



Schedule for Personality Assessment from Notes and Documents (SPAN-DOC): preliminary validation, links to the ICD-11 classification of personality disorder, and use in eating disorders

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Preliminary validation, links to the ICD-11 classification of personality disorder, and
use in eating disorders

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<ABSTRACT>

Background: The underlying core of personality is insufficiently assessed by any single instrument. This has led to the development of instruments adapted for written records in the assessment of personality disorder.

Aims: To test the construct validity and inter-rater reliability of a new personality assessment method.

Method: This study (four parts) assessed the construct validity of the Schedule for Personality Assessment from Notes and Documents (SPAN-DOC), a dimensional assessment from clinical records. We examined inter-rater reliability using case vignettes (Part 1); and convergent validity in three ways: by comparison with NEO Five-Factor Inventory in 130 Korean patients (Part 2), with agreed ICD-11 personality severity levels in two populations (Part 3), and determining its use in assessing the personality status in 90 British patients with eating disorders (Part 4).

Results: Internal consistency ($\alpha = 0.90$) and inter-rater reliability (intraclass correlation coefficient ≥ 0.88) were satisfactory. Each factor in the five-factor model of personality was correlated with conceptually valid SPAN-DOC variables. The SPAN-DOC domain traits in those with eating disorders were categorized into 3 clusters; self-aggrandisement, emotionally unstable, and anxious/dependent.

Conclusions: This study provides preliminary support for the usefulness of SPAN-DOC in the assessment of personality disorder.

Keywords: personality disorder, classification, ICD-11, reliability, eating disorders

INTRODUCTION

Both the DSM-5 alternative model and ICD-11 classifications of personality disorder have adopted a dimensional classification of personality disorder, and severity of personality disturbance is one of the main elements of their classification structure (Skodol *et al.*, 2011, Tyrer *et al.*, 2011). The basic trait dimensions of personality have long been established and have a consistent structure, regardless of the presence or absence of personality disorder (Clark, 2005, Widiger, 2005, 2011, Widiger and Mullins-Sweatt, 2010). The classification of severity allows the dimensional nature of personality disturbance to be acknowledged in practice and helps to establish priorities for treatment and management (Crawford *et al.*, 2011). As personality and its disorder can no longer be regarded as an entirely stable entity (Paris, 2002, Seivewright *et al.*, 2002, Shea *et al.*, 2002, Shea and Yen, 2003), it is not likely that an assessment can be made adequately in a single face-to-face interview. Greater awareness of the instability of personality and limitations of interview information alone has led to the development of instruments adapted for written records in the assessment of personality disorder. The Schedule for Personality Assessment from Notes and Documents (SPAN-DOC) (Tyrer and Clark, 2007) was developed to resolve errors inherent in the current system. SPAN-DOC was derived from the Personality Assessment Schedule (PAS) (Tyrer *et al.*, 1979) and the Schedule for Nonadaptive and Adaptive Personality-2 (Clark, 2014). It has 26 core personality features each rated from written material, either in the form of clinical notes, formal reports, or other written information. More credence is given to formal psychiatric assessments or recorded contemporaneous information than general reports of historical data. Some evidence of the usefulness of this type of assessment has come from studies of a similar instrument, PAS-DOC (Tyrer *et al.*, 2007). Before this assessment can be regarded as credible in practice, more information is needed about its reliability and validity and how its scores can be converted to conventional classification.

The interleaving aims of this study were to determine the extent to which the SPAN-DOC is a reliable and valid measure of personality status in patients with personality disorder, whether it is consistent with information derived from other measures, how it links to the new ICD-11 classification of personality disorder, and to test its applicability in eating disorders.

METHODS

Part 1: Inter-rater reliability of SPAN-DOC

SPAN-DOC was translated into Korean by YK who was thoroughly trained in its use. A reverse translation was completed by another researcher who was fluent in English under conditions of blindness to the original version. A psychologist who was fluent in English closely checked and confirmed that the translation and reverse translation were appropriately equivalent. A total of seven Korean psychiatrists and psychologists participated in the rating of the case vignettes using SPAN-DOC. The case vignettes were developed by members of the ICD-11 working group as standard typical cases for the diagnosis of personality disorders. We selected seven case vignettes that were relevant and easy to understand in Korean culture. Researchers were trained in the use of SPAN-DOC and reached a consensus in the scoring system prior to beginning the study. Inter-rater reliability then was tested using the case vignettes.

Part 2 : The validity of SPAN-DOC

A total of 130 Korean patients, who were confirmed as having personality pathology in the ICD-11 field trial (Kim *et al.*, 2014, Kim *et al.*, 2015a), participated in the study. The participants consisted of 83 males and 47 females, with a mean age of 39.1 years [standard deviation (SD) = 13.7] and mean number of education years of 11.4 (SD=3.4); 112 participants were inpatients, and 18 were outpatients. The distribution of primary Axis I mental disorders were as follows: alcohol use disorders (n=48, 36.9%), affective disorders (n=22, 16.9%), post-traumatic stress disorder (n=16, 12.3%), eating disorders (n=13, 10%), anxiety disorders (n=9, 6.9%), other mental disorders (n=10, 7.7%), and personality disorders only (n=12, 9.3%). After obtaining informed consent for their participation in the study, researchers reviewed the patients' case notes of the patients to assess their personality status. All raters participated in part 1 and achieved good inter-rater reliability [Intraclass Correlation Coefficient (ICC) = 0.82 ~ 0.94]. Patients completed the standardized Korean versions of NEO Five-Factor Inventory (NEO-FFI) (Costa and McCrae, 1989) and Social Functioning Questionnaire (SFQ) (Tyrer *et al.*, 2005). The protocol was approved by the ethics committees of Seoul Paik Hospital (ref. IIT-2012-014) and Kangnam Sacred Hospital (ref. IIT-2012-05-51).

Part 3 : Relations between SPAN-DOC and ICD-11 classification

The ICD-11 classification of personality disorder records all disorder on a single dimension of severity, with five defined anchor points (Tyrer *et al.*, 2015a) as follows: (0) no personality dysfunction; (1) personality difficulty—the personality disturbance is closely linked to a setting and present in limited circumstances; (2) mild personality disorder—notable problems in many

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3 interpersonal relationships and the performance of expected occupational and social roles, but some
4 relationships are maintained and/or some roles carried out; (3) moderate personality disorder—
5 marked problems in most interpersonal relationships and in the performance of expected occupational
6 and social roles across a wide range of situations that are sufficiently extensive that most are
7 compromised to some degree; or (4) severe personality disorder—severe problems in interpersonal
8 functioning affecting all areas of life with profound general social dysfunction and the absence or
9 severely compromised ability and/or willingness to perform expected occupational and social roles.
10 The ICD-11 classification of personality disorder also use domain traits to qualify the nature of each
11 level of disorder – negative affectivity, detachment, anankastia (obsessive-compulsive domain),
12 disinhibition and dissociality.
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19 To determine the ICD-11 severity of personality disorder two data sets were examined: (i) a
20 selection of 12 case vignettes from the Nottingham Study of Personality Disorder (Tyrer *et al.*, 1988)
21 and (ii) a similar selection of 25 vignettes used in developing a new instrument to record the severity
22 of ICD-11 personality disorders.
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26 Two databases were used to link SPAN-DOC scores with the ICD-11 diagnostic system: (1) The
27 Nottingham Study of Neurotic Disorder, a 30-year study in which data are still being collected, and in
28 which personality status was recorded at baseline and subsequently converted into ICD-11 severity
29 levels with a high degree of agreement between raters (Hassiotis *et al.*, 1997). Patients had baseline
30 case summaries and these were assessed independently by EK without knowledge of the ICD
31 diagnostic levels; (2) The second database was a set of 25 clinical vignettes prepared by KO for the
32 assessment of a new instrument for assessing ICD-11 personality, for which members of the
33 International Advisory Group had reached a consensus judgment about the presence and severity of
34 personality disorder according to ICD-11 criteria. These included demographic details and clinical
35 history, DSM-IV diagnoses using the Structured Clinical Interview for DSM-IV Personality Disorders
36 (SCID-II) (First, 1994), self-harm and forensic history, and social history. EK also assessed the 25
37 vignettes using the SPAN-DOC without any knowledge of participants' ICD-11 personality status.
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45 Preliminary work by PT suggested that the total SPAN-DOC score was the best indicator of all
46 levels of severity apart from severe personality disorder, in which more focus on ratings referring to
47 self-harm and aggression was needed. Attention was therefore focused on the SPAN-DOC cut points
48 most closely linked to the ICD-11 severity definitions, with special attention to the items most
49 appropriate for scoring severe personality disorder.
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55 **Part 4 : Application of SPAN-DOC into patients with eating disorders**

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3 A total of 90 patients over the age of 18 with eating disorders were evaluated using SPAN-DOC
4 from a tertiary referral service for eating disorders in London, UK. The patients fulfilled the DSM-5
5 diagnostic criteria of anorexia nervosa (AN), bulimia nervosa (BN) or binge eating disorder (BED)
6 (American Psychiatric Association., 2013). All patients gave their informed consent for their case
7 notes to be reviewed to assess their personality status. The Eating Disorder Examination
8 Questionnaire (EDE-Q) (Fairburn and Beglin, 1994) was used for assessment of symptoms of eating
9 disorders. All SPAN-DOC scores were converted to ICD-11 levels (Tyrer *et al.*, 2015b) for the eating
10 disorder patients after completion of Part 3 of the study. The SPAN-DOC/ICD-11 conversion is
11 defined as the results of Part 3. The ethicality was approved by the NRES Committee – Camberwell
12 St Giles (ref 09/H0807/66).
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21 **Measurements**

22 23 24 25 26 **The Schedule for Personality Assessment from Notes and Documents (SPAN-DOC) (Tyrer and** 27 **Clark, 2007)** 28

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30 Twenty-six personality variables are assessed in SPAN-DOC, which cover the range of normal to
31 abnormal pathology. As the data must be extracted from written information, ratings are highly
32 dependent on the quality of such data, and the scoring instructions differ from those of other
33 assessment devices. For reliability purposes, it is helpful to record the main items from the written
34 record that were used to score each trait.
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38 The schedule has two components. Firstly, the notes or documents used to score SPAN-DOC are
39 examined and assessed for their (i) comprehensiveness, (ii) balance, and (iii) extent of corroboration.
40 In examining the data source, there are two essential requirements: (i) the source of information uses
41 direct first-hand observations and descriptions of the subject and (ii) at least part of the documentation
42 refers to the person in such a way as to indicate their habitual functioning and behaviour rather than
43 their current status. On the basis of the comprehensiveness, balance and corroboration of the
44 documents, their reliability is rated for their overall quality in assessing personality status. Stage 2 is
45 the rating of traits, with the severity of each trait measured on a nine-point scale for all variables.
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51 The 26 personality variables assessed in the SPAN-DOC are moodiness/emotional lability,
52 anxiousness, anger/irritability, vulnerability, resourcelessness, suspiciousness/mistrust,
53 hypersensitivity, aggression, worthlessness, suicidality, eccentricity, emotional dependence/neediness,
54 passive dependence/indecisiveness, anhedonia, entitlement, exhibitionism, introspection/introversion,
55 shyness, aloofness/coldness/detachment, sensation/novelty seeking, impulsivity, hyperperfectionism,
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3 callousness, irresponsibility, inflexibility, and hypochondriasis.
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5 Useful items of information obtained from written records that may be related to personality status
6 and, when corroborated by other data, linked to a personality disorder diagnosis were: (1) marital
7 relationship(s), (2) child care, (3) financial status (indebtedness and its reasons), (4) employment
8 status, (5) legal status, (6) substance use and risky behaviour (e.g. gambling), (7) housing, and (8)
9 problems experienced in adolescence. Detailed information for each item is listed in the data section
10 of this paper.
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15 16 17 **NEO Five-Factor Inventory (NEO-FFI) (Costa and McCrae, 1992)**

18 The NEO-FFI is a 60-item self-report instrument used to measure the five personality domains of
19 the five factor model: N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness and C =
20 Conscientiousness (12 items per domain). It includes self-descriptive statements that participants
21 respond to using a 1 (strongly disagree) to 5 (strongly agree) Likert scale. It is often used in field-
22 based research and clinical studies, as it is designed to measure the personality dimensions of the
23 longer NEO Personality Inventory in a shorter time frame. We used the standardized Korean version
24 of the NEO-FFI (Ahn and Chae, 1997) of which the internal consistency (Cronbach's alpha) was
25 0.68~0.86.
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35 **Social Functioning Questionnaire (SFQ) (Tyrer *et al.*, 2005)**

36 The SFQ is an eight-item self-report scale (score range 0-24), which was developed from the
37 interview form of the Social Functioning Schedule (Remington and Tyrer., 1979) for a quick
38 assessment of perceived social functioning. We used the Korean version of the SFQ (Kim *et al.*,
39 2015b) of which the internal consistency (Cronbach's alpha) was 0.81.
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47 **Analysis**

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52 Interrater reliabilities were measured using the intraclass correlation coefficients (ICCs) among
53 seven raters for each case based on the SPAN-DOC assessment; internal consistency was examined
54 using Cronbach's alpha. Structural validity was assessed by a principal component factor analysis
55 with Varimax rotation of factors, using a scree plot to determine the number of factors to extract.
56 Construct validity was investigated by computing correlations between the 26 personality variables
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and five factors derived from the dimensional assessment of normal personality (NEO-FFI) and social function (SFQ).

The data analytic strategy used to derive the personality prototypes in the patients with eating disorders based on the SPAN-DOC's dimensional assessment was Ward's hierarchical clustering procedure (Ward, 1963). The two most similar clusters in terms of their squared Euclidian distance (R^2) were combined stepwise, starting with the clusters that contained only one participant. After applying the procedure, we chose the number of clusters based on R^2 and the results from previous studies.

Two-tailed tests were used and a p -value < 0.05 was considered indicative of statistical significance. Analyses were conducted using IBM SPSS Statistics 19 and SAS 9.2 statistics.

RESULTS

Part 1 : Inter-rater reliability of SPAN-DOC

Inter-rater reliability among the seven raters using ICC for the case vignettes was high [0.82 (95% CI 0.69 to 0.91) ~ 0.94 (95% CI 0.89 to 0.97)]

Part 2 : Validity test of SPAN-DOC

Sample Characteristics: The distribution and clinical characteristics are shown in Table 1.

[Tables 1 near here]

Internal consistency : The overall internal consistency of SPAN-DOC in the patients with personality disorders was high, Cronbach's alpha coefficient = 0.90.

Structural validity : The measures of sampling adequacy for SPAN-DOC indicated that the data were suitable for factor analysis (Kaiser-Meyer-Olkin = 0.81, Bartlett's sphericity $\chi^2 = 2245.2$, $p < 0.01$). Examination of the scree plot indicated that the best number of factors to extract was 6, which

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3 accounted for 72 % of the total variance (Figure 1). The 6 factors were: (1) aloof/callous/eccentric, (2)
4 emotionally unstable, (3) anxious/dependent, (4) narcissistic/histrionic, (5)
5 hyperperfectionistic/inflexible, and (6) hypochondriacal (Table 2).
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11 [Figure 1 near here]

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13 [Tables 2 near here]

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18 *Construct validity* : We examined correlations between the 26 variables and the NEO-FFI and SFQ.
19 Each factor in the five-factor model of personality correlated with conceptually valid SPAN-DOC
20 variables (Table 3). The total SPAN-DOC score was positively correlated with the SFS ($r=0.37$,
21 $p<0.01$).
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27 [Tables 3 near here]

28 29 30 31 **Part 3 : Relations between SPAN-DOC and ICD-11 classification - Linking SPAN-DOC scores to** 32 **ICD-11 personality levels**

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35 EK was trained in SPAN-DOC assessments by PT until there was an agreement level of kappa 0.9
36 from case vignettes from the Nottingham Study. These data also included the sub-syndromal
37 assessment of personality difficulty (Tyrer *et al.*, 2015a). She then recorded SPAN-DOC ratings from
38 the 25 other vignettes, developed by KO, without any knowledge of the agreed ICD-11 severity levels
39 for each of the vignettes. Once the SPAN-DOC and ICD-11 ratings had been completed, the best
40 possible fit of SPAN-DOC scores and levels was estimated, and with this algorithm only three of the
41 cases were mis-classified. This is shown in Table 3.
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49 [Table 3 near here]

50 51 52 53 **Part 4: Application of SPAN-DOC into patients with eating disorders**

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56 *Sample Characteristics* : The mean age (SD) of the participants was 30.9 (9.5) years; 85 of the
57 participants (94%) were female; 84 patients (95.4%) were Caucasian; 55 patients (61.1%) with eating
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3 disorders had more than one co-occurring axis I disorders, among which depression was the most
4 common (N=32) followed by substance dependency (N=15).
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13 *Cluster analysis of SPAN-DOC in eating disorders* : From the results of the hierarchical cluster
14 analysis in the patients with eating disorders, the squared Euclidean distances, R2, indicated that the
15 four ± 1 clusters was the best number of clusters. We chose the three-cluster solution, which was
16 comparable with the results of other research in patients with eating disorders (Claes *et al.*, 2006).
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20 The first prototype is characterized by high scores on moodiness/emotional lability, impulsivity,
21 anxiousness, worthlessness, suicidality, anger/irritability, sensation/novelty seeking, and vulnerability
22 and we labeled it the emotionally dysregulated cluster. The second prototype had high scores on
23 anxiousness, hypersensitivity, introspection/introversion, and passive dependence/indecisiveness and
24 was called the anxious dependent cluster. The third prototype shows low scores in the overall
25 dimensions with a relatively high score in entitlement and was called the self-aggrandisement cluster.
26 The total score of the self-aggrandisement cluster was significantly lower than those of the other 2
27 clusters [F(2,87)=63.67, p<0.01]. Among the patients with eating disorders, the traits of callousness
28 (0.08±0.31; min 0, max 2) and aloofness/coldness/detachment (0.09±0.36; min 0, max 2) rarely
29 showed.
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39 *Conversion of the SPAN-DOC scores into ICD-11 levels for the eating disorder patients* : SPAN-DOC
40 scores were converted to the levels of ICD-11 personality disturbance. 31 patients with eating
41 disorders (34.4%) were classified as having no personality disturbance, 32 patients (37.8%) were
42 classified as having a personality difficulty, 20 patients (22.2%) were classified as having a mild
43 personality disorder, and 7 (7.8%) patients were classified as having a moderate personality disorder.
44 No patient with eating disorders were classified as having a severe personality disorder.
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50 **DISCUSSION**

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55 The aims of this study were to assess the psychometric potential of SPAN-DOC with regard to its
56 reliability (Part 1) and validity for assessing personality disorder (Part 2), its relation with the
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3 proposed ICD-11 classification of personality disorders (Part 3), and its use in an eating disorder
4 population (Part 4). These interleaving studies were intended to serve as a template for further work
5 on this method of assessment and provide evidence of personality function that goes beyond self-
6 report and interview measures. This is the first study to incorporate a personality assessment using
7 notes and documents, the SPAN-DOC.
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11 In part 1 of the study, the inter-rater reliability of SPAN-DOC was found to be satisfactory using
12 standard case vignettes. Although reliability, the extent of agreement between assessors, is an essential
13 first step in validation of a measure, the inter-rater reliability of personality disorder has been low
14 even with structured interviews (Clark and Harrison, 2001, Zimmerman, 1994). In this study, the high
15 level of inter-rater reliability of SPAN-DOC was encouraging, with agreement shown to be
16 satisfactory with similar range to the PAS (Tyrer and Alexander, 1979).
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21 In part 2 of the study, the SPAN-DOC was investigated in a clinical sample with personality
22 disturbance. The alpha value of SPAN-DOC suggested that the overall score has good internal
23 consistency. The factor solution of SPAN-DOC was extracted with 6 factors, although this might well
24 be reduced subsequently. When these are applied to the proposed 6 domains of ICD-11, the first factor
25 can be separated into the detached and dissocial dimensions, the second factor into the disinhibited
26 domain, the third factor into the negative affectivity domain, the fourth factor into the dissocial
27 domain, and the fifth and sixth factors into the anankastic domain. These are reasonably consistent
28 with other data from a different population (Mulder et al., 2016) and also approximate fairly well to
29 the 5 domain traits in the ICD-11 of personality disorders. This outcome points at the good content
30 validity of the SPAN-DOC, even though the dissocial domain was spread over 2 factors. One reason
31 of this discordance between dissocial domain and factors of SPAN-DOC may come from our sample's
32 characteristics in which we were not able to include a forensic population, but the presence of the
33 dissocial domain in the first factor suggests greater variance in this domain.
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42 The total SPAN-DOC score was correlated well with the SFQ core, suggesting that the total
43 SPAN-DOC score is indeed an indicator of social function.
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46 In part 4 of the study, our cluster analysis replicated the three factor model of personality
47 prototypes in patients with eating disorders, which is consistent with the accumulating evidence from
48 the dimensional analysis (Claes *et al.*, 2006, Goldner *et al.*, 1999, Holliday *et al.*, 2006, Strober, 1983,
49 Thompson-Brenner and Westen, 2005). In our study, the self-aggrandisement type was characterized
50 by perfectionism and high functioning and consisted of 55.6% of the patients with eating disorders.
51 The emotionally dysregulated type was characterized by emotional lability and impulsivity and
52 consisted of 27.8% of the patients with eating disorders. The anxious/avoidant type was characterized
53 by anxiousness, hypersensitivity and introversion and consisted of 16.7% of the patients with eating
54 disorders. Another finding in this study was that the scores of the antisocial or schizotypal domains
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3 were low in our subjects as previously reported (Holliday *et al.*, 2006, Karwautz *et al.*, 2003, Milos *et*
4 *al.*, 2003) suggesting that these features are uncommon in patients with eating disorders.
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7 In part 4 of the study, the results of the conversion of SPAN-DOC scores into ICD-11 levels of
8 personality disturbance were consistent with previous studies (Cassin and von Ranson, 2005). 30% of
9 patients with eating disorders had comorbid personality disorders, and the number increased to 64.4%
10 when personality difficulty was included. Personality difficulty is not deemed to be a disorder but
11 would be placed in the part of the classification that relates to non-disease entities that constitute
12 factors influencing health status and encounters with health services (Z codes in ICD-10) (Tyrer *et al.*,
13 2015a). The category of personality difficulty can be assigned if it is relevant to the provision of
14 health services, and it refers to a disturbance that might be manifested only intermittently in specific
15 circumstances (eg, when under stress) or in particular environmental settings.
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21 There are several possible ways of linking the scores of the 26 variables in SPAN-DOC to other
22 measures of personality disorder but the use of the total score as the discriminating factor fit well with
23 the ICD-11 concept of personality disorder and no other alternative was realistically considered.
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26 There are some limitations that we need to acknowledge in this study. The first is that this study
27 was conducted with the Korean version of SPAN-DOC, so the findings need to be confirmed with the
28 original English version. Other limitations are that the results of SPAN-DOC was not separately
29 verified with interview in the British patients with eating disorders in our study, and the matching of
30 SPAN-DOC scores with ICD-11 levels on the basis of vignettes only is less accurate than interview
31 measures.
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36 Nevertheless, the present study provides fair to good evidence for the usefulness of dimensional
37 assessment from clinical records in the assessment of personality disorder. Comparisons with other
38 formal measuring instruments would be needed to support these findings.
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44 **Acknowledgement**

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For Peer Review

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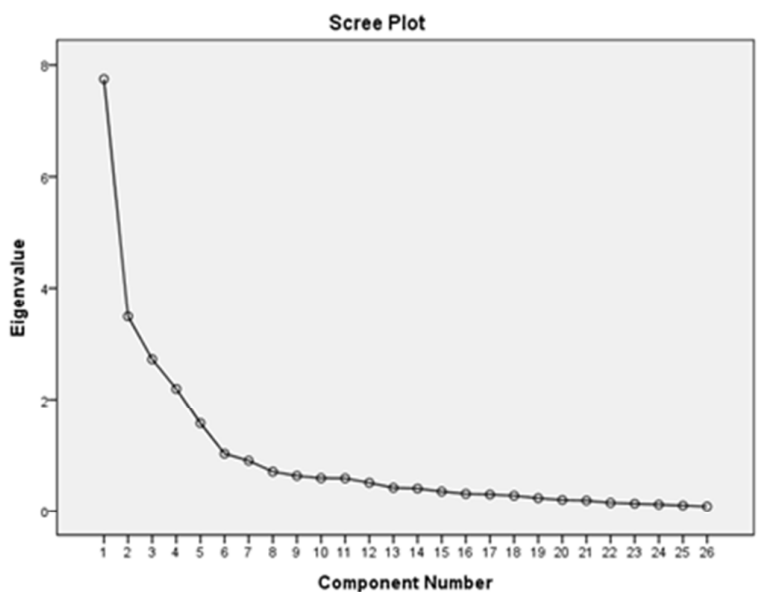


Figure 1. Scree plot of Schedule for Personality Assessment from Notes and Documents (SPAN-DOC) in patients with personality disturbance in Part 1

Peer Review

Table 1. Distribution and clinical characteristics of participants in Part 1 (n=130)

	Value	Frequency	Percent (%)	
Gender	Male	83	63.8	
	Female	47	36.2	
Marriage	Single	66	50.8	
	Married	28	21.5	
	Divorced	26	20.0	
	Separated	3	2.3	
	Widowed	5	3.8	
	Re-married	2	1.5	
Job	Unemployed	87	66.9	
	Employed	43	33.0	
Status	Inpatients	112	86.2	
	Outpatients	18	13.8	
	Mean	SD.	Min ~ Max	
Age (year)	39.09	13.71	16 ~ 72	
Education (year)	11.41	3.44	6 ~ 18	
NEO-FFI				
	Neuroticism	41.6	8.1	26~58
	Extraversion	35.8	8.3	14~54
	Openness	38.6	6.3	20~51
	Agreeableness	39.9	7.2	15~57
	Conscientiousness	40.6	8.7	14~59
SFQ	12.2	3.9	2~22	

SD, standard deviation; NEO-FFI, NEO Five Factor Inventory; SAPAS, Self-report Standardized Assessment of Personality-Abbreviated Scale; SFQ, Social Functioning Questionnaire

Table 2. The rotated factor loadings for the first six components of SPAN-DOC

	Components					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Moodiness/emotional lability	-.028	.757	.119	.064	-.003	.320
Anxiousness	.248	.578	.026	-.210	.148	.510
Anger /irritability	.207	.772	.137	.140	-.031	.082
Vulnerability	.273	.402	.590	-.097	.060	-.109
Resourcelessness	.123	.169	.781	.053	-.081	.001
Suspiciousness/mistrust	.523	.659	-.059	-.082	.044	.047
Hypersensitivity	.231	.791	.010	.067	.191	.056
Aggression	.055	.797	.023	.310	.161	-.104
Worthlessness	.335	.199	.590	-.329	.228	.012
Suicidality	.316	.378	.387	-.026	.289	-.189
Eccentricity	.676	.135	.170	.097	-.204	.254
Emotional dependence /neediness	-.076	-.201	.707	.068	.295	.310
Passive dependence/ indecisiveness	.117	-.025	.644	-.062	.167	.511
Anhedonia	.769	.223	.175	-.087	.191	.055
Entitlement	.106	.028	-.110	.888	.181	-.030
Exhibitionism	.040	.117	-.017	.905	.074	-.011
Introspection/introversion	.836	-.067	.209	-.157	.191	.158
Shyness	.611	.010	.251	-.155	.338	.237
Aloofness/coldness/detachment	.843	.167	-.066	.126	.112	-.062
Sensation/novelty seeking	-.057	.211	.183	.830	-.042	.191
Impulsivity	-.112	.547	.423	.401	-.049	-.126
Hyperperfectionism	.113	.202	-.087	.256	.801	.203
Callousness	.782	.260	.062	.247	.034	-.019
Irresponsibility	.106	.000	.776	.144	-.287	.007
Inflexibility	.512	.138	.122	.047	.719	.106
Hypochondriasis	.242	.219	.075	.203	.185	.703

SPAN-DOC: Schedule for Personality Assessment from Notes and Documents

Loadings greater than 0.5 are presented in bold.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Table 3. Correlation between five factors of NEO and 26 personality variables of SPAN-DOC

	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Moodiness / emotional lability	.095	.041	.005	-.159	.059
Anxiousness	.130	-.027	-.037	-.128	-.070
Anger / irritability	-.009	-.032	-.023	-.156	.028
Vulnerability	.102	-.135	-.217*	-.091	-.104
Resourcelessness	.012	.044	-.047	.070	.011
Suspiciousness / mistrust	.143	-.297**	-.248*	-.381**	-.151
Hypersensitivity	.109	-.259**	-.133	-.260**	-.130
Aggression	.012	-.062	.048	-.271**	-.011
Worthlessness	.231*	-.232*	-.325**	-.128	-.218*
Suicidality	.080	-.258**	-.175	-.197*	-.177
Eccentricity	.066	-.153	.069	-.013	.026
Emotional dependence / neediness	.166	-.023	-.021	-.044	-.075
passive dependence / indecisiveness	.147	.008	-.123	.020	-.167
Anhedonia	.260**	-.470**	-.295**	-.348**	-.373**
Entitlement	-.323**	.116	.272**	-.009	.298**
Exhibitionism	-.257**	.195*	.165	-.082	.191
Introspection / introversion	.139	-.399**	-.187	-.119	-.262**
Shyness	.213*	-.313**	-.206*	-.135	-.180
Aloofness / coldness / detachment	.135	-.512**	-.223*	-.428**	-.288**
Sensation / novelty seeking	-.070	.152	.183	-.230*	.144
Impulsivity	.051	.065	.070	-.211*	.091
Hyperperfectionism	-.006	-.020	-.010	-.034	.086
Callousness	.114	-.371**	-.187	-.423**	-.259**
Irresponsibility	.063	.044	-.040	.026	-.008
Inflexibility	.197*	-.362**	-.227*	-.257*	-.258**
Hypochondriasis	.130	-.019	.065	-.143	.037

SPAN-DOC: Schedule for Personality Assessment from Notes and Documents
 Pearson's correlation coefficients (r) are presented.

* p -value <0.05, ** p -value<0.01

Table 4. The clinical characteristics of the patients with eating disorders in Part 4 (N=90)

Characteristics	AN (N=48)	BN (N=33)	BED (N=9)
Age, years	29.70±10.23	30.58±7.09	38.67±10.76
Male (%)	3(6.3%)	1(3.0%)	1(11.1%)
Body mass index, kg/m ²	15.96±2.00	21.42±2.54	44.86±11.02
EDE-Q, global	3.37±1.69	4.70±1.00	3.78±1.27

AN, Anorexia nervosa; BN, Bulimia nervosa; BED, Binge eating disorders; EDE-Q, Eating Disorders Examination Questionnaire; Data are shown as mean ± SD or number (%).

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