

Psychometric Evaluation of a Shortened Version of the 40-item Defense Style Questionnaire

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ABSTRACT

The 40-item version of the Defense Style Questionnaire (DSQ-40) is a widely used self-report measure of defense mechanisms. A previous study, however, has suggested that 12 items out of 40 are lacking in face validity. The aim of the present study was to evaluate the psychometric properties of a shortened version of the DSQ-40, deleting the items with insufficient face validity (DSQ-28), in a non-clinical sample of university students. Exploratory factor analysis extracted a five-factor structure. The pattern of relationships for the five factors along with coping strategies assessed by the Ways of Coping Checklist, short version (WCCL), general psychopathological symptoms, evaluated by the Symptom Checklist 90-Revised (SCL-90 R), and personality disorder symptoms, explored through the Personality Diagnostic Questionnaire, Fourth Edition (PDQ-4), suggests that this 28 item-version of the DSQ may have better discriminant and criterion validity than the DSQ-40. *Key words:* DSQ-40, defense mechanisms, coping strategies, personality disorders, psychopathological symptoms.

The 40-item version of the Defense Style Questionnaire (DSQ-40, Andrews, Singh, & Bond, 1993), derived from the original measure developed by Bond, Gardner, Christian, and Siegel (1983), is a widely used self-report measure for defense mechanisms given its easy administration and cost-effectiveness. There are few studies examining the face validity of the DSQ-40. Chabrol, Rousseau, Rodgers, Callahan, Pirlot, and Sztulman (2005) conducted an examination of the face validity of the DSQ-40. Eight clinicians independently attributed each item of the DSQ-40 to a defense mechanism. Twelve items out of 40 (30%) were attributed to the defense mechanisms they were supposed to investigate by fewer than 4 out of the 8 raters. This result suggests that a substantial part of the DSQ-40 is lacking in face validity. This lack of face validity may, in part, explain the previously reported limitations of the DSQ-40 concerning insufficient internal consistency of one or all of the three mature, neurotic and immature dimensions (e.g., Andrews, Singh, & Bond, 1993; Chabrol & Brandibas, 2000), the unstable factor structure (e.g., Chabrol & Brandibas, 2000; Hayashi, Miyake, & Minakawa, 2004; Muris, Winands, & Horselenberg, 2003) or the failure of defense styles to discriminate between personality or psychiatric disorders (e.g., Sinha & Watson, 1999). In an attempt to

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correct these inadequacies, a 60-item version of the DSQ was created (Bond, Trijsburg, & Drapeau, 2003) to make its defenses and their operationalization congruent with the DSM-IV (APA, 1994). However, this promising version proved to be disappointing: a study of the psychometric properties of the DSQ-60 concluded that “this revised version does not represent a significant improvement of previous versions of the scale. Present day standards and guidelines indicate that the psychometric features of the DSQ-60 must be improved upon before broad use of the scale is warranted” (p. 179; Thygesen, Drapeau, Trijsburg, Lecours, & De Roten, 2008). So the previous version, DSQ-40 continued to be used widely till today (e.g., Brody & Carson, 2012; Carvalho, Hyphantis, Taunay, Macêdo, Floros, & Ottoni, in press; Grebot & Berjot, 2012; Grebot & Paty, 2010; Marchesi, Parenti, Aprile, Cabrino, & De Panfilis, 2011; Sekiya, Sato, Sakai *et al.*, 2012) along with DSQ-60 (Drapeau, Thompson, Petraglia, Thygesen, & Lecours, 2011; Petraglia, Thygesen, Lecours, & Drapeau, 2009; Timmermann, Naziri, & Etienne, 2009; van Wijk-Herbrink, Andrea, & Verheul, 2011).

The goal of the current study was to evaluate the factor structure of a shortened version of the DSQ-40 deleting the items with dubious validity and examining the relationships between defense factors, coping strategies, psychopathological symptoms, and personality disorders traits in non-clinical young adults. We hypothesized that this shortened version could show better discriminant and criterion validity than the original DSQ-40.

METHOD

Participants and procedure

Data was obtained from 201 third year female Psychology students (mean age 22.5, range 19-34) in Toulouse, France. All female students attending a course on coping strategies were asked to participate in the study (as there were only 17 male students, they were not approached). Participants provided written informed consent before completing the questionnaires. Questionnaires were completed during class time, were anonymous, and no compensation was offered. No students refused to participate in the study given these conditions and all questionnaires turned out to be usable.

Measures

The shortened version of the DSQ-40 is composed of 28 items assessing mature defenses (anticipation 2 items, humor 2 items, sublimation 2 items, and suppression 2 items), neurotic defenses (isolation 1 item, reaction formation 2 items, pseudo-altruism 1 item, and undoing 1 item), and immature defenses (acting out 2 items, autistic fantasy 2 items, denial 2 items, idealization 2 items, passive aggression 1 item, rationalisation 2 items, splitting 2 items, and somatization 2 items).

Coping strategies were assessed using the Ways of Coping Checklist (WCCL, short version, 42 items; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). The WCCL

is composed of 5 scales: problem-focused, seeking social support, self-blame, wishful thinking, and avoidant coping.

General psychopathological symptomatology was assessed with the Symptom Checklist 90, revised (SCL-90-R; Derogatis, 1983), a widely used self-report measure of psychiatric symptoms. In this study, we used the Global Severity Index (GSI) -the average score for all 90 items- which is an overall measure of psychiatric distress. This index can range from 0 to 4; there is no generally accepted cut-off for psychiatric cases using the SCL-90-R.

Personality disorder symptoms were measured using the Personality Diagnostic Questionnaire, Fourth Edition (PDQ-4; Hyler, 1994). The PDQ-4 is a self-report questionnaire designed to assess the ten personality disorders of the DSM-IV (APA, 1994). Scores were calculated for cluster A personality disorders (paranoid, schizoid, schizotypal), cluster B (histrionic, narcissistic, borderline, antisocial), and cluster C (avoidant, dependent, obsessive-compulsive) by summing the pathological responses to the items exploring the corresponding DSM-IV diagnostic criteria. The PDQ total score was calculated as an index of overall personality disturbance. The PDQ was designed to provide high sensitivity at the expense of low specificity. According to Hyler (1994) a total score of 30 or more indicates a significant likelihood that the respondent has a personality disturbance.

Statistical analyses

An exploratory factorial analysis was performed on the 28 items (principal components extraction with varimax rotation). A solution was selected on the basis of the scree test. A criterion of at least 0.30 to define a loading was used in this report. Items with loadings on other factors were interpreted as belonging to the factor on which they had the highest loading. Internal consistency for each factor was assessed with the use of Cronbach's coefficient α . As Cronbach's α depends on the number of items, we also used the mean inter-item correlation (MIC) to facilitate comparison between factors of different lengths.

The correlations between scales or factors were calculated using Pearson's r coefficient. The strength of the underlying relationships was measured with effect sizes. A Pearson correlation coefficient of .10 is considered to be a small effect, .30 a medium effect, and .50 a large effect (Cohen, 1992).

Standard multiple regression analyses were used to evaluate the unique contribution of each defense styles to psychopathological measures.

The sample size was sufficient for a multivariate analysis. The subjects-to-variables ratio was sufficient for exploratory factor analyses as it was greater than the traditional 4-5 participants per variable guideline (Floyd & Widaman, 1995). The subjects-to-predictors ratio was adequate for multiple regression analysis as it was around the traditional guideline of at least ten participants *per* predictors (Howell, 1997). All statistical analyses were performed using STATISTICA, Version 10.

RESULTS

The sample had a mean GSI of 0.63 ($SD= 0.37$, range 0.04-2.09). The mean for PDQ total score was 29.4 ($SD= 10.4$, range 1-61). Forty-two participants (21%) had a PDQ total score equal or greater to 30. Endorsement was sufficient to permit analyses and interpretation of the results.

The scree plot clearly suggested a two or a five-factor solution. The two-factor solution was not retained because it only explained 19% of the total variance. The five-factor solution accounted for 37% of the total variance. All items loaded on at least one factor. Table 1 presents the results of this factorial analysis.

The first factor (eigenvalue 2.74, explained variance: 9%) consisted of 9 items (splitting, acting out, idealization, passive aggression) and was called immature defenses.

Table 1. Results of the factorial analysis of the DSQ 28 : factor loadings, Cronbach's α , mean inter-item correlation (MIC), and factor scores.

	Immature defenses	Mature defenses	Autistic fantasy	Neurotic defenses	Denial
Acting out	.66	-.05	.06	-.20	.13
Splitting	.58	-.11	-.09	.10	.06
Splitting	.49	-.06	.37	.03	.14
Acting out	.46	-.13	.31	-.28	.28
Idealisation	.46	.06	-.14	.32	.16
Idealisation	.43	.22	-.07	.26	-.07
Passive aggression	.41	.21	.28	.06	-.26
Somatisation	.35	-.11	.07	-.03	.33
Somatisation	.33	-.01	.20	.24	-.06
Humour	-.07	.68	.05	.09	.00
Rationalisation	.30	.59	-.31	-.16	.05
Anticipation	-.05	.48	.23	.32	.08
Humour	.15	.42	-.12	.03	-.36
Anticipation	.04	.42	.04	.02	-.10
Suppression	-.04	.41	.08	.13	-.39
Suppression	-.30	.41	-.01	-.17	.25
Sublimation	-.08	.39	-.06	-.10	.08
Rationalisation	.25	.34	-.13	.21	-.01
Autistic fantasy	.02	.04	.79	-.05	.21
Autistic fantasy	.13	.03	.75	-.06	.03
Isolation	-.06	-.05	.53	.10	-.05
Pseudo-altruism	.16	-.04	-.03	.70	-.10
Reaction formation	.02	-.03	.06	.61	.04
Undoing	.09	.09	-.03	.47	.42
Reaction formation	-.27	.39	.10	.41	.10
Sublimation	.09	.08	.11	.07	.46
Denial	-.23	.25	.02	.06	.45
Denial	.21	.31	-.13	.05	.41
Cronbach's α	.60	.47	.61	.42	.34
MIC	.17	.17	.37	.18	.15
<i>M (SD)</i>	33.3 (11)	44.4 (9.3)	9.7 (9.3)	18.9 (5.2)	9.4 (4)

The second factor (eigenvalue 2.63, explained variance: 9%) consisted of 9 items (humor, anticipation, suppression, rationalization, sublimation) and was called mature defenses. The third factor (eigenvalue 1.91, explained variance: 8%) consisted of 3 items (autistic fantasy and isolation). The higher loadings of the autistic fantasy items suggested that it was the core component of that factor and was thus called autistic fantasy. The fourth factor (eigenvalue 1.64, explained variance: 7%) consisted of 4 items (reaction formation, pseudo-altruism and undoing) and was called neurotic defenses. The fifth factor (eigenvalue 1.47, explained variance: 6%) consisted of 3 items (denial, one of the item exploring sublimation) and was called denial. Cronbach's α range from .34 to .64 and mean inter-item correlations (MIC) from .15 to .37. The low α for the denial factor is not surprising for a 3-item scale. Internal consistency, as assessed with the MIC, was modest but acceptable given the range of .15-.40 for optimal level of homogeneity (Briggs & Cheek, 1986; Clark & Watson, 1995). Factors were either unrelated or weakly related (correlation coefficient range .0-.20) (Table 2).

Given the relatively modest amount of explained variance and internal consistency of the factors for the 5-factor solution, the 3, 4 and 6 factor-solutions were examined. The 3 and 4-factor solutions explained accounted for a too little common variance (26% and 32%, respectively) (Floyd & Widaman, 1995). The 6-factor solution explained 42% of the total variance. The main difference with the 5-factor solution was the extraction of a factor composed of the two items exploring humor. As, in general, three variables per factor are needed to identify common factors (Floyd & Widaman, 1995), this solution was not considered better than the five-factor one.

The correlation matrix for DSQ factors and WCCL scales is presented in Table 3. According to Cohen (1992), defense factors and ways of coping were unrelated or

Table 2. Intercorrelations between defense styles.

	Mature defenses	Autistic fantasy	Neurotic defenses	Denial
Immature defenses	-.003	.18*	.13*	.11
Mature defenses		-.02	.15*	.17*
Autistic fantasy			.00	.05
Neurotic defenses				.20*

* $p < .05$

Table 3. Correlations between coping strategies and defense styles.

Coping strategies	Defense styles				
	Immature defenses	Mature defenses	Autistic fantasy	Neurotic defenses	Denial
Problem-focused	.03	.58*	-.22*	.17*	.19*
Social support	.16*	.07	-.17*	.11	-.06
Self-blame	.20*	-.10	.17*	.25*	.01
Wishful thinking	.19*	-.11	.20*	.08	.15*
Avoidant	.23*	-.13*	.27*	.11	.17*

* $p < .05$

weakly related with the exception of the mature factor which was highly related to problem-solving.

The contribution of defense factors to the prediction of psychopathological symptoms, as assessed with the GSI, was tested with a standard multiple regression analysis. All predictors were considered simultaneously in the same regression equation. The five factors explained, as a group, 9% of the variance in the GSI score, which was significant, $F(5, 195) = 3.9, p < .001$. Two variables explained unique variation in the outcome variable. Specifically, immature defenses, ($\beta = .16, p = .02$) were positively related to the GSI whereas mature defenses ($\beta = -.21, p = .003$) were negatively related to the GSI.

Standard regression analyses predicting DSM cluster scores were conducted with the five defense factor as predictors. This model accounted for a significant part of the variance of cluster A score (19%, $F(5, 195) = 9, p < .0001$), cluster B score (26%, $F(5, 195) = 14, p < .0001$), and cluster C score (26%, $F(5, 195) = 13.9, p < .0001$).

With regards to the cluster A score, autistic fantasy and immature defenses were the only significant predictors ($\beta = .30, p < .0001$ and $\beta = .24, p < .0001$, respectively). For the cluster B score, immature defenses and autistic fantasy were the only significant positive predictors ($\beta = .37, p < .0001$ and $\beta = .24, p < .0001$, respectively) whereas mature defenses was a negative significant predictor ($\beta = -.18, p < .0001$). In terms of the cluster C score, autistic fantasy, neurotic defenses and immature defenses were significant positive predictors ($\beta = .25, p < .0001$, and $\beta = .23, p < .0001$, and $\beta = .20, p < .0001$, respectively) whereas mature defenses was a negative significant predictor ($\beta = -.31, p < .0001$).

DISCUSSION

Although the sample was non-clinical, the rate of endorsement of psychopathological symptoms and of personality disorder traits was relatively high. The sample had a mean GSI similar to the norms for college student non-patients. According to Todd, Deane, and McKenna (1997), non-patient undergraduates, like adolescents, tend to be more symptomatic than adults. The high level of participants with probable personality disturbances, as indicated by PDQ total score equal to or greater than 30 (21%) is consistent with the results of other studies among university students. For example, Sinha and Watson (2003) reported that 30% of the undergraduate student sample was above the cut-off for the Coolidge Axis II Inventory (CATI; Coolidge & Mervin, 1992), a self-report inventory designed to measure DSM-III-R (APA, 1987) personality disorders. Although the variability of scores of defense mechanisms and psychopathological measures allowed for a statistically relevant study of their relationships, a limitation of the present study is that it was conducted on a non-patient sample of female young adults. Our findings may not be generalizable to male adults and patient populations.

In this study, the 5-factor solution appeared to be the most satisfactory. Yet, the amount of total variance accounted for and the internal consistency of factors were

modest. This result is consistent with previous studies of the DSQ: e.g., Spinhoven, van Gaalen, and Abraham (1995), using a short version of the DSQ (36 items), found a three factor solution explaining 30% of the total variance in a non-clinical sample, the factors having modest internal consistency (mean inter-item correlation range: .13-.15). Other studies which have used the DSQ-40 did not report the internal consistency of defense styles scales or the amount of variance explained by the chosen solution if an exploratory factorial analysis was conducted (e.g., Akkerman, Lewin, & Carr, 1999; Bouchard & Thériault, 2003; Muris *et al.*, 2003; Sinha & Watson, 2004; Hayashi *et al.*, 2004). The modest amount of variance explained and the modest internal consistency of factors may suggest that the use of defense mechanisms appears to be affected more by characteristics specific to each mechanism rather than by underlying defense styles (Floyd & Widaman, 1995).

The five factors extracted in the present study were generally consistent with theoretical assumptions on the hierarchy of defense but there were three notable exceptions. First, the two items exploring rationalization loaded on the mature factor, although rationalization is usually considered as an immature defense. This result is, however, in agreement with Spinhoven *et al.* (1995) who also found that rationalization loaded on the mature factor. In Hayashi *et al.*'s study (2004), among university students, rationalization and denial were included in the mature factor of the DSQ 40. This suggests that rationalization may be healthy as denial may be (Druss & Douglas, 1988). The second discrepancy with theory of defenses was the loading of the item exploring isolation ("Often I find that I don't feel anything when the situation would seem to warrant strong emotions") on the autistic fantasy factor. One explanation may be that this item is exploring dissociation rather than isolation. The items supposed to evaluate autistic fantasy may also correspond to absorption and imaginative involvement which are manifestations of dissociation (Bernstein & Putnam, 1986). The third discrepancy was the loading of one item exploring sublimation ("Sticking to the task at hand keeps me from feeling depressed or anxious") on the denial factor. One explanation is that this item is exploring adaptive avoidant coping rather than sublimation. Thus, the factors extracted in the present study appear to be more consistent with defense theory than the factors obtained with the DSQ 40 when factor analysis was conducted on the item level. For example, Hayashi *et al.* (2004) found three factors, the first being a mixture of mature and immature defenses and the third a mixture of neurotic and immature defenses.

The pattern of intercorrelation of the DSQ factors extracted in the present study suggests that the defense styles they defined are largely independent. The denial factor was weakly positively related to both mature and immature factor. This result is in agreement with the assumption that denial may be either immature or healthy depending on the context (Druss & Douglas, 1988; Hibbard & Porcerelli, 1998).

In this study, the pattern of correlation suggests that defense styles and coping strategies are relatively independent dimensions of personality. Our results are in agreement with the few studies which have assessed the relations between defense styles, as assessed by different versions of the DSQ, and coping strategies. They found that defense styles were either unrelated, or weakly or moderately related to coping strategies (Bouchard & Thériault, 2003; Callahan & Chabrol, 2004; Erickson, Feldman, & Steiner, 1997; Grebot,

Paty, & Girard Dephanix, 2006; Hersoug, Sexton, & Hoglend, 2002). The absence of relation or the weak relation observed in our study argues for a heightened discriminant validity of the expurgated version of the DSQ specially when compared with Bouchard and Thériault's and Grebot *et al.*'s studies which used the DSQ-40. The high correlation between mature defenses and problem-focused coping noted in the present study may be linked to the difficulty in distinguishing adaptive defense mechanisms from adaptive coping strategies when using self-report questionnaires which do not assess awareness of motivation (Davidson & MacGregor, 1998).

In this study, immature and mature defenses were the only significant predictors of GSI score, with the others factors not contributing significantly. Muris and Merckelbach (1996) using a short form of the DSQ found significant moderate correlations between immature defenses and GSI whereas correlations between neurotic or mature defenses and GSI were not significant. Holi, Sammallahti, and Aalberg (1999) used regression analyses to assess the relationships between defense styles, as assessed by the 72-item version of the DSQ, and general symptomatology as assessed by the SCL-90. The immature style explained most of the variance of psychopathological symptoms, the role of the mature defense style was minor and that of the neurotic defense style, insignificant. These results suggest that the expurgated version of the DSQ-40 has criterion validity similar to the one of the longer versions of the DSQ.

In the present study, defense styles were specifically linked to the personality disorders cluster. This result is consistent with previous studies finding an association of defense styles with personality disorders (Bond, 2004). Our shortened version of the DSQ-40, however, appeared to have better criterion validity than the original 40-item version. Sinha and Watson (1999), using the DSQ-40 in a non-clinical sample, found that specific personality disorder can not be predicted from the defense styles. Mulder, Joyce, Sullivan, Bulik, and Carter (1999) found similar results in a clinical sample with the use of DSQ-40, defense styles not being related to personality clusters in a predictable way.

This study suggests that the 28 item-version of the DSQ might have better discriminant and criterion validity than the DSQ-40. Further studies aimed at improving face validity may ameliorate reliability and validity and the usefulness of DSQ in clinical practice and research studies. As considerable data have been already gathered on the DSQ, these data could be processed again using only the 28 items with satisfactory face validity to yield more relevant results.

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