

Examining the Defense Style Questionnaire 88 (DSQ-88) in an Employee Sample: Items and a Two-factor Model

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ABSTRACT

The original 88-item version of the Defense Style Questionnaire (DSQ) has been ignored in recent studies. The current study examined the scoring instructions in the DSQ-88 manual by investigating how the items used to score specific defense styles loaded in an exploratory factor analysis. It also sought to confirm a two-factor model of ego defense styles in a sample of 493 employees at a large, established university in Jamaica, West Indies. The DSQ-88 was administered to employees by research assistants during work hours as part of a larger study. Twenty-six of the 33 items used to score maladaptive action in the DSQ-88 loaded above .40 on a general maladaptive factor in the current data. Principal components analyses resulted in two factors (maladaptive and adaptive) which accounted for 39.4% of the variance and included items from 18 defense mechanisms. Confirmatory factor analysis supported a two-factor model with items from acting out, fantasy, help-rejecting complaining, splitting, inhibition, omnipotence-devaluation, passive-aggression, projective identification, regression, somatization and projection loading on a maladaptive factor and items from humor, sublimation, suppression and denial on an adaptive factor. Recommendations are made for the development of another shortened version of the DSQ-88 for use with employee populations.

Key words: DSQ, defense mechanisms, Caribbean employees.

Novelty and Significance

What is already known about the topic?

- There are many versions of the DSQ and psychometric studies on them yield a wide range of factors comprised of varying mixtures of defense mechanisms.
- Since the shorter versions have been developed (e.g., DSQ-40; DSQ-60) work on the DSQ-88 has been neglected.
- Most studies have supported a three-factor model.

What this paper adds?

- The study used data from non-clinical employees from the Caribbean region.
- It examined the scoring instructions in the DSQ-88 manual.
- It supported a two-factor model of defense styles using confirmatory factor analysis.

The study of ego defense mechanisms is not confined to psychopathology and psychotherapy (Barrett, Williams, & Fong, 2002). Social and personality psychology uses defenses in relation to self-esteem protection (Baumeister, Dale, & Sommer, 1998). Defensiveness has also been examined in the organizational context for many years (see Argyris, 1990). Defense mechanisms are not only part of psychological disorders (Blaya, Dornelles, Blaya, *et al.*, 2006; Kipper, Blaya, Teruchkin, *et al.*, 2005) but are also considered part of personality (Bond & Vaillant, 1986; Vaillant, 1977) and every day experiences of coping and adaptation for non-clinical populations.

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In organizational settings it is much more difficult, time-consuming and costly to use more traditional clinical methods like interviews to measure ego defensiveness in employees (see Menzies, 1960). These methods may also be unsuitable for detecting non-pathological levels of defensiveness expected in non-clinical populations. The Defense Style Questionnaire (DSQ) (Bond, 1992) is the most widely used self-report survey instrument for measuring defense mechanisms and should be quite applicable for studying large groups of employees. Additionally, it differentiates between maladaptive and adaptive ego defense styles (Bond, 1992) which should be very useful in organizational change research.

Researchers must cautiously choose the most appropriate version of the DSQ for their studies. The most frequently used versions are the DSQ-40 (Andrews, Singh, & Bond, 1993) and the DSQ-60 (Trijsburg, Van T'Spijker, Van, Hesselink, & Duivenvoorden, 2000) which are shortened versions of the original DSQ-88 (ten items in the DSQ-88 are lie scale items). These versions differ on the number of items per and labels of defense mechanisms, the number of defenses represented and the number and label of defense styles represented. Only 13 defense mechanisms overlap across the three versions -acting out, pseudo-altruism, humor, passive aggressive behavior, suppression, withdrawal, inhibition, projection, reaction formation, splitting, undoing, anticipation and fantasy.

Most research on the shorter DSQ versions emphasizes differentiating clinical from non-clinical populations and very few studies have used it to study issues with students or employees (see Bovey & Hede, 2001; Parekh, Majeed, Khan, *et al.*, 2010). The DSQ 60 and 40 were created in alignment with the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV and DSM-III-R respectively and may be more relevant for psychopathology and clinical research. Tests of validity for the DSQ-40 were done with tests for psychological symptoms (Saint-Martin, Valls, Rousseau, Callahan, & Chabrol, 2013) and general defensive functioning. Since the emergence of the shorter versions, research on the DSQ-88 has been neglected. This version may be more relevant to studying employees because it includes items from coping mechanisms that are not all present in the shortened versions. Additionally, it is more likely than the other versions which have a three-factor structure, to differentiate between maladaptive and adaptive styles.

Although the DSQ-40 has adequate psychometric properties (Andrews *et al.*, 1993), recent research has questioned the validity of its items (e.g., Chabrol, Rousseau, Rodgers, Callahan, Pirlot and Sztulman, 2005). Twelve of its items lacked face validity in a study with 201 female students (Saint-Martin *et al.*, 2013). A study with the DSQ-42 also showed that items were allocated correctly to their DSM-IV definitions 81% of the time by experts. With reference to the DSQ-60, researchers noted that it was not psychometrically superior to the DSQ-40 and they recommended revision of some of the items, dropping some of the defense mechanisms and/or writing new items (Thygesen, Drapeau, Trijsburg, Lecours, & de Roten, 2008). They also recommended an iterative approach to testing the psychometric properties of the instrument.

Given all the issues with the shorter versions, the current study re-examined the DSQ-88 as a possible option for measuring defense styles in working adults. Inconsistencies in the scoring manual were observed (Bond & Wesley, 1996) but no

study examined this. The manual lists the items which should be used to score each of the styles but it is unclear why some items were included or excluded. Although there are 78 defense mechanism items in the DSQ-88, the scores are calculated with only 63 items (33 items for maladaptive action; seven for adaptive; eight for self-sacrificing and 15 for image-distorting). Additionally, based on the factor analysis results with 81 items presented in the manual (see Bond & Wesley, 1996), items from defense mechanisms which did not load on specific styles were used to calculate the scores for that style. For instance, items on projective identification, somatization, fantasy, help-rejecting complaining, consumption and undoing were used to score the maladaptive action style although these defenses did not load strongly in their analyses.

The current study examined the scoring instructions in the DSQ-88 manual by investigating whether the items used to score specific defense styles would load accordingly in an exploratory factor analysis. It also used an iterative approach, including correlational and exploratory factor analyses (EFAs) to determine the best items and defenses to be included in the measure with a sample of non-clinical employees. Finally the study sought to confirm a two-factor model of ego defense styles in a similar sample.

METHOD

Participants and Procedure

Data were collected in 2012 from 493 randomly selected employees at a large established university in Jamaica (West Indies) as part of a larger study. The sample was randomly split into two sets to meet the sample size requirements for independent exploratory ($n= 345$) and confirmatory factor analyses (CFA) ($n= 148$) based on the number of variables to be analyzed. (There were no statistically significant differences between the samples for the EFA and CFA). The entire sample comprised 96 academics, 187 administrators, 159 technical and professional staff, and 44 leaders of sections (not all participants gave their job category information). There were 162 males (32.9%) and 324 females (65.7%) (not all participants gave their gender). Most persons were between 31 and 50 years old, Jamaican and of African heritage. On average, males worked at the university for 137 months and females for 146 months.

Research assistants were hired to administer questionnaires to participants during work hours. The university's ethics review committee gave approval for the study. Participants received information on the study requirements and were asked to sign an informed consent sheet. They were not compensated for participating. The response rate was 80.6% (612 persons contacted and 493 completed questionnaires received). Only 4.1% of the persons who were contacted were opposed to participating for reasons other than being busy.

Instruments

The DSQ started off as a set of 97 items which represented 24 defense mechanisms (Bond & Wesley, 1996). After testing, a 78-item version was created in 1986 which included

11 items representing undoing (UN), help-rejecting complaining (HRC), consumption (CONS), isolation (ISOL), task orientation (TO) and affiliation (AFF). The additional defense mechanisms represented in the DSQ-88 are acting out (AO), pseudo-altruism (ALT), humor (HUM), passive aggressive behavior (PA), regression (REG), somatization (SOM), suppression (SUP), withdrawal (WITH), denial (DEN), omnipotence-devaluation (OMNID), omnipotence (OMNI), inhibition (INHIB), primitive idealization (PRI), projection (PROJ), projective identification (PROJI), reaction formation (RF), splitting (SPL), sublimation (SUB) and anticipation (ANT). These defense mechanisms formed four defense styles: maladaptive action, self-sacrificing, image-distorting and adaptive. Psychometric properties were not reported in the DSQ-88 manual. Vaillant, Bond and Vaillant (1986) reported that the same four defense styles were found in a sample of 131 males. Perry and Cooper (1986) reported adequate test-retest reliabilities for the four styles using data from 39 patients. In the current study, the items were scored on a 9-point Likert scale where 1= strongly disagree and 9= strongly agree.

RESULTS

Following suggestions from Thygesen *et al.* (2008), an iterative approach to analysis was taken in the current study. Seventy-six items were analysed to examine the scoring instructions of the DSQ-88 (one PA item and one CONS item were deleted because the responses from most of the participants were unreliable). The process initially involved running correlations with all pairs of items. Significant correlations between items that were used in the manual to score a style as well as correlations between individual defense mechanism items were recorded. These procedures helped to detect if items which were used to score styles in the manual were sufficiently correlated and if items for each defense mechanism correlated sufficiently with each other. They also hinted at which items may cluster together in factor analysis. Item which correlated significantly with other items from the same defense mechanism and from the style they were used to score were expected to load together on a factor. This expectation was strengthened if the correlations between the defense mechanism items and styles were supported theoretically and by past factor analyses conducted by the scale developers.

Based on these procedures, four items were dropped from further analysis because they did not significantly correlate with any others (two PA items, one DEN item and one HUM item), and because their wording was incompatible with their suggested defense mechanisms. The correlations also suggested that some items would not load on the style that they were placed in, according to psychoanalytic theories. Additionally, only two factors were expected to emerge in the current data: maladaptive and adaptive. Items which were used to score the image-distorting style were expected to load on the maladaptive action factor. There was no strong support for a self-sacrificing style from the correlations.

Principal components analysis (PCA) without rotation was done on a sample of 325 cases with 62 items which were used in the DSQ-88 scoring instructions (one FAN; two REG; one PROJI; four AO, two PA, four OMNI; five INHIB; three WITH; seven PROJ; two SOM; three HRC; one UN; one CONS; two HUM; two SUP; one ANT; one

AFF; one SUB; three OMNID; three SPL; three DEN; two PRI; two ISOL; one ALT and five RF). All 72 items which remained from the correlational analysis were not used because the sample size to item ratio would have been jeopardized (de Vaus, 2002). The correlation matrix was factorable (Tabachnick & Fidell, 2001). Overall the factor loadings were low and only loadings .40 and above were considered when labelling the factors. Analysis of eigenvalues, scree plots and variances in the initial solution revealed four factors although only two of these factors were theoretically meaningful.

Factor one accounted for 16.3% (eigenvalue 9.97) of the variance followed by factor two (5.4%; eigenvalue 3.29), factor three (4.5%; eigenvalue 2.73) and factor four (3.7%; eigenvalue 2.25). Factor one was a generalized maladaptive factor with 34 items from AO, PROJI, PROJ, PA, FAN, HRC, SOM, REG, INHIB, ISOL, WITH, OMNID, SPL, DEN, UN and OMNI. In terms of the scoring instructions on the DSQ-88, items from DEN, ISOL, OMNID and SPL were not included, but loaded on the generalized maladaptive factor in the current data. Additionally, one item from CONS was included in the scoring of the DSQ-88 but did not load above .40 in the current data. Factor two in the current data was similar to the adaptive style and included five items from SUP, DEN, HUM, OMNI and SUB. In the scoring of the DSQ-88, items from ANT and AFF were included and there were no DEN and OMNI items. Factor three had three SPL items and one HRC item which loaded higher than .40 and factor four had no loadings higher than or equal to .40.

In the current sample, 26 of the 33 items used to score maladaptive action in the DSQ-88 manual loaded above .40 on the general maladaptive factor, which represents a 75% overlap. Seven of the items used to score the image-distorting style in the DSQ-88 were in the set of 26, including items from OMNI, OMNID, SPL, PROJ and ISOL (54% overlap in items used to score image-distorting). One DEN item used to score self-sacrificing in the DSQ-88 loaded above .40 on the maladaptive factor as well. Two items were problematic (one item each from WITH and OMNI) because they cross-loaded significantly on the first and third factors in the current data. There was a 43% overlap (three items) in the items used in the DSQ-88 and the current factor loadings for the adaptive style.

Two items (one HUM and one SUP) were omitted from further analyses because they did not load on their expected factors and did not significantly correlate with expected items in the correlational analysis. Another PCA ($n=328$) was done on the 39 items which loaded on the two factors in the first analysis in an attempt to improve the size of the loadings and reduce the cross-loadings. Communalities ranged from .43 to .75 and the factor loadings were improved overall. Two factors were apparent from the scree plot, eigenvalues and variances. The first factor accounted for 22.4% of the variance and was similar to the generalized maladaptive factor observed in the first PCA. The other factor was also similar to the adaptive style and accounted for 6.7% of the variance. The WITH and OMNI items with problematic cross-loadings in the first PCA cross-loaded again and were deleted from further analyses.

The remaining 37 items were reduced to a smaller set of variables for a final PCA. Defense mechanism variables were created for AO, OMNID, PROJ, HRC, INHIB, PA, SOM and REG by averaging scores of some of their individual items which loaded

together in the initial factor analyses and correlated significantly. Items remaining for OMNI (one item), DEN (one item) and PROJ (one item) were not included in the aggregated variables but rather used as single items because of the patterns of correlations and loadings in the previous factor analyses. Single items were used as variables for PROJI, FAN, SUB, SUP, HUM, SPL and ISOL. The final PCA was therefore done with 335 cases and 18 variables. The scree plot showed two factors similar to the others. Factor one accounted for 28.5% of the variance and comprised AO, FAN, HRC, INHIB, an ISOL item, OMNID, PA, PROJ, a PROJ item, a PROJI item, REG, SOM and a SPL item. The factor loadings ranged from .51 to .73. The second factor accounted for 10.9% of the variance and comprised an item each from DEN, HUM, OMNI, SUB and SUP. Factor loadings ranged from .56 to .63. The final solution had no significant cross-loadings and the factors made sense theoretically (Bond, 1992). Cronbach alpha for the maladaptive style was .84 ($n=336$) and .56 for the adaptive style ($n=340$).

Confirmatory factor analysis was conducted in AMOS (Arbuckle, 2006) on 146 cases to confirm the two-factor model suggested by the final PCA. The model was specified with two latent factors called maladaptive (MAL) and adaptive (AD) styles and was recursive. The latent factors were allowed to covary freely. Maximum likelihood estimation was used to calculate the model statistics. There were no skewness, kurtosis or outlier issues in the data and tolerance and VIF values were acceptable (de Vaus, 2002). The initial model had an insignificant chi-square value ($\chi^2=200.57$, $DF=134$, $p=.000$). The modification indices showed that the error terms for some variables co-varied. The standardized regression weights were examined for these variables and one OMNI item was deleted because it had the lowest value (.16). This deletion resulted in an improvement in the chi-square ($\chi^2=131.22$, $DF=103$, $p=.03$). Further, one ISOL item was deleted because it was a single item and MAL contributed to it the least. The chi-square improved and became insignificant ($\chi^2=110.83$, $DF=89$, $p=.06$). All standardized regression estimates were significant ($p<.05$) and model fit statistics were good (CMIN/DF= 1.25; GFI= .91; AGFI= .88; PGFI= .68; CFI = .95; PCFI= .80; RMSEA= .41; PCLOSE= .71; CAIC= 296.33 and AIC= .172.83). The model therefore confirmed a latent maladaptive factor which comprised items from AO, FAN, HRC, SPL, INHIB, OMNID, PA, REG, SOM, PROJ, and PROJI and an adaptive factor with items from HUM, SUB, SUP and DEN.

DISCUSSION

The current study examined the items used to score and the underlying factor structure of the DSQ-88 in a non-clinical sample. Given the number of versions of the DSQ available and the variations in their factor structure and defense mechanisms, it is important to raise awareness about how the styles are scored. Further studies with the original DSQ-88 may help to clarify inconsistencies in findings using the shorter, more popular versions. Additionally, to this author's knowledge, no other study has done research on the DSQ with a Caribbean sample, or with a large number of employees from a large bureaucratic organization. This study's results are therefore unique to

a mostly Black and Jamaican employee sample at this time and further research is needed to determine the generalizability of the findings to other populations. Further, no screening for mental illness was done with the participants and they were assumed to be psychologically healthy for the most part.

The current analytical procedures do not fully support the items used to score styles in the DSQ-88 (Bond & Wesley, 1996). Examining correlations is a very important first step in building scales (de Vaus, 2002). Therefore correlations were used to support decisions to include or exclude variables and to make predictions in subsequent EFAs and the CFA in this study. Four items were eliminated which would likely have harmed the results of the factor analyses. Items designed to tap into DEN and OMNI fit better with the adaptive style than with any other style. Additionally, although there was a significant overlap in items used to score the maladaptive action style, the current maladaptive factor also included items from the image-distorting style. Disparities in the items used to score the styles between the current study and the original DSQ-88 studies may be caused by differences in the samples and analytic methods, including which items were eliminated. Varimax rotation was not used in the current study because initial attempts to use the procedure produced theoretically ambiguous factors.

No previously published study has supported a two-factor structure using any version of the DSQ. The current study supports early suggestions that the DSQ best differentiates between maladaptive and adaptive styles (Bond, 1992). The amount of variance explained by the two factors (39.4%) in the final PCA is generally consistent with past research (e.g., Spinhoven, van Gaalen, & Abraham, 1995). Reliabilities are also generally low for the adaptive or mature style (Thygesen *et al.*, 2008). It also supports a highly consistent finding that the HUM, SUP and SUB defense mechanisms are part of an adaptive defense style (Andrews *et al.*, 1993; Bond & Wesley, 1996; Thygesen *et al.*, 2008). Further, it corroborates other observations that AO, PA, INHIB, and PROJ appear most frequently as part of a maladaptive style in factor analyses with different versions of the DSQ (Andrews *et al.*, 1993; Blaya *et al.*, 2007; Bond & Wesley, 1996). Additionally, several studies have suggested that the maladaptive or immature factor is the strongest and most valid (see Saint-Martin *et al.*, 2013). Future studies should seek to develop new items for HUM, SUP, and SUB given their importance for the adaptive style and because they were only represented by one item each in the final analyses. Additional items should also be added or revised for PROJ, FAN, SOM, REG, PA, DEN and SPL. Finally, TO, PRI, UN, CONS, ANT, AFF, ALT and RF did not seem to be relevant defense mechanisms in the current sample and perhaps can be deleted in future versions.

The styles which were supported by the current data may reflect particular behaviors used by employees to deal with stress, conflict and anxiety in their workplace. The nature of the maladaptive style is reflected in the items as a whole: acting out by being impulsive, getting aggressive or pushing too far; fantasizing by daydreaming; rejecting help from doctors and complaining constantly; being shy and inhibited; feeling numb in the face of problems; putting others down; sulking; trying to get back at one's boss; feeling mistreated or targeted; feeling robbed emotionally; acting childish or breaking down when stressed; getting physically ill when faced with stress; and seeing oneself as

totally good or bad. For those who may use an adaptive style, their behaviors include the following: suppressing problems until they can deal with them; using creative ways to manage stress and anxiety; feeling like they can deal with problems; being fearless; and seeing the funny side of problematic situations. Inclusion of denial items in an adaptive style is consistent with a study done with university students (Hayashi, Miyake, & Minakawa, 2004).

In conclusion, organizational studies researchers who wish to use versions of the DSQ need to examine the factor structure in their data and carefully select items to score styles. Based on the current analyses, a smaller set of 37 items may be used as a base to develop another version of the DSQ-88 for a non-clinical employee population. Two factors which are theoretically grounded and reliable may prove beneficial for understanding defenses in mentally-healthy adults using DSQ items. These factors would not necessarily be constituted by individual defense mechanisms but could comprise items that are more representative of the styles as a whole. Further testing on these 37 items should include reliability, validity, comparisons between non-clinical and clinical samples and a focus on developing items for the styles rather than for individual defenses. Researchers should also consider whether there are any cultural influences on the use or prevalence of defense mechanisms and styles in their samples.

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