Anxiety, stress, depression, and psychosocial functioning of Indian adolescents

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ABSTRACT

Background: Lifetime prevalence of depression and anxiety increases from 1% of the population under age 12 years to ~17%-25% of the population by the end of adolescence. The greatest increase in new cases occurs between 15-18 years. Indian empirical studies have reported a prevalence of psychiatric morbidity in the range between 14.4% and 31.7%; thus, affecting psychosocial functioning.

Aims: The objectives of the current study were to (i) examine the psychometric properties of the DASS and SDQ on Indian adolescents, (ii) explore the role of socio- demographic variables and (iii) examine if there was any difference between school going and school dropouts.

Methodology: Data from 1812 students, aged 12-19 years was collected with mean age = 15.67 years (SD =1.41 years). The participants were administered a booklet containing demographic questionnaire and psychometric scales such as DASS-21 (Henry & Crawford, 2005; Lovibond & Lovibond, 1999) and Strengths and Difficulties Questionnaire (Goodman, 1997).

Statistical Analysis: Structure validation, correlational analysis and multivariate analysis.

Results and Conclusions: The results of validation indicated that English and Hindi version of 3 factor model of DASS and 2 factor model of SDQ was an acceptable model fit. It was noted that early adolescents were high on prosocial behaviour whereas late adolescents were high on difficulties score. Females were higher than males on prosocial behaviour. Adolescents residing in rural areas differed from their urban counterparts on prosocial behaviour and anxiety. Government school going adolescents differed from private school going adolescents on prosocial behaviour, stress and anxiety. Negative perception of relationship with family affected adolescents difficulties score, depression and stress. Similarly, negative perception of self-concept leads to higher difficulties score and lower prosocial behaviour score. The school going adolescents differed from non-school going adolescents on stress, depression and anxiety.

Key words: Anxiety, depression, psychosocial functioning, stress

INTRODUCTION

Depression and anxiety are recognized as common, serious disorders and debilitating mental health problems in the changing social context and are afflicting adolescents and student population to a large extent.[1,2] Lifetime prevalence increases drastically from 1% of the population under age 12 years to ~17-25% of the population by the end of adolescence, with an increase in cases in age-group of 15–18 years.[3,4]

Depression, Anxiety, and Stress Scale 21 (DASS-21) has been widely employed to assess relationship and effect of depression, anxiety, and stress among various population, age-groups, clinical and nonclinical respondents and
discriminate between anxiety and depression.\[5,6\] There are two versions of the scale; a long form (42 items) and short form (21 items) both versions are reliable and valid measures in clinical and nonclinical populations\[5,6\] and different cultural and ethnic groups.\[9,10\] The factor structure of the DASS was found same in clinical and nonclinical samples, supporting the idea that clinical disorders represent an extreme or maladaptive manifestation of basic emotional syndromes.

Depression, Anxiety, and Stress Scale 21 has a stable and clear factor structure which is established by either analyzing items obtained from participants’ ratings of DASS-21\[7,10\] or examining factor structure from direct ratings of DASS-21.\[11\] Although confirmatory factor analysis (CFA) results have supported the three-factor model as theorized, a close examination of the fit indices reported in most studies actually reveals poor or mixed support for the model, according to the recommended guidelines.\[12\] However, a study on different cultural groups such as Hispanic, American, and British adults demonstrated good fit for the theorized three-factor model.\[10\] Recent findings\[13\] support validity and reliability of the three-factor constructs of the DASS to measure depression, anxiety, and stress symptoms among medical course applicants.

Depression, anxiety and stress affect psychosocial functioning of adolescents. Psychosocial functioning is an important mental health aspect to investigate since adolescents spend their maximum time in school and with peers. One of the instruments employed widely to measure psychosocial functioning is Strengths and Difficulties Questionnaire (SDQ).\[14\] The scale measures five distinct domains of psychosocial adjustment among adolescents namely: Hyperactivity/inattention, emotional symptoms, conduct problems, peer problems, and pro-social behavior.\[15,16\] SDQ’s subscales are found to be (a) conceptually meaningful, (b) consistent with current knowledge of comorbidity, and (c) indicative of distinct constructs.\[17–19\] However, low consistency coefficients have been observed for the self-report form especially for conduct problems and peer problems sub-scale.\[19–23\] The low internal consistency values may be due to (i) less items in each SDQ subscale, (ii) possibility that these subscales measure heterogeneous content than intended\[19\] and (iii) due to several positively worded reverse-scored items in the conduct problems and peer problems subscales.\[23\] However, the exploratory factor analysis (EFA) and CFA are established in different languages,\[24–26\] across continents and countries such as UK, Europe, Asia, USA, and Australia\[25–27\] and cultures.\[20,28\] However, the CFA results vary.\[29\] Some studies have found support for a five-factor model\[25,29,30\] three-factor solution\[31,32\] and some for a two-factor model.\[32,33\] CFA analysis has been carried in different countries such as Norway, Belgium, and Russia.\[34–36\]

Demographic variables seem to have a profound effect on the expression of anxiety and depression depending on the perception of oneself and also the social context in which one is operating in the individual’s life. The most consistent finding in the literature is the higher prevalence of depression in females than males which is attributed to menarche, a normal hormonal change.\[37,38\] Depression in females is associated with anxiety, sleep, appetite disturbances, and fatigue.\[39\] In addition, females are observed to be more dissatisfied with body image, feelings of failure, concentration problems, and work difficulties.\[40\] Cultural beliefs and differences in help-seeking behaviors and accessing mental health services have accounted for some of the differences.\[41\]

**Indian youths and mental illness**

According to UNICEF (2011), India is a house to 20.5% adolescents of the amounting to around 243 million youths. Adolescence as a phase of life has been given importance in the ancient text of Dharamashastra, which recognized the complex nature of adolescence and prescribed specific codes of conduct for this phase of life. Even today, the traditional codes of conduct continue to influence the cultural practices toward adolescents.\[42\] In line with Indian collectivist cultural values, even in today’s time youngsters are expected to conform and be loyal to family norms and group harmony.\[43\]

There is the absence of statistical data about prevalence of mental health among Indian adolescents, though various research studies report psychiatric morbidity in the range between 14.4% and 31.7%.\[44\] Mood disorders were assessed among South Indian urban adolescents. It was observed that 37.1% were mildly, 19.4% were moderately, and 4.3% were severely depressed.\[45\] Among young Indian males, depressive symptoms were present in 18.5% of the participants, anxiety in 24.4%, and stress in 20%.\[46\] In 87% of participants, comorbidity of anxiety and depression was found.\[47\] In addition, depression and stress were found to be significantly associated with a number of adverse events over the course of time,\[48\] suicidal behavior,\[49\] and poor psychosocial functioning like poor academic performance.\[48\]

**Study aims**

Aims of the study were to (a) investigate the factor structure for SDQ and DASS in Indian setting; (b) to investigate the role and effect of demographic variables, family and self-concept on psychosocial functioning, depression, stress, and anxiety (c) to investigate if there is any difference between school dropouts and school-going adolescents.

**MATERIALS AND METHODS**

**Participants**

In this study, there were two sample sets. Sample 1 consists
of adolescents attending school. These adolescents were well-versed with Hindi or English. The sample consisted of a total of 1812 adolescent participants. Of 1812 participants, 1054 (58.2%) were males, and 757 (41.8%) were females. The age range was 12–19 years with mean as 15.67 years (standard deviation [SD] =1.41 years). With respect to residence, 674 (37.2%) of participants resided in rural areas, whereas 1088 (60%) were staying in urban areas, and remaining were missing values (2.8%). There were 42.3% of participants who attended government school, whereas 57.7% attended private school. The majority (40.4%) of the participants studied in class 11 whereas the remaining participants were either in class 8 (8.8%), class 9 (2.8%), 10 (21.4%), or 12 (25.9%). About 0.7% of the participants did not report in which class they were studying. The majority (53.8%) of the participants resided in nuclear families whereas others resided in joint families (41.4%). However, 4.8% of participants did not mention the type of family they resided.

The sample 2 consisted of 120 Hindi speaking adolescents who were school dropouts living in rural areas. Of the 120 school dropouts, there were 65 males and 55 females (mean age =16.71 years; SD =3.44). For purpose of comparison with dropouts, 498 participants from sample 1, who were living in the same locality and answered the questionnaire in Hindi, were only used for school going versus dropouts comparison to match locality and language of both groups. Of them (498 participants), there were 246 males and 252 females with a mean age =16.39 years and SD =1.14.

Measures
The study employed quantitative methodology to collect data. The booklet also consisted of different psychometric scales, questions related to self-concept and relationship with family [Table 1].

### Table 1: Questions asked to adolescents with respect to the relationship with family and self-concept

| Question asked                                                                 | Response – Options | Factor                   |
|-------------------------------------------------------------------------------|--------------------|--------------------------|
| Can you express your opinions and thoughts in front of your parents and other family members? | No                  | Relationships with family |
| Do you think there is a relaxed environment in your family?                   | No                  | Relationships with family |
| Overall how is relationship amongst your family members?                      | Strained           | Amicable                |
| Are you satisfied with your physical appearance?                              | No                  | Self-concept             |
| Are you satisfied with your dressing style?                                   | No                  | Self-concept             |
| Do you have facilitating environment to use your character strengths?         | No                  | Self-concept             |

Strength and Difficulties Questionnaire\(^{[15]}\) is a 25-item, brief behavioral screening questionnaire. The questionnaire is scored on 3-point scale (0–2), “0” denoting “Not True” and “2” denoting “Certainly True.” The questionnaire is divided into five subscales – emotional symptoms, conduct problems, hyperactivity, peer relationship problems, and pro-social behavior. The sum of the items in each subscale gives their total score and the sum of the total scores of the subscales except for pro-social behavior gives the total score for difficulties. Since the Cronbach alphas were low for individual subscales of difficulties, a combined total score for difficulties was employed during analysis in this study. The Cronbach alpha for pro-social behavior (English = 0.58; Hindi = 0.55) and for total difficulties score (English =0.62; Hindi = 0.61) were acceptable. Few studies\(^{[20-23]}\) have reported low Cronbach alpha for the self-report.

**Procedure**

**Instrument translation**

Three bilingual experts translated the original English version of all the psychometric scales into Hindi language. The scales were later back-translated by bilingual experts into English to verify the content similarity to the original scales and to ensure that translated scales were true copy of the original tests. The discrepancies were resolved, and the test was once again verified by the authors and bilingual experts.

**Data collection**

The researchers contacted various schools located in Delhi-NCR and adjoining rural areas of Haryana and Uttar Pradesh to obtain permission for data collection. The permission was sought from the school principal, and a consent letter was signed by the school authorities. The class teachers were requested to arrange a session for an hour. After allocation of time slot by the class teacher, researchers went to the classroom and distributed the booklets. The booklet consisted of demographic performa sheet, questionnaire on the relationship with family and self-concept, and various tests including SDQ and DASS along with several other scales. This study is a part of the larger study that was conducted to explore the mental health of adolescents residing in these areas. Participants were briefed about the nature of the study and were asked to sign the consent form. Further, instructions were given...
to the students regarding filling up information in the booklet and timely doubts of the students were clarified. The students were assured of confidentiality of information.

The original English version and the translated Hindi version were administered. There were 591 (32.6%) participants who responded in English whereas 1221 (67.4%) of participants responded in Hindi. The participants were given language choice.

Statistical analysis
The data was analyzed using Statistical Package for the Social Sciences (SPSS) version 15.0 and LISREL 8.8. The data were screened to check the minimum and maximum values for each statement of SDQ and DASS Scales. SPSS preliminary frequency output was analyzed for missing values. Frequency analysis for each item indicated that responses for each statement had minimum and maximum values within the range. The percentage of missing values was under 5% and random in nature. Therefore, missing data was replaced by means of a regression imputation as recommended by Tabachnick and Fidell (2007). The descriptive analysis, CFA, and multivariate analysis were employed on the data.

RESULTS
The SDQ scale had means (Hindi 1.11–2.42; English 1.36–2.63) and SD (Hindi 0.68–0.86; English 0.54–0.75) were in an acceptable range. The absolute skewness (Hindi −0.35–0.48; English −1.08–1.36) and kurtosis (Hindi −0.98–1.35; English −1.36–1.08) were within acceptable range of <2.0 (Skewness) to <7.0 (Kurtosis) thus demonstrating that domain scores were approximately normally distributed. Similar results were observed for DASS. The means (Hindi 0.43–1.24, English 0.54–1.24), SD (Hindi 0.82–1.23; English 0.90–1.10), skewness (Hindi 0.004–1.26; English 0.34–1.53), and kurtosis (Hindi −0.98–2.87; English −0.92–1.15) were within the range.

Section I: Confirmatory factor analysis for Strength and Difficulties Questionnaire and Depression Anxiety Stress Scale
Table 2 indicates the CFA for English and Hindi version of SDQ and DASS. Figures 1-4 indicate the factor loadings and domain correlations for the scales. Table 1 and Figures 1-4 demonstrate acceptable CFA properties for English and Hindi version of SDQ and DASS. For SDQ, all suggested factor models in the literature were tested in this study. However, the five and three-factor models fit indices confirmed to the norms poorly hence the two-factor solution was tested which was comparatively better in this study fit.

Section II: Domain inter-correlations
Table 3 indicates the inter-correlations between the measures of SDQ and DASS. The results indicate that pro-social behavior is negatively correlated with difficulties, stress, depression, and anxiety whereas all the other negative mental health indicators are correlated significantly positively with each other.

Section III: Role of demographic variables in Depression, Anxiety, and Stress Scale and Strengths and Difficulties Questionnaire
The relationship between demographic variables, SDQ and DASS, was computed. The participants who did not furnish information on demographic data (Age-group [n = 51, 2.8% of total sample size], relationship with family [n = 35, 1.93% of total sample size] and self-concept [n = 123, 6.79% of total sample size]) were excluded from the analysis. Multivariate analysis was conducted for SDQ and DASS.

The multivariate results indicated main effects for age-group (Female [5, 1571] =5.50, P < 0.01), gender (Female [5, 1571] =5.57.850, P < 0.01), type of school (Female [5, 1571] =3.25, P < 0.01), place of residence (Female [5, 1571] =7.30, P < 0.01), ability to express thoughts and opinion in front of parents (Female [5, 1571] =3.05, P < 0.01), presence of relaxed environment at home (Female [5, 1571] =4.36, P < 0.01), and presence of amicable relationships among family members (Female [5, 1571] =3.17, P < 0.01).

The difficulties score (Female [5, 1571] =109.36, P < 0.01) and pro-social behavior (Female [5, 1571] =73.18, P < 0.01) affected age-group significantly.
It was observed that mean score of early adolescents (Male = 7.87) was higher on pro-social behavior as compared to middle adolescents (Male = 7.81) and late adolescents (Male = 7.47). However, for difficulties score, it was observed that late adolescents (Male = 18.64) had higher mean score as compared to early (Male = 16.06) and middle adolescents (Male = 16.74).

Females (Male = 8.07) possessed higher pro-social behavior mean as compared to males (Male = 7.59) (Female [1, 1571] = 41.69, $P < 0.01$) whereas males (Male = 17.00) possessed level of difficulties score as compared to females (Male = 16.43) (Female [1, 1571] = 27.59, $P < 0.01$). Rural adolescents differed from urban adolescents on pro-social behavior (Female [1, 1761] = 13.09, $P < 0.01$) and anxiety (Female [1, 1761] = 18.60, $P < 0.01$). Government school and private school adolescents differed significantly on pro-social behavior (Female [1, 1761] = 32.59, $P < 0.01$), stress (Female [1, 1761] = 5.55, $P < 0.05$), and anxiety (Female [1, 1761] = 3.73, $P < 0.05$).

Relationship with family was assessed as ability to express opinion and thoughts in front of parents and family members, perceived presence of relaxed family environment and perceived overall relationships among family members. Positive perception of opinion and thoughts expression in front of parents and family members affected adolescent’s pro-social behavior (Female [2, 1800] = 27.29, $P < 0.01$).
Adolescents who perceived inability to express opinion and thoughts in front of parents and family members possessed higher total difficulties scores (Female [2, 1800] = 76.42, \( P < 0.01 \)).

Adolescents who perceived absence of relaxed family environment suffered from total difficulties score (Female [2, 1804] = 19.08, \( P < 0.05 \)) and depression (Female [2, 1804] = 4.45, \( P < 0.05 \)).

Adolescents who considered that there was absence of amicable relationship among family members suffered from total difficulties score (Female [2, 1794] = 4.39, \( P < 0.05 \)), stress (Female [2, 1794] = 5.29, \( P < 0.01 \)) and depression (Female [2, 1794] = 5.08, \( P < 0.05 \)).

Self-concept was assessed as adolescent’s satisfaction with physical appearance, satisfaction with dressing style and presence of a favorable environment to facilitate character strengths.

Satisfaction with physical appearance positively affected adolescents pro-social behavior (Female [2, 1787] = 20.66, \( P < 0.01 \)). Adolescents who were dissatisfied with their physical appearance displayed total difficulties score (Female [2, 1787] = 43.00, \( P < 0.01 \)) and dissatisfied with their dressing style displayed total difficulties score (Female [2, 1803] = 13.25, \( P < 0.01 \)).

Adolescents who perceived presence of for facilitating character strengths displayed higher score on pro-social behavior (Female [1, 1720] = 20.66, \( P < 0.01 \)) and absence of environment for facilitating character strengths suffered from total difficulties score (Female [1, 1720] = 5.23, \( P < 0.05 \)).

School dropout versus school going children

\( T \)-test results have indicated that school dropouts indicated higher level of stress (\( t [616] = 4.15, P < 0.05 \)), depression (\( t [616] = 7.15, P < 0.01 \)), and anxiety (\( t [616] = 5.93, P < 0.01 \)) as compared to school attending adolescents.

**DISCUSSION**

The objective of the present study was to investigate the psychometric properties, CFA for DASS and SDQ and also the effect of demographic variables on the same. The study also aims to investigate the differences in response to DASS and SDQ of school going and drop out adolescents.

According to the findings of the study, CFA properties of both DASS and SDQ have been found to be acceptable. The DASS brief 21-item version is a reliable and valid measure of depression, anxiety, and stress in clinical and nonclinical population of adults and different cultural and ethnic groups. The factor structure of the DASS is consistent in clinical and nonclinical samples. The factor structure of the current study aligns with a factor structure from other studies. Although the DASS has previously been used in research involving adolescent samples, its psychometric properties were not established in population younger than 18 years of age. Hence, the current study is a value addition to the literature with respect to factor structure validity for the adolescent sample. The current study also fulfills the void of examining the validity and reliability of DASS-21 for adolescents, who may not have yet experienced these three specific emotional states. Recent findings align with the results of the current study that too support validity and reliability of the three-factor constructs of the DASS to measure depression, anxiety, and stress symptoms.

The SDQ in its different language versions has been widely used in a variety of studies. The SDQ factor structure and psychometric properties have been widely replicated in samples from United Kingdom, Europe, Asia, USA, and Australia. Regarding the internal structure, there are a large number of studies confirming the existence of the five theoretical dimensions, using both EFA and CFA. There discrepancies with respect to valid factor structure for SDQ. Different factor structures such as five-factor model, four-factor model, three-factor model and a two-factor model have been documented in literature. The current study was able to confirm an acceptable two-factor solution.

According to the findings of the present study, pro-social behavior is negatively correlated with difficulties, stress, depression, and anxiety whereas all the other negative indicators of mental health are correlated significantly positively. Children’s temperament dimensions and characteristics have repeatedly been shown as being related to social competence, skilled social behavior, pro-social behavior, and cognitions. Children with temperamental inhibition, who typically display fear, anxiety, and withdrawal when confronted with a range of novel stimuli including people, objects, and situations, have been observed to show a reticent style of interaction (i.e., on-looking, unoccupied behavior with signs of anxiety) and are generally considered to be at risk for later peer rejection. Higher rate of pro-social interactions was linked to greater life satisfaction and pro-social acts for middle school students. According to the findings of the study, gender differences were reported in pro-social behavior with females engaging in more pro-social acts as compared to males. Women placed more importance on the social psychological value of pro-social behavior than did men. Based on gender roles, females are believed to be more responsive, empathetic, and pro-social than males whereas males are expected to be relatively independent and achievement oriented.

Geographic location or residence tends to influence people’s...
behavior of caring and sharing due to their social interactions. For instance, rural residents are more likely to help or share due to the fact that they have been used to live cohesively as opposed to urban residents who are more disintegrated. According to the findings of the current study, relationship with parents has also been implicated in pro-social behavior and total difficulties score. According to research findings, out of all the stages of one’s life, adolescence represents a difficult developmental period whereby many demands are imposed on the adolescents by others and themselves as well. Poor family environment in terms of parental hostility, rejection, and inconsistencies can all contribute to psychological problems viz., anxiety, stress, neuroticism, depression, and many others. Though life without stress cannot be imagined and up to a certain limit may be adequate for personality development, but if noncongeniality prevails for a longer period, these stresses become too severe which may affect the psychic equilibrium producing maladaptive patterns of behavior. Stress and anxiety are the offshoots of inadequate interaction with the environment, and family environment is the chief cause. At the same time, the adolescents’ attempts toward individuation and developing a self-concept may affect parent-child relationship and imbalance the family environment leading to conflicts thereby thwarting the cohesiveness and organization of the family leading to stress and anxiety. By and large, the results of this study are in tune with the previous literature.

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