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## Personality factors from the five-factor model of personality that predict dissociative tendencies in a clinical population

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### Abstract

This study examined the relation between the five factor model of personality and dissociative tendencies using a heterogeneous clinical population. Thus, 86 psychiatric patients (33 male, 53 female) from a variety of adult psychiatric clinics completed the Dissociative Experiences Scale [Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Diseases*, 174, 727–735] and the Revised NEO Personality Inventory [Costa, P. T., & McCrae, R. R. (1992). *The revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources]. Results indicated that neuroticism, extraversion, and conscientiousness were all significantly correlated with dissociative tendencies. The data provide empirical support for the conceptual relations between dissociative tendencies and personality. © 2002 Elsevier Science Ltd. All rights reserved.

*Keywords:* Dissociation; Five factor model

Dissociation and the five factor model of personality are time honored and thoroughly researched constructs. However, very little research has investigated the relation between them. A more thorough analysis would help to better understand both normal, as well as pathological levels of dissociation.

There are a number of conceptual reasons to believe that there may be significant relationships between dissociation and the major constructs of personality as defined by the five factor model (FFM): neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

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In particular, *neuroticism* and dissociation can both be conceptualized as involving ineffective forms of coping (Watson & Hubbard, 1996). This is partially supported in that persons who experience the anxiety-related component of neuroticism, have been found to more readily dissociate when experiencing stress (Wolfradt & Meyer, 1997). It has also been found that persons rated as being more psychologically vulnerable are more likely to dissociate (Irwin, 1995), dissociation has been found to be high among persons with post-traumatic stress disorder (Bremnar & Marmar, 1998), and dissociation is particularly high among persons who are fearful and avoidant (Anderson & Alexander, 1996). Finally, dissociation has been found to be significantly higher among persons who are depressed (Dorahy & Schumaker, 1997), bulimic (Groth-Marnat & Michel, 2000; Vanderlinden, 1993), experience high levels of shame (Einstein, 1998), and feel powerless (Irwin, 1998). While none of these studies specifically used measures of neuroticism, the above variables (maladaptive coping, anxiety, vulnerability, PTSD, depression, bulimia, shame) form a cluster that appears to be highly related to what has usually been considered to be neurotic.

Similar to neuroticism, conceptual links suggest that dissociation may be negatively related to *extraversion*. Specifically, extraverts are more likely to use external means of coping such as seeking social support whereas those who are more introverted would be more likely to utilize more internal coping mechanisms such as dissociation. Empirical research supportive of such a relation include a negative correlation between daydreaming and extraversion (Zhiyan & Singer, 1997) and a negative correlation between dissociation and positive affect (Irwin, 1995; Kemberman, Russ, & Shearin, 1997).

*Openness to experience* includes personality facets of fantasy, aesthetic appreciation, and accessibility to a wide variety of feelings, actions, ideas, and values. As a result, it might be expected that it would be positively associated with dissociation. Indeed, absorption (a dimension of dissociation), has been found to correlate with openness to experience (Glisky & Kihlstrom, 1993). Similarly, fantasy prone persons have been found to be relatively high dissociators (Lynn, Pintar, & Rhue, 1997) as have those who daydream extensively (Zhiyan & Singer, 1997).

Since *conscientiousness* involves coping strategies which rely on careful and precise planning (Watson & Hubbard, 1996), it would seem that conscientiousness and dissociation would be negatively correlated. Some support for this might be the positive correlation between irrational thinking and dissociation (Norton, Ross, & Novotny, 1990). Finally, *agreeableness* has not been related to either daydreaming (Zhiyan & Singer, 1997) or coping strategies (Watson & Hubbard, 1996). Since both these constructs are related to dissociation, it would therefore be expected that agreeableness would similarly not be related to dissociation.

To date, only two studies have specifically investigated the link between dissociation and the FFM. Unlike the concepts detailed in the earlier review, Holtgraves and Stockdale (1991) hypothesized that dissociative tendencies would not relate to personality since they believed that dissociation was a fairly independent and distinct dimension of personality. Consistent with their prediction, they found only one small but significant correlation between dissociative tendencies and neuroticism and no significant correlations between dissociation and the remaining four factors of personality. In contrast to Holtgraves and Stockdale (1997), Goldberg (1999) found significant positive correlations between dissociative tendencies and both neuroticism and imagination (a facet similar to openness to experience), and negative correlations between dissociation and conscientiousness and agreeableness. Given the above quite discrepant findings, it would be important to both explain why this might have occurred, as well as design a study to optimally

test out the actual dissociation-FFM relation. While both studies used the NEO-PI-R, Holtgraves and Stockdale used the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) whereas Goldberg (1999) used the similar Curious Experiences Scale (CES; Goldberg, 1999) which was designed to assess levels of dissociation among normal populations. A further issue is that Goldberg (1999) used a large sample ( $N = 755$ ) which might have allowed him to detect small but clinically unimportant relations. Both studies used normal populations which might have resulted in a restricted range of responses relative to samples that have a wider range of responses as might be found in a clinical population.

The current study used a heterogeneous clinical population and controlled for possible age and gender effects. By using a clinical sample, a wider range of responses was likely to occur for both dissociation as well as some of the personality factors (especially neuroticism; Carlson, 1994; Grabe, Spitzer, & Freyberger 1999; Groth-Marnat, 1991). This increased the likelihood that both statistically significant and clinically meaningful relationships were detected. Information from a clinical population would also make the findings generalizable to clinical practice. Finally, a number of studies have found that age and gender influence degree of dissociation (Groth-Marnat, Roberts, & Ollier, 1999; Irwin, 1994; Ross, Joshie, & Curie, 1990). As a result, age and gender were controlled in the data analysis. The DES was used rather than the CES since the DES was designed for and has been used with clinical populations (and the current study also used a clinical populations). The DES also has the advantage that it has been used much more extensively than the CES. As a result, far more is known about its psychometrics and a greater number of comparisons can be made with other studies. Given the above considerations and literature review, it is hypothesized that, after controlling for other variables, dissociative experiences will be positively associated with neuroticism and openness to experience. Conversely, it is expected that dissociation would be negatively correlated with extraversion and conscientiousness but with only a negligible correlation with agreeableness.

## 1. Method

### 1.1. *Participants and procedure*

Eighty-six Australian clients (33 male, 53 female) from three outpatient clinics in Perth, Western Australia volunteered to participate in the study. The age ranged between 18 and 70 with a mean of 41.73 (S.D. = 13.85). Clients were diagnosed by their treating psychologist or psychiatrist and had a wide variety of disorders with the most frequent being depression (22%), generalized anxiety disorder (10%) and social phobia (8%). Additional diagnoses included adjustment disorder (2%), bipolar disorder (3%), dysthymia (5%), eating disorder (3%), neurological disorder (2%), obsessive compulsive disorder (2%), panic disorder (2%), psychosomatic condition (5%), post traumatic stress disorder (3%), drug dependence (1%), other/medical (25%), and undiagnosed (7%). Participants completed a general cover sheet requesting demographic information, the DES (Bernstein & Putnam, 1986), and the NEO-PI-R (Costa & McCrae, 1992). To prevent possible order effects, the presentation of the measures was counterbalanced by randomly giving half the participants the DES first followed by the NEO-PI-R, and half the participants were given the NEO-PI-R followed by the DES.

## 1.2. Measures

### 1.2.1. DES

The DES (Bernstein & Putnam, 1986) is a 28-item, self-report measure designed to assess proneness to dissociative experiences in terms of three main factors (amnesia, absorption, and depersonalization/derealization). The items are dissociative experience statements and are responded to on a 10-point Likert scale (0–100 with 10% increments). Responses indicate the percentage of time the participant has the nominated dissociative experience with higher scores representing a greater proneness to dissociative experiences. The DES is the most frequently used measure for dissociation (Holtgraves & Stockdale, 1997; van Ijzendoorn & Schuengel, 1996). It has excellent reliability ( $\alpha = 0.93$ ; test retest coefficients range between 0.78 and 0.84) and meta-analytic reviews suggest good convergent validity when used to evaluate dissociative experiences (overall Cohen's  $d = 1.05$ ) and traumatic experiences (van Ijzendoorn & Schuengel, 1996).

### 1.2.2. NEO-PI-R

The NEO-PI-R (Costa & McCrae, 1992) is a self-report inventory consisting of 240 statements presented in a five-point Likert format ranging from (*strongly agree*) to (*strongly disagree*). The NEO-PI-R was designed to measure the five domains of the FFM (Table 1). The test is non-threatening in that it does not ask sensitive questions and takes approximately 30 min to complete. Costa and McCrae (1992) report internal consistencies ranging from 0.86 to 0.95 and test retest reliabilities of 0.79 (Neuroticism), 0.79 (Extraversion), 0.80 (Openness to experience), 0.80 (Agreeableness), and 0.83 (Conscientiousness). Convergent and discriminant validity is excellent and indicate that it accurately measures the intended constructs (Costa & McCrae, 1992).

## 2. Results

Table 1 presents the means and standard deviation for the five domains along with their correlations with the DES. The mean for the DES was 10.75 with a standard deviation of 9.19. A further review of DES scores indicated that 17 participants (20%) scored above the critical cutoff of 20 with 4 (5%) scoring above the much higher cutoff of 30. Dissociation, as measured by the DES, was positively correlated with neuroticism (0.58) and negatively correlated with extraversion

Table 1  
Mean NEO-PI-R scores, standard deviations, and correlations with the DES ( $N = 86$ )

NEO-PI-R	<i>M</i>	S.D.	Correlation with DES
Neuroticism	63.14	12.98	0.58*
Extraversion	43.05	12.07	-0.34*
Openness to experience	47.26	9.80	0.09
Agreeableness	51.01	9.84	-0.16
Conscientiousness	42.22	12.81	-0.46*

\* $P < 0.01$ .

( $-0.34$ ) and conscientiousness ( $-0.46$ ). It should be noted that the subcategories (facets) for the five personality factors were not calculated since the sample size would have provided insufficient power for such an analysis. In contrast, there was an 80% chance of capturing medium to large associations between DES and each of the NEO-PI-R scales presented in Table 1 employing an alpha level of 0.05 to determine significance (no Bonferoni corrections were required).

Since the study was also interested in the influence of gender and order of presentation on the DES, means, standard deviations, differences between groups, and correlations were also calculated. The mean responses for female DES scores ( $M = 12.12$ ,  $S.D. = 10.01$ ) were higher than for male DES responses ( $M = 7.58$ ,  $M = 4.74$ ). It was also evident that participants who responded to the NEO-PI-R first followed by the DES had higher scores ( $M = 12.62$ ,  $S.D. = 9.35$ ) than participants who responded in the reverse order ( $M = 9.07$ ,  $S.D. = 8.04$ ). Independent samples *t*-tests (two tailed) found that the differences between the gender and order of administration groups were significant ( $P < 0.05$ ).

A hierarchical multiple regression was performed to further determine the predictive power of the NEO-PI-R factors on DES scores. However, the earlier differences between groups provided support for considering these as extraneous variables which should be adequately controlled when assessing the relative contribution of personality factors on dissociative tendencies. In addition, age was considered a possible extraneous variable due to previous research noting that dissociation tends to decrease with age (Groth-Marnat et al., 1999; Irwin, 1994; Ross et al., 1990). Finally, normality assumption was assessed graphically through histograms, box plots, normal probability plots, as well as statistically through the Lilliefors statistic and values on skewness and kurtosis. The examination of these charts and statistics in relation to DES scores suggested that this variable was positively skewed and contained four outliers. To eradicate the effect of these outliers and to normalize the distribution, a square root transformation was applied to the DES scores. Re-examination of the tests of normality revealed that the DES was now a graphically and statistically normal distribution.

Table 2  
Summary of hierarchical regression analysis for variables predicting dissociation ( $N = 85$ )

Variables	<i>B</i>	S.E. <i>B</i>	<i>sr</i>	$sr^2 \times 100$	$R^2$	delta $R^2$
<i>Step 1</i>					0.114	
Age	-0.01	0.01	-0.07	0.49		
Gender	-0.63	0.28	-0.24	5.76*		
Order	-0.57	0.29	-0.21	4.41		
<i>Step 2</i>					0.416	30.2
Age	0.01	0.01	0.09	0.81		
Gender	-0.48	0.24	-0.18	3.24*		
Order	-0.12	0.25	-0.04	0.16		
Neuroticism	0.05	0.01	0.30	9.00*		
Extraversion	-0.00	0.01	-0.02	0.04		
Openness to experience	0.02	0.01	0.10	1.00		
Agreeableness	0.01	0.01	0.08	0.64		
Conscientiousness	-0.02	0.01	-0.18	3.24*		

Note: one subject was removed since they were considered to be an outlier. \* $P < 0.05$ .

Given the earlier considerations and procedures, the first step of a regression analysis entered age, gender, and order into the analysis of DES (Table 2). This step produced an  $R^2$  value of 0.114,  $F(3,81) = 3.47$ ,  $P < 0.05$ . Gender was the only variable in Step 1 to be of significance in the prediction of DES ( $sr = -0.24$ ,  $P < 0.05$ ) and predicted 5.76% ( $sr^2 \times 100$ ) of the variance. The second (and final) step entered the five personality dimensions of the NEO-PI-R to evaluate the extent to which these predicted DES once age, gender, and order were controlled for (Table 2). Gender still remained a significant predictor ( $P < 0.05$ ) of DES but to a lesser extent than was observed in Step 1. The five personality factors in the second step increased  $R^2$  to 0.416 with the five factors together accounting for an additional 30.2% of the variance in DES scores. Thus, in the final step of the hierarchical regression, gender ( $sr = -0.18$ ,  $P < 0.05$ ,  $sr^2 \times 100 = 3.24$ ), neuroticism ( $sr = 0.30$ ,  $P < 0.05$ ,  $sr^2 \times 100 = 9.00$ ), and conscientiousness ( $sr = -0.18$ ,  $P < 0.05$ ,  $sr^2 \times 100 = 3.24$ ), all made a unique contribution to the prediction of dissociative tendencies (DES).

### 3. Discussion

Overall, the results are consistent with conceptualizations that the five factors (and specific components of these factors) predict level of dissociation. Specifically, the five factors as a whole accounted for 30.2% of the dissociation variance after controlling for the extraneous variables of age, gender, and order of test administration. This supports the view of one of the first researchers of dissociation, Janet (1907) who described personality as creating a premorbid vulnerability to dissociative experience. It also supports suggestions by Spiegel and Greenleaf (1992) and the empirical work of Goldberg (1999) that the degree to which people dissociate depends on their personality style. In contrast, the present findings do not support the work of Holtgraves and Stockdale (1997) who concluded that dissociation (as measured by the DES) does not seem to relate to personality as represented by the five-factor model.

A number of specific factors in the FFM were found to predict dissociation. The strongest, most robust factor was neuroticism which accounted for 9% of the unique variance. While not as strong, a negative correlation was found between dissociation and conscientiousness which accounted for 3.24% of the unique variance. The hypothesis that the more extraverted a person is, the less they dissociate was only given partial support. Whereas the correlation matrix indicated a significant negative correlation ( $-0.34$ ) and the overall contribution of the FFM was a full 30.2%, the *unique* variance of extraversion after controlling for age, gender, and order of administration was found to be a nonsignificant 0.04%. This suggests that it is closely connected to other variables (primarily neuroticism) which, when considered as a whole, do predict level of dissociation. Counter to expectations, openness to experience was not found to relate to level of dissociation.

The earlier personality predictors are consistent with the following three primary features of dissociation which consider it to be: (1) a *maladaptive* coping response to stress and trauma, (2) a psychobiological defense against *negative stimuli*, and (3) an *internally oriented* coping mechanism (Irwin, 1995, 1998; Lynn et al., 1997). Since dissociation is a maladaptive coping response, it is conceptually consistent with neuroticism which is also considered to be, in its broadest terms, a maladaptive style of coping characterized by avoidance, anxiety, and negative affect (Costa & McCrae, 1992). Neuroticism and dissociation are also associated with negative stimuli, specifically vulnerability (Irwin, 1995), fearfulness (Anderson & Alexander, 1996), depression (Dorahy

& Schumaker, 1997), abuse (Galletley, 1997), shame (Einstein, 1998), and powerlessness (Irwin, 1998). Finally, since extraverts use externally oriented coping mechanisms (i.e. social support; Amirkhan, Risinger, & Swickert, 1995; Watson & Hubbard, 1996) and are more likely to experience positive affect (Watson & Hubbard, 1996), it would be expected that there would be the negative correlation between extraversion and dissociation identified in the study. Somewhat similarly, the precise, rational style of persons who are conscientious would be inconsistent with the global depersonalizing and nonrational style of persons who are dissociators.

An interesting finding of the current study was that, when the NEO-PIR was administered first, the DES scores were significantly higher. It can be speculated that this was because the NEO-PIR is a more neutral, less pathologically oriented test than the DES. As a result, some participants might have become more relaxed and open when taking the NEO-PIR first thereby resulting in greater openness (and slightly higher scores) when later taking the DES. In contrast, when the more threatening DES was presented first, the participants might have become more inhibited and defensive in their responses thereby resulting in lower scores. However, the significance of this should be somewhat minimized in that, in the first step of the regression, order of test administration on its own did not contribute significantly to the prediction of dissociative tendencies.

The earlier findings, along with similar research (Groth-Marnat et al., 1999; Irwin, 1994; Ross et al., 1990), suggest that future investigations with dissociation should take into account gender, age, and possibly order of presentation since these may be extraneous variables which reduce the extent dissociation can be uniquely predicted by other variables. In addition, a replication and extension of the present study should be done using a larger sample which would enable researchers to establish the relation between the 30 facets (subcategories) of the FFM. It is an understanding of these subtle aspects of personality and dissociation which may increase the depth of knowledge of the constructs. It would also be interesting to refine knowledge further by administering the DES and NEO-PI-R only to those clients having either formal dissociative disorders or disorders known to be high in dissociation (PTSD, bulimia, etc.). A further extension of this would be to investigate whether or not longitudinal research can confirm whether or not the components of the FFM which are related to dissociation (neuroticism, extraversion, and conscientiousness) predispose a person to develop dissociative disorders or disorders high in dissociation. However, the current study was useful in supporting the dissociation-personality links that higher neuroticism was associated with higher levels of dissociation. In contrast, high extraversion and conscientiousness were found to be associated with lower levels of dissociation.

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