder and female sex.

Discussion

Self-report questionnaires for diagnosing personality disorders are commonly used both in research

Table 2. Factors contributing to increased probability of Axis II diagnosis: a logistic regression model with DIP-Q diagnosis as the dependent variable based on three clinical groups ($n=448$)[a]

Variable	*B*	*P*-value	Adjusted odds ratio	95% CI
Axis I disorder				
Psychotic disorders	0.03	NS	1.03	0.51–2.05
Bipolar disorders	−0.10	NS	0.91	0.29–2.87
Depression	0.78	0.013	**2.20**	1.18–4.04
Drug abuse/dependence	0.06	NS	1.06	0.53–2.12
Anxiety disorders	0.54	NS	1.72	0.80–3.67
Clinical sample				
General psychiatry[b]	—	—	1.00	
Forensic psychiatry	0.76	0.015	**2.14**	1.16–3.96
Psychotherapy applicants	1.60	<0.001	**4.93**	2.22–11.0
Low age (<28 years)	0.36	NS	1.44	0.83–2.50
High age (>43 years)	−0.37	NS	0.69	0.41–1.15
Female sex	0.50	NS	1.65	0.03–2.92

[a] Model $\chi^2=47.0$ (df = 10); $P<0.0001$; −2 log likelihood = 501.4; goodness of fit = 456.2.
[b] Reference group.
NS, non-significant.

and in clinical practice. Apart from saving time, they are free from systematic interviewer bias. However, assessments by self-report have some obvious drawbacks, and one major disadvantage is their sensitivity to state effects. Some aspects for the clinician/researcher to consider when interpreting DIP-Q results obtained from diverse clinical settings are pointed out in this paper.

The overall prevalence of personality disorder in clinical psychiatric populations has previously been demonstrated to be around 70%. The fact that the general psychiatric group in this study had a slightly lower prevalence (59%) can be explained by the selection of the clinical subgroups.

It is noteworthy that dimensional cluster scores (Fig. 1) discriminated significantly between all three clinical samples. Compared to the general psychiatric sample, the psychotherapy applicants fulfilled more criteria both in total and in clusters B and C, and the forensic psychiatric patients had significantly higher scores in clusters A and B. With regard to the specific personality disorders, the psychotherapy applicants scored high on the cluster C and borderline personality dimensions. The forensic patients, on the other hand, deviated from the two other groups only in the antisocial dimension, and compared to the general psychiatric group they fulfilled more criteria for paranoid, schizotypal and narcissistic personality traits. The fact that these intergroup differences correspond to the tendencies observed in the clinical assessments is particularly interesting, since the dimensional approach comes closer to the true nature of personality pathology (2, 6, 19).

In the sample of healthy volunteers, the prevalence of any personality disorder was 14%, which was roughly as expected. As in other studies examining Axis II self-reports, over-inclusivity is demonstrated, especially of paranoid and obsessive-compulsive personality disorders, while narcissistic and histrionic personality disorders are under-represented. These tendencies also appear in the healthy sample. From a dimensional perspective the healthy volunteers differed significantly from all three clinical groups in all specified personality dimensions and clusters.

The deviations from the expected differences between populations are challenging findings. At first glance, the high rates of DIP-Q personality disorder (90%) among psychotherapy applicants may seem unreasonable, but it must be borne in mind that this is a highly selected group, and that other data suggest that this group includes individuals with severe psychopathology. In a pilot study, Rorschach results were compared in patients from the COMPASS project and in general psychiatric samples. Significantly more patients in the COMPASS group had positive schizophrenia and depression indexes (20). The high frequency of depressive disorder (56%) in the present sample can be assumed to have an impact on perceived self-image, and could aggravate personality traits. However, when this factor is ruled out, the risk for Axis II diagnosis according to DIP-Q still remains significant among the psychotherapy applicants. Motivational sets, which in this case would be the opportunity to receive publicly funded psychotherapy, may be influential factors.

The results also indicate some sex differences. Female patients were more depressive, had a higher prevalence of personality disorders in clusters B and C, and rated themselves lower on the GAF scale. The results of GAF self-report show the same tendencies (or shortcomings) as the DIP-Q self-report, i.e. that female subjects tend to aggravate their problems or underestimate themselves, and that depressive mood is associated with low self-ratings on GAF and higher DIP-Q scores. In general, the patients gave themselves lower GAF scores than did the experts. These findings are consistent with the results of earlier studies on this topic (18).

It is a complex task to outline individual and clinical factors contributing to high risk for Axis II diagnosis by means of a self-report instrument. Since for obvious reasons the factors involved are interrelated, analysis is greatly facilitated by multivariate statistical procedures. According to the present results, variables such as motivation,

belonging to a specific sample, concurrent Axis I disorder, and possibly also gender need to be taken into account when evaluating the results of diagnostic tools for Axis II disorders. This is relevant irrespective of whether the instrument is a self-report questionnaire, a structured interview, or simply a clinical judgement.

Conclusions

(i) The prevalence of any personality disorder in the three clinical groups was 70% as measured by DIP-Q self-report and 55% according to clinical assessment. The instrument discriminated well between the samples, and the figures suggest that the DIP-Q may be somewhat over-inclusive for certain personality disorders, such as paranoid, obsessive-compulsive and possibly also borderline personality disorder.

(ii) From a dimensional perspective (i.e. the number of fulfilled Axis II criteria according to DIP-Q), all clinical groups differed significantly from the control group in all specified personality dimensions and clusters. Dimensional DIP-Q cluster scores also discriminated significantly between all three clinical samples.

(iii) Depressive disorders were found to exert a strong influence on the DIP-Q by increasing the degree of personality pathology, which is believed to be state-related rather trait-dependent. This also applies to some extent to Axis I comorbidity of anxiety disorder, and possibly also to depressive episodes of bipolar disorders. In this respect, caution is required in the use of the DIP-Q.

(iv) Independent of Axis I disorders, gender and age, a significantly increased prevalence of personality disorders was recorded in two of the three clinical subgroups, i.e. forensic psychiatric patients and subjects applying for psychotherapy vs. general psychiatric patients. This increase may, of course, be related to an actual high degree of personality pathology. Again, however, caution is recommended when the DIP-Q self-report is used in patients who situationally may benefit from exaggerating their symptoms and conditions.

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