

## MULTIVARIATE ANALYSIS OF PERCEIVED DYSFUNCTION RATINGS OF PERSONALITY DISORDER SYMPTOMS

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Dysfunction in personality disorder symptoms was assessed using multivariate techniques to analyse lay judges' ( $N = 216$ ) ratings of occupational impairment, social impairment, and personal distress. Factor analysis revealed that ratings of occupational impairment and social impairment loaded onto distinct factors. Personal distress ratings loaded onto two separate factors: high distress and low distress. Multidimensional scaling revealed two dimensions for overall dysfunction among personality disorders: severity of dysfunction and internalization-externalization. The dimensions were independence-dependence and severity of dysfunction for occupational impairment, interpersonal involvement and dominance-submission for social impairment, and internalization-externalization and severity for personal distress.

*Functional impairment*, defined as ...*clinically significant distress, or impairment in social, occupational or other important areas of functioning...* (American Psychiatric Association, 1994, p. 633), is a core feature of personality disorder in the DSM-IV (American Psychiatric Association, 1994). Previous research has examined the relationship between overall dysfunction and personality disorder (PD). For example, Skodol et al. (2002) found high levels of dysfunction in individuals with PDs even relative to those with a major Axis-I disorder. Personality-disordered individuals were more likely to be divorced,

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Keywords: personality disorder, occupational impairment, social impairment, personal distress.

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separated, or never to have married. More unemployment, frequent job changes, or periods of disability were also characteristic of those with PDs.

Skodol et al. (2002) also examined the relative degree of dysfunction across a number of PDs. Schizotypal and borderline PDs were associated with relatively high levels of dysfunction, whereas obsessive-compulsive PD was associated with a relatively low level of dysfunction. Similar results were found in an earlier study by Nakao et al. (1992): schizotypal, paranoid and borderline PD were found to involve the most dysfunction and histrionic and obsessive-compulsive PD the least. Sprock, Crosby, and Neilsen (2001), using lay raters, found that the highest overall dysfunction was associated with antisocial and borderline PD and the lowest with histrionic and schizoid PDs.

There is a scarcity of research that examines the empirical basis of the rationally derived categories of dysfunction: occupational impairment, social impairment, and personal distress. Further examination of these three categories is likely to have important implications for theory and research in personality disorders. Examination of PDs in terms of these three categories involves a more fine-grained analysis of dysfunction. Two disorders could have the same level of overall dysfunction, but one might be characterized by high personal distress and the other by significant occupational and social dysfunction. Analysis of these different profiles of dysfunction is likely to clarify theoretical distinctions between the PDs and to have therapeutic applications. For example, a PD characterized by personal distress may be more likely to be associated with treatment motivation, whereas a disorder with high levels of social dysfunction may be associated with therapist-client conflict.

Two recent studies have investigated the three DSM-IV (American Psychiatric Association, 1994) domains of impairment among PDs. Funtowicz and Widiger (1999) had clinicians rate the severity of dysfunction for the PD symptoms in terms of occupational impairment, social impairment, and personal distress. Female-typed disorders (dependent and borderline) were characterized by relatively high levels of personal distress and male-typed disorders (paranoid and antisocial) were characterized by relatively high levels of occupational and social impairment. Funtowicz and Widiger also found high overall dysfunction for paranoid and borderline PD and low overall dysfunction for schizoid and histrionic PD, patterns congruent with the findings of Skodol et al. (2002), Nakao et al. (1992) and Sprock et al. (2001). Howell and Watson (2002) replicated the findings of Funtowicz and Widiger with lay raters.

Funtowicz and Widiger (1999) and Howell and Watson (2002) demonstrated several quantitative differences in the amount of dysfunction that PD symptoms manifested in the three domains of impairment. However, each PD may have a different profile of dysfunction, raising the possibility that the PDs are different from each other in a qualitative sense. For example, in the Howell and Watson

study, paranoid and borderline PD had a similar level of occupational impairment. However, the manifestation of occupational impairment in paranoid PD may be very different from occupational impairment in borderline PD. Moreover, the amount of social impairment and personal distress differs across these disorders despite their similarity on occupational impairment, and those differences may affect the manifestation of occupational impairment.

There appear to be no studies that examine the relationships between the PDs in terms of the three domains of impairment. The purpose of the current study was to further examine the data previously analysed by Howell and Watson (2002) by performing a detailed analysis of the underlying structure of occupational impairment, social impairment, and personal distress in personality disorder. An initial analysis was to determine if occupational impairment, social impairment and personal distress represent three distinct classes of dysfunction. The second stage of inquiry examined qualitative differences between PDs in terms of the three domains of dysfunction.

## METHOD

### PARTICIPANTS

Participants were 216 undergraduate students enrolled in personality and abnormal psychology courses at a university studies college. The mean age of participants was 23 (range = 17 to 54), and 71.3% were female (seven participants did not report age and one did not report sex).

In the current study, lay judges made impairment and distress ratings of personality disorder diagnostic criteria. Howell and Watson (2002) validated the use of lay judgments of social impairment, occupational impairment, and personal distress associated with disorder symptoms by showing that rank order correlations between the mean ratings of lay and clinician judges for personality disorder symptoms were strong for ratings of social impairment ( $r_s = .84$ ), occupational impairment ( $r_s = .94$ ), and personal distress ( $r_s = .99$ ). Moreover, as described above, lay judgments revealed a pattern of dysfunction between male- and female-typed personality disorders that strongly converged with that emerging on the basis of clinician judgments. Finally, the findings of Howell and Watson converged strongly with those obtained by Sprock et al. (2001), who also employed lay judges in making dysfunction ratings of personality disorder symptoms. In sum, the use of lay raters in the current research is justified given that our study was focused on the *relative* pattern of the different types of impairment occurring in male- and female-typed disorders, and given that previous research has demonstrated a strong convergence both between different groups of lay judges and between lay and clinician judges in the pattern of dysfunction associated with personality disorders.

### PROCEDURE AND MATERIALS

We informed participants that the study concerned lay judges' perceptions of the degree of social impairment, occupational impairment, and personal distress associated with the symptoms comprising various PD symptoms. Participants rated each symptom on each of these three dimensions using a 7-point scale. The scale included four verbal labels (i.e., 1 = *none*, 3 = *mild*, 5 = *moderate*, and 7 = *severe*), but it was emphasized that participants could use any number from 1 through to 7 when making each rating. The rating scale was identical to that employed by Funtowicz and Widiger (1999), who reported acceptable levels of internal consistency. To orient themselves to the nature of their rating task, participants read definitions of social impairment, occupational impairment, and personal distress and then read one sample symptom which did not appear among the symptoms listed on the questionnaire "complains of being misunderstood and unappreciated by others". Participants also read hypothetical ratings of social impairment (rated as 6 in the example), occupational impairment (rated as 5), and personal distress (rated as 2) for the sample symptom.

Individual symptoms for all of the PDs were listed in the same, randomized, order for all participants. Approximately 10 symptoms appeared on each page of the questionnaire, and to the right of each symptoms three blank spaces in which participants placed their ratings of occupational impairment, social impairment, and personal distress. Symptoms were worded as in the DSM-IV (American Psychiatric Association, 1994), including all parenthesized portions of symptom descriptions. For clarity, we added definitions of the terms *dissociative symptoms*, *impressionistic*, *illusion*, *affect*, and *idea of reference* to the description of five symptoms.

## RESULTS

To assess the internal reliability of dysfunction ratings, Cronbach's alpha was calculated for the ten PDs and three types of ratings. For occupational impairment, reliability coefficients ranged from  $\alpha = .61$  for obsessive-compulsive PD to  $\alpha = .83$  for narcissistic PD. For social impairment, they ranged from  $\alpha = .67$  for dependent PD to  $\alpha = .84$  for narcissistic PD. In the case of personal distress, the values were from  $\alpha = .70$  for obsessive-compulsive PD to  $\alpha = .85$  for paranoid PD.

### FACTOR ANALYSIS

In order to assess the factor structure of the three types of ratings, principal components analysis of the set of 30 ratings (10 personality disorders by three types of dysfunction) was performed with a Varimax rotation. Each rating

consisted of the average occupational impairment, social impairment or personal distress across all criteria for each personality disorder.

**TABLE 1**  
FACTOR ANALYSIS OF IMPAIRMENT RATINGS

Factor	1	2	3	4	5
<b>Occupational Impairment</b>					
Paranoid	.86				
Histrionic	.83				
Narcissistic	.81				
Schizotypal	.75				
Schizoid	.72				
Antisocial	.71				
Avoidant	.71				
Borderline	.71				
Dependent	.64				
Obsessive-compulsive	.57				
<b>Personal Distress 1</b>					
Narcissistic		.86			
Histrionic		.81			
Schizoid		.80			
Antisocial		.80			
Obsessive-Compulsive		.70			
Schizotypal		.62			
<b>Social Impairment</b>					
Histrionic			.80		
Schizoid			.79		
Narcissistic			.79		
Schizotypal			.76		
Paranoid			.76		
Obsessive-compulsive			.71		
Avoidant			.71		
Antisocial			.62		
Dependent			.57		
Borderline			.56		
<b>Personal Distress 2</b>					
Paranoid				.79	
Dependent				.72	
Borderline				.70	
Avoidant				.70	
Eigenvalue	6.50	4.48	6.40	3.79	1.24
% Variance	21.67	14.95	21.34	12.66	4.15

Note: Varimax rotation. Factor loadings below .50 are omitted.

The results confirm the orthogonality of the three types of impairment. A five-factor solution was obtained, accounting for 74.49% of the variance (see Table

1). The first four of these factors were interpretable. The fifth factor accounted for a small amount of the variance, with the majority of loadings between .00 and .20 and with no loadings above .50. Factor 1 is occupational impairment, with occupational impairment ratings for all ten PDs loading above .50 on this factor.

Factor 3 consists of social impairment, with social impairment ratings for all ten PDs loading above .50. Personal distress loaded on Factors 2 and 4: Factor 2 represents low personal distress with distress ratings for narcissistic, histrionic, schizoid, antisocial, obsessive-compulsive and schizotypal PD loading on this factor. Factor 4, representing high personal distress, consisted of distress ratings for paranoid, dependent, borderline and avoidant PD. The average personal distress ratings computed for PDs of which the distress ratings loaded onto Factor 2 ( $M = 4.18$ ,  $SD = .84$ ) were significantly less than those for PDs of which the distress ratings loaded onto Factor 4 ( $M = 5.62$ ,  $SD = .70$ ),  $F(1, 215) = 964.3$ ,  $p < .001$ .

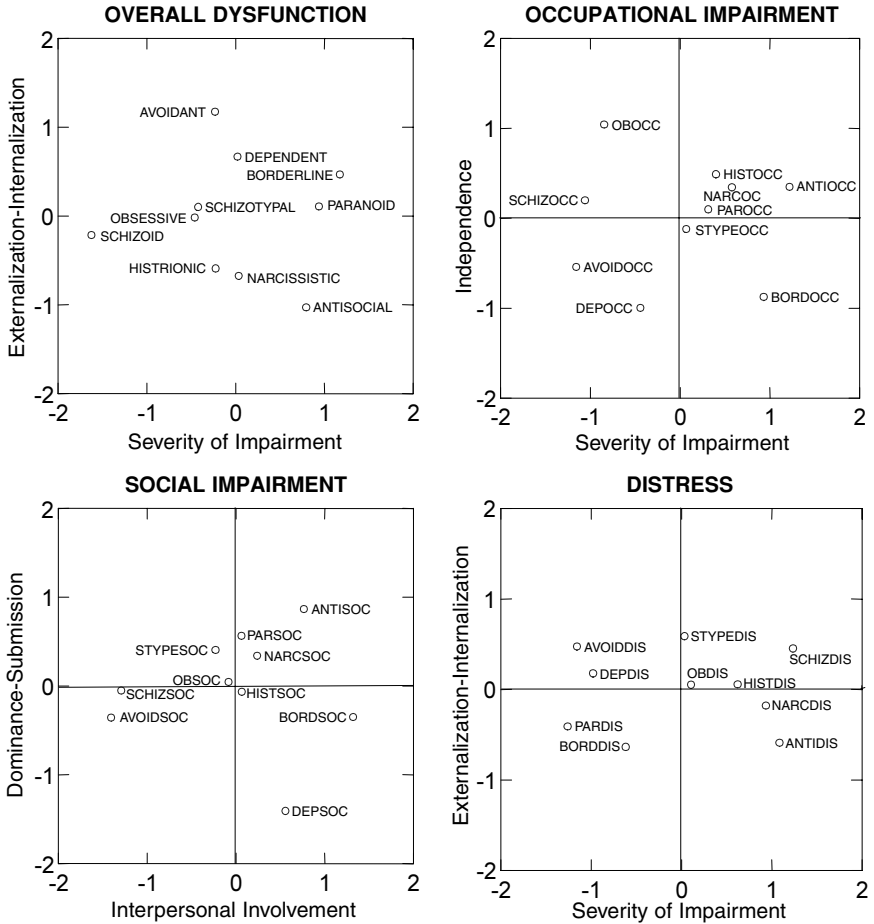
#### MULTIDIMENSIONAL SCALING (MDS) ANALYSIS

In order to examine more closely the structure of dysfunction ratings, separate MDS analyses were performed on the overall dysfunction, occupational impairment, social impairment and personal distress ratings for the PD scales. Pearson correlation matrices for the ratings were scaled with the Kruskal method using SYSTAT. The MDS on the overall dysfunction ratings (i.e., averaged across occupational impairment, social impairment, and personal distress) produced a two-dimensional solution (see Figure 1),  $\text{Stress}^1 = .092$ ,  $R^2 = .94$ . Dimension 1 appears to represent a severity dimension ranging from borderline PD on the high end to schizoid PD on the low end. Dimension two is most likely to be an externalization-internalization dimension, ranging from avoidant PD on the internalization end to antisocial PD on the externalization end.

For the occupational impairment ratings, a two-dimensional solution was obtained with  $\text{Stress} = .146$ ,  $R^2 = .86$  (see Figure 1). Dimension 1 appears to be a severity dimension ranging from high occupational impairment (antisocial PD) to low occupational impairment (avoidant PD). Dimension 2 is likely to be an independent (obsessive-compulsive)-dependent (dependent PD) dimension. Overall, the ten disorders formed two clusters: antisocial, borderline, histrionic, narcissistic, paranoid, and schizotypal PD and schizoid, avoidant, dependent and obsessive-compulsive PD. These two clusters are, respectively, high occupational impairment ( $M = 4.63$ ,  $SD = 0.83$ ) and low occupational impairment ( $M = 3.96$ ,  $SD = 0.71$ ),  $F(1,215) = 370.46$ ,  $p < .001$ .

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<sup>1</sup> Stress is a commonly used measure of goodness-of-fit for a MDS solution. The lower the value, the better the fit of the solution.



**Figure.** Multidimensional scaling of overall dysfunction, occupational impairment, social impairment and personal distress ratings of personality disorder symptoms. Occ.= occupational impairment., Soc. = social impairment, and Dis. = personal distress.

For social impairment, the two-dimensional solution, Stress = .104,  $R^2 = .94$ , appears to be dominance-submission (antisocial versus dependent PD) and interpersonal involvement (avoidant versus borderline PD; see Figure 1). This result is similar to previous MDS analysis of personality disorder inventory data reported by Watson and Sinha (1995), who also found a dominance-submission dimension and an interpersonal involvement dimension. Since many of the PD symptoms are likely to involve social impairment, these ratings are likely to be similar to self-report questionnaire responses based upon diagnostic criteria. The Coolidge Axis-II Inventory (CATI, Coolidge, 1984) is based upon the DSM

criteria. In order to further validate the obtained MDS solution, the loadings derived from a previous sample ( $N = 305$ ) of university students (Watson & Sinha) were entered into the initial configuration, as a confirmatory multidimensional scaling analysis as described by Wilkinson (1989). The obtained solution revealed a good fit between the CATI data and the social impairment ratings,  $\text{Stress} = .08$ ,  $R^2 = .97$ . In addition, rank order (Spearman's rho) correlations between the two sets of MDS loadings were  $\rho_s = .75$  for the dominance-submission dimension and  $\rho_s = .67$  for the interpersonal involvement dimension.

In the case of personal distress, a two-dimensional solution also emerged,  $\text{Stress} = .07$ ,  $R^2 = .97$  (see Figure 1). Dimension one involves high (avoidant, dependent, paranoid, borderline PD) versus low personal distress (schizoid, schizotypal, obsessive-compulsive, histrionic, narcissistic, antisocial PD). This result is consistent with the factor analytic findings and with previous research by Funtowicz and Widiger (1999). In addition, Leaf et al. (1990) revealed that histrionic, narcissistic, antisocial and compulsive PDs are associated with low distress. Dimension two appears to be an internalization-externalization dimension, with schizoid and schizotypal PDs on the internalization end of the dimension and borderline and antisocial PDs on the externalization end. Schizoid, avoidant and schizotypal PDs are characterized by internalized distress and antisocial and borderline PDs are characterized by acting out. Histrionic PD is also characterized by externalization, and fell within the middle of this dimension. This appears to be a relative difference, with antisocial and borderline being more characterized by acting out. When these two dimensions are combined, four types emerge: high distress, internal (avoidant, dependent), high distress, external (paranoid, borderline), low distress, internal (schizoid, schizotypal), low distress, external (obsessive-compulsive, histrionic, narcissistic, antisocial).

## DISCUSSION

Personality disorder symptomology involves dysfunction in different life domains. The results of the factor analysis provide strong evidence for the conceptualization of occupational impairment, social impairment, and personal distress as distinct, orthogonal domains of dysfunction. Personal distress may be something different for the set of disorders that loaded on Factor four (paranoid, dependent, borderline and avoidant PD) compared to the remaining PDs that loaded on Factor two. High versus low personal distress is a reasonable interpretation of this dimension.

The results of the MDS analyses reveal that the personality disorders have distinct patterns of interrelationship depending upon the type of dysfunction

being measured. This provides additional evidence for the validity of the separation of the three domains, for similar patterns would emerge if they were not distinct.

### **OCCUPATIONAL IMPAIRMENT**

There is little literature on personality disorder and the workplace. The issue is complicated because some personality traits can cause dysfunction in the workplace while others can be adaptive to certain occupations. Oldham and Morris (1995) offer some possible insight on this issue derived from clinical evidence. The individual with the disorder can be a hardworking individual and a good employee if he or she is in a career that matches his/her personality characteristics. For example, narcissistic individuals can be driven to high achievement but may sabotage themselves by exaggerating their abilities, exploiting others in order to advance their careers, and lashing out when criticized (Oldham & Morris).

The DSM-IV personality disorders are a set of 10 different behavior patterns. Therefore, in the occupational domain, it is likely that these personality types will exhibit different approaches to performing the required tasks of an occupation and will interact with others on the job in different ways. Finally, persons of different personality types may also select, be selected for, or somehow end up in different occupations because of their personality.

Occupational impairment is characterized by an independence-dependence dimension ranging from high independence (obsessive-compulsive) to low independence (dependent). A likely interpretation of this difference is that individuals with obsessive-compulsive PD are unlikely to allow others to perform tasks for them because they perceive others as being unable to do so properly. Obsessive-compulsive PD individuals are also likely to insist that others perform tasks to their rigorous standards. Dependent individuals are likely to be very cooperative in the workplace, but may be unable to initiate projects on their own. However, they are likely to volunteer for unpleasant tasks that others do not want to do in order to maintain the dependent relationship. According to Oldham and Morris (1995), an individual with this personality style is well-suited to a career where he or she can take direct orders from a superior.

### **SOCIAL IMPAIRMENT**

With social impairment, the results are consistent with more recent research specifically examining social impairment (Oltmanns, Melley, & Turkheimer, 2002; Svanborg, Gustavsson, Mattila-Evenden, & Asberg, 1999) and with a line of research that has related PDs to the interpersonal model of personality. Oltmanns et al. demonstrated the importance of social impairment as a form of dysfunction in PD, including its independence from negative mood. Svanborg et

al. examined PDs and difficulty in social relationships, revealing that “interpersonal aversiveness” was associated with severity of personality pathology. Interpersonal aversiveness is a blend of irritability, suspicion and detachment, along with low socialization. Interpersonal aversiveness could be related to the dimensions underlying social impairment that emerged in this study. Detachment and low socialization mirror the low end of our interpersonal involvement dimension. Irritability and suspicion are consistent with the dominant pole of the dominance-submission dimension.

The interpersonal nature of PDs has been the subject of several investigations that have related PDs to the interpersonal model dimensions of dominance-submission and warm-cold (e.g., De Jong, Van den Brink, Jansen, & Schippers, 1989; Soldz, Budman, Demby, & Merry, 1993). The PDs varied to a great extent on the dominance-submission dimension (e.g., antisocial/narcissistic are dominant, dependent/avoidant are submissive; Soldz et al.). With the warm-cold dimension, disordered personalities are distributed on the neutral to cold end of the interpersonal model, rather than on the warm side of the spectrum which is more closely associated with normal personality (De Jong et al.).

### PERSONAL DISTRESS

The results of this research related personal distress to severity and an internalization-externalization dimension. In terms of severity, PDs varied widely in personal distress in the Funtowicz and Widiger (1999) and Howell and Watson (2002) studies, varying from low (schizoid, narcissistic) to high (borderline, paranoid). Beyond severity, personal distress may be related to an internalization-externalization dimension. Widiger, Trull, Hurt, Clarkin, and Frances (1987) found a third dimension labeled internal-rumination versus external, behavioral, acting out. In this study, the PDs varied on an internalization-externalization dimension, with schizoid and obsessive-compulsive on the “internal rumination” end of the spectrum and antisocial, paranoid and borderline on the “behavioral acting out” end of the scale. The observation that externalization or internalization of problems is related to mental disorders has been noted by several researchers (Krueger, 1999; Krueger, Caspi, Moffitt, & Silva, 1998). When severity and internalization-externalization are combined, four different types emerge: high distress, internal (avoidant, dependent); high distress, external (paranoid, borderline); low distress, internal (schizoid, schizotypal); and low distress, external (obsessive-compulsive, histrionic, narcissistic, antisocial).

### LIMITATIONS AND FUTURE DIRECTIONS

The use of lay raters rather than clinicians is the most notable limitation of this research. As Garb (1997) has argued, it is unclear whether research using nonexpert raters generalizes to the domain of clinical judgment. However,

Howell and Watson (2002) found that correlational analyses revealed a high degree of correspondence between lay ratings and the clinician ratings reported by Funtowicz and Widiger (1999). It would be useful in the future to replicate these ratings with clinicians to ascertain the validity of the orthogonality of the three domains of dysfunction and to replicate the dimensional structure of the PDs within each domain of dysfunction.

Another possible avenue of research is a further investigation of the 17 markers of dysfunction recently identified by Parker et al. (2002): disagreeableness, inability to care for others, lack of cooperation, causing discomfort to others, ineffectiveness, lack of empathy, failure to form and maintain interpersonal relationships, impulsivity, inflexibility, maladaptability, immorality, extremes of optimism, self-defeating behavior, lack of directedness, lack of humor, and tenuous stability under stress. Many of these markers may be related to the three DSM-IV domains of impairment. It is possible that these markers are facets of these larger domains of impairment. Another possibility is that some of these are separate from the domains of impairment and represent other areas of impairment that warrant separate larger domains.

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