Author's response to reviews

Title: Ego Defense Mechanisms in Pakistani Medical Students: A cross sectional analysis

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Title: Ego Defense Mechanisms in Pakistani Medical Students: A cross sectional Analysis

Reviewer: Jean-Nicolas Despland

Thank you for consideration of our manuscript for publication in your journal. The authors also wish to extend their gratitude to the reviewer for kind perusal and feedback.

The concerns highlighted in the reviewer’s report have been addressed as under:

Is the question posed by the authors well defined? This study aims to identify the prevalence of various defense mechanisms employed by medical students of Karachi using the Bond Defense style Questionnaire. Defense mechanisms levels are supposed to be associated with the level of stress and the development of depression among students. Both questions are worthy of note, but the relationship between them is neither discussed, nor studied in this paper.

This is a preliminary study, the first of its kind in Pakistan, whose main objective was to identify the prevalence of the different defense mechanisms employed by medical students. Based on prior studies on a similar population (Shaikh 2004, Inam 2003, Khan 2006), the authors established the greater levels of anxiety and depression in medical students. Hence, our results reflect the ego defense mechanisms employed by a population with high stress levels. We have not compared our results with the general population of Karachi, Pakistan, or correlated it with their lower stress levels.

We have incorporated this in paragraph 6 of Background.

Are the methods appropriate and well described? The study of defense mechanisms is useful and interesting, but the authors do not describe the numerous methodological problems associated with this topic, especially with DSQ-40. Trijsburg and colleagues (2000) have emphasized that the validity of specific defenses is weak and that the evidence of the division of defenses measured with the Defense Style Questionnaire (DSQ) into immature, neurotic, and mature types appears to be lacking. Furthermore the underlying structure of the DSQ-40 was not tested, the internal consistency of the mature factor was fairly low and the content validity was based on judgments of a limited number of experts. They hypothesized that defenses can be represented unidimensionally and that the overall defensive functioning scores correlates positively with GAF in a psychiatric sample. The newly developed DSQ-60 (Thygesen et al. 2008) was designed to build upon strengths, and correct prior weaknesses in the scale’s development, but problems remain.
Trijsburg et al 2000 on DSQ-40: “The evidence for the division of defenses measured with the Defense Style Questionnaire (DSQ) into immature, neurotic, and mature types appears to be lacking. We concluded that the DSQ is a useful instrument for measuring overall defensive functioning.” We have incorporated this into our manuscript in paragraph 2 under discussion of Limitations.

DSQ-60 (Thygesen 2008): “Results are compared with prior research on the DSQ and suggest that the psychometric properties of the scale remain to be improved before broad use is warranted.” We have incorporated this in paragraph 3 under Limitations.

This study has more specific problems:
- In what way is the sample “representative”?

To incorporate a large and representative sample, students were randomly selected from 5 of the largest leading government and private medical colleges in Karachi, the country’s largest and most populous city.

- What are the difference between government and private colleges?

This has been described in paragraph 2 under Subjects in the Methodology section, as under: There are approximately equal numbers of government and private medical colleges and universities in Pakistan, all of which meet a strict criteria set by a central statutory and regulatory authority [19], ensuring a standard quality of education. However, private and government institutions differ in terms of subsidization of tuition fees and stronghold of student political unions, both greater in the latter.

- DSQ-40 is a self-report questionnaire: what was the task of the interviewers?

Interviewers outlined the nature and objectives of the study, and informed consent was formally obtained from every single study participant. The interviewers maintained uniformity in answering questions regarding the use, need, and implication of the research question.
- In which language was this version of DSQ-40?

As mentioned in paragraph 3 of Methods of Measurement under the Methodology section, the authors employed the original DSQ-40 in the English language, as all medical colleges and universities in Pakistan use English as the medium of instruction and examination.

- The method for calculating proportion of defenses and levels could be described more precisely.

The DSQ-40 was analyzed in 2 ways: (a) as originally suggested by Andrews et al. (1993), by pairing 2 items together under the label of a defense mechanism; and (b) as suggested by Andrews et al. (1993) by grouping the defense mechanisms into mature, neurotic, and immature defenses. The means (± standard deviation) for individual and grouped defenses were calculated.

Paragraph 3 of Methods of Measurement, and Data Analysis under Methodology have been revised to incorporate the above.

Does the manuscript adhere to the relevant standards for reporting and data deposition? Figure 1 is not useful, because redundant. In table, 1 or 2 decimal places is sufficient. Standards deviations are missing.

The redundant figure 1 has been replaced. The decimal places in table 1 have been rounded to 2 places, and standard deviations have been added.

Are the discussion and conclusions well balanced and adequately supported by the data? Results are discussed in a very speculative way, e.g. the prevalence of specific defense mechanisms among students, the psychopathology of adolescence, or concerning gender differences. In addition, it is not understandable in which way this study establishes a greater stress level among medical students than in general population. Are limitations of the work clearly stated? Some references are not listed, e.g. the different versions of DSQ-40 in Finnish, French, Japanese or Brazilian-Portuguese.

Based on prior studies on a similar population (Shaikh 2004, Inam 2003, Khan 2006), the authors established the greater levels of anxiety and depression in medical students of Karachi, Pakistan.

MBA has revised Results, modified References, and added Limitations.
Thank you for consideration of our manuscript for publication in your journal. The authors also wish to extend their gratitude to the reviewer for kind perusal and feedback.

The concerns highlighted in the reviewer’s report have been addressed as under:

The main methodological problem is the lack of normative data from the general youthful population in Pakistan. It is not possible to compare the scores of different defense styles with each other without any norm data and without appropriate statistical analyses.

This is a preliminary study, the first of its kind in Pakistan, whose main objective was to identify which ego defense mechanisms are commonly employed by medical students – a population established, by other prior studies (Shaikh 2004, Inam 2003, Khan 2006), to have higher stress levels than the general population. The authors have not compared the difference in prevalence of EDM in medical students versus the general population. We have, however, tried to identify the difference, if any, within the medical student population based on defined characteristics, i.e. gender, year of education, type of university, etc.

The authors give no data on the representativeness of their sample. How many medical students are there in Karachi, what is the gender distribution, and how large a proportion of them did the sample represent? What was the response rate? How many students refused from the study? How did they differ from those who consented?

The previously described methods have been critically analyzed, and subsequently revised to explain sampling and representativeness. The exact number of medical students in Karachi or their gender distribution has not been reported. However, it is known that there are 12 recognized medical colleges and universities in Karachi, with 90 to 200 students in every year (Pakistan Medical & Dental Council). The estimated average number of students in each year is 160, hence making a total of 9600 medical students in the city of Karachi alone. This would mean the study sampled approximately 7% of the population.

The response rate (calculated from the number of missing questionnaires) was 96%, incorporated in line 1 under Results.
The methods of the study are not described sufficiently. Actually, the first paragraph in the Results section could be moved to the methods section describing the subjects. Also the grouping of the subjects (according to gender, years in medical education, medical institutions, and “preclinical” vs “clinical”) for analyses should be given in the Methods section. A separate paragraph on the statistical methods used should be added.

This has been incorporated in Methods. The sample was grouped and compared based on gender and year of medical education, 1st and 2nd year students comprising the preclinical group while 3rd, 4th and 5th year students constituted the clinical students group. Defense mechanisms employed by the students were also analyzed in relation to the ‘type’ of college they were enrolled in, i.e. private and government medical colleges.

Paragraph 3 under Data Analysis is as under: Frequencies were calculated for categorical variables. The means (± standard deviation) for individual and grouped defenses were calculated. Respondents answered each of the 60 items on a 9 point Likert scale with anchors of one (not at all applicable to me) and nine (completely applicable to me). Scores for each defense were calculated by taking the mean of the two items representing the particular defense mechanism. Style scores were derived by taking the mean of the items belonging to each factor scale. Means were compared using the independent sample t-test. A p-value of less than 0.05 was considered to be statistically significant for all analyses.

Abstract:
What do the authors mean with use the term “Bond style” Defense Style Questionnaire (DSQ-40) (pp. 2, line 8)

If not defined in the methods, it is impossible to understand what is meant by “preclinical group” (pp. 2, line 12)?

Without any control data, how can the authors state that neurotic mechanisms are prevalent among medical students (pp. 2, line 14)

What kind of risk do the authors mean in the last sentence of the abstract (pp. 2, line 16)?

Bond style DSQ-40 refers to the modified 40-question DSQ, based on the original Bond questionnaire. The authors have, however, replaced the term with “DSQ-40” to avoid confusion. The term ‘preclinical’ has been replaced with ‘first and second year’ students.

The Results and Conclusion described in the abstract have been rephrased as under:
Results: Neurotic factors had a higher mean score (5.62) than Mature (5.60) and Immature (4.78) mechanisms. Immature mechanisms were more prevalent in males whereas Neurotic mechanisms were more commonly employed by females. Neurotic and Immature factors were significantly more prevalent in first and second year students. Mature mechanisms were significantly higher in students enrolled in Government colleges than Private institutions (p<0.05).

Conclusions: Neurotic mechanisms are prevalent among medical students of Karachi and this could reflect greater stress levels than the general population. Employment of these mechanisms was associated with female gender, enrollment in a private medical college, and preclinical students.

Introduction:
In general, the introduction should be more in line with the research question. The majority of the introduction handles with the level of stress of medical students while the research question is about defense mechanisms of medical students.

Inaccurate/irrelevant references make it very hard to evaluate the whole introduction. Reference 1 does not seem to contain the original information on defining defenses nor the DSM IV axes (pp. 3, line 6). Perhaps the authors wish to refer to a more appropriate source here. The second paragraph in the introduction might suit better to the Methods section. References 2 - 10 and 12 are missing in the text. Why is that? There seems to be some kind of confusion in referring to previous research.

The authors believe the data collected would help identifying medical students employing immature and neurotic defense mechanisms (pp. 4, line 2). However, they do not present any results or discussion on how to identify these students. The authors should refer to previous literature when stating that anxiety level varies through medical education (pp. 4, line 6).

The changes suggested by the reviewer have been incorporated in the manuscript:

1. The introduction is fine tuned to be more in line with the research question. The authors begin by defining and identifying the 20 major defense mechanisms. Vaillants’ proposed Hierarchy of Defenses has been referenced, which correlates mature, immature, and neurotic defenses with measures of adaptive adult functioning. Several studies have determined the association between individual defense mechanisms, their association (and significance) with stress, and levels of
adult functioning. The authors then proceed to quote prior studies which establish a higher level of stress in the medical student study population. (Shaikh 2004, Inam 2003, Khan 2006)

2. The aims and rationale of the current study have been clearly outlined.

3. The references have been revised thoroughly by MBA, and apologies extended for the frightful overlook.

4. The authors state that the data collected would aid in identifying the subset of medical students more likely to employ immature and neurotic defense mechanisms, which would then serve as a target for medical practitioners for teaching interventions, mental health-promoting strategies, and various awareness programs. The goal of these interventional programs would be to assist individuals in acquiring greater insight by bringing their unconscious behavior to consciousness and assisting them in understanding the cause of the behavior. This could eventually encourage adoption of mature defense mechanisms, and hence, a better quality of life, in coalition with social support systems, or psychotherapy.

Appropriate ways to do so have been discussed under the Discussion and Conclusion sections.

5. Varying levels of anxiety over the 5-year medical curriculum have been discussed elsewhere

**Methods:**
The authors should describe more precisely the methods of sampling? What is meant by “was randomly selected” (pp. 4, line 12), “a larger sample size” (line 12) and “more representative sample” (line 13) Reference 14 does not seem to an appropriate reference here.

Furthermore, the authors could find more recent literature on the validity of DSQ-40. Is the 67-item version really the original form of Bond’s DSQ (pp. 4, line 18 and pp. 5, line 5)? The authors should give references concerning the sentence “This instrument…with similar results to…original questionnaire” (pp. 5, line 4).

The previously described methods have been critically analyzed, and subsequently revised to explain sampling and representativeness. The exact number of medical students in Karachi or their gender distribution has not been reported. However, it is known that there are 12 recognized medical colleges and universities in Karachi, with 90
to 200 students in every year (Pakistan Medical & Dental Council). The estimated average number of students in each year is 160, hence making a total of 9600 medical students in the city of Karachi alone. This would mean the study sampled approximately 7% of the population.

Discussion on DSQ-40 and other forms has been extended to incorporate recent literature, both in the Methodology (paragraph 3 under Methods of Measurement) and Discussion (paragraphs 2 and 3 under Limitations) sections. The statistical tests have been outlined.

References have been revised to incorporate reviewer’s comments.

**Results:**
The authors should give the statistical tests and test results. What do the authors mean by “a comparable proportion…” (pp. 6, line 4)? What do the authors mean with “previous knowledge of defense mechanisms” (pp. 6, line 8) and how was this measured?

The rationale for presenting p values >.05 as statistically significant (e.g. pp. 6, line 19; pp. 7, lines 18-20; and tables) should be given.

The authors might consider rephrasing the sentence “…were more commonly found…” (pp. 6, line 21). What do the authors mean with “mature factors” (pp. 7. line 6)?

By ‘previous knowledge of defense mechanisms’, the authors aimed to assess whether the medical students were aware of the concept (and hence, implication and significance) of the concept of ego defense mechanisms. This was evaluated by a yes-no question, and has been rephrased in paragraph 2 of Results as under:

“Only 39 students (5.7%) of the total sample were aware of the concept of psychological defense mechanisms prior to this study.”

The results of the statistical analyses have been reviewed, and only results with a significant p value <0.05 have been included in the text and the table.

‘Mature factors’ = ‘Mature defense mechanisms’

**Tables and figure:**
Figure 1 is missing relevant information. Relevant statistical information, e.g. standard deviations should be given in tables 1 and 2. The authors present overlapping information in the text and tables (e.g. means on page 6, lines 11-13).
Figure 1 was considered redundant (overlapping information), and has been replaced to highlight the statistically significant gender differences in the prevalence of EDM using Independent Sample T-test. Standard deviations have been included in Table 1. Table 2 has been deleted from the final manuscript.

**Discussion:**
The authors should be more careful in generalizing the results to represent “the entire medical student population in Karachi/Pakistan without any data on the representativeness of the sample (see comment 2). Before stating “a large proportion of the future physicians of Pakistan might be females” (pp. 8, line 4-6) one needs to have data on the gender of medical students in the Country.

It seems the authors have misunderstood the results of the study by La Cour (2002) in comparing his results with their own (e.g. pp. 8, lines 18-20).

The authors should consider reporting the results in some other form than “the most common defense mechanism” (e.g. pp. 8, line 18). Using the methods in the ms, it seems that the only a limited discussion of the results concerning “the year of medical education” would be possible (e.g. p.8, lines 23-25).

Furthermore, the study of Evans et al. (2000) reports data on only adolescents, not young adults. The authors state concerning the anticipation “it was found to be so independently of gender and year of education” (pp. 9, line 3). Where are the results supporting the notion? On page 9. line 12, the authors probably mean “female students AND students in the clinical group”.

Can the authors really infer whether the greater use of immature and neurotic factors among preclinical students is due to age, clinical responsibility or both (pp. 9, line 21)?

The authors refer to Levitt’s (1991) study. How do the authors think that defense style factors associate with introversion (and gender) (pp. 10.line 5) and thus explain their findings? The grounds for this are difficult to understand in ms. Is it really possible to infer the labileness of women’s emotions according to gender differences in isolation (pp. 10. line 9) and why do the authors refer to Levitt’s study here?

What does “significantly common” (pp. 10. line 13) mean? What is meant by “higher prevalence” (pp. 11, line 3) and which normal population do the authors refer to (line 4)? Risk factor for what (pp. 11, line 6)?
A separate paragraph on the limitations of the study is needed.

The representative and sampling have been discussed under Methodology and Limitations. As our data was collected from five different medical colleges of Karachi, it would be safe to say that our results can be generalized to represent the entire medical student population of Karachi, if not Pakistan. There is no official demographic data on the Pakistani medical student population. Hence, to purport the growing proportions of female students worldwide, studies conducted in UK, USA, and Canada have been referenced (Burton 2004, Barzansky 2006-07, BMA 2004).

Comparison with La Cour’s, Levitt’s, and Evan’s studies have been revised, as suggested by the esteemed reviewer. Concerning the use of Anticipation, the authors state “it was found to be so independently of gender and year of education” which means they did not find a statistically significant association with either of the two.

The authors have cautiously reasoned that the greater use of immature and neurotic factors among preclinical students is due to both age (to a lesser degree), and clinical responsibility.

Gender differences have been explained, and referenced (Freud 1937, Levitt 1991, Brody et al 1985, Cramer 1979, Borrelli 1979). Paragraphs 2 and 3 state:

“The positing of gender differences in defenses on the basis of classical psychoanalytic theory [1] has generally been supported in prior investigations, which state that women tend to use internalizing defenses such as Introversion, and men are more likely to employ externalizing ones [28, 31, 32] such as Projection and Aggression [32,33].

In our study, the mean score of Isolation was found to be significantly greater in males than females. This is consistent with findings made by Watson and Sinha [26] and La Cour [22]. Females are generally more emotionally labile as compared to their male counterparts who are better at splitting emotional components from their thoughts [28], as shown by higher means for Isolation in men in our study.”

The terms “higher prevalence”, “risk factor”, and “significantly common” have been deleted, and replaced. A separate paragraph discussing the Limitations of the study has been included in the Discussion section.

References:
The relevance and numbering of all the references need to be re-examined. Many references seem to be old. At least part of them could be updated.
MBA has thoroughly revised this section.

Why not use a table concerning the year of education and defense mechanisms?

The authors appreciate the commendable suggestion, and have incorporated a table concerning the gender and defense mechanisms, which they felt had more discussion points.