Pakistan Journal of Psychological Research, 2010, Vol. 25, No. 2, 115-130

Development of an Indigenous Depression Scale for Adolescent Schoolgirls

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Depressive symptoms in adolescence are a risk factor for psychiatric disturbances in adulthood. Therefore, the assessment of early signs of depression in adolescent schoolgirls was undertaken that entailed three phases. In the first phase, 87 schoolgirls were interviewed and 40 items related to depression were obtained. These were judged for its content validity by experts in second phase. In the third phase, these extracted items were administered on schoolgirls ($N = 500$) along with Children Depression Inventory (Kovacs, 2007). Factor analysis revealed three main factors, i.e., Loneliness, Irritability, and Anxiety. The sensitivity and specificity index of the scale also appeared to be promising. The results demonstrated high internal consistency (.88) of this scale. The scale had moderate correlation (.68) with Children Depression Inventory.

Keywords: depression, adolescent schoolgirls, indigenous depression scale

Adolescence is the period of blossoming, youthfulness, joy, zeal, energy, and all that is positive is the essence of being a human. It is quite disheartening to notice a disappearance of hope and joy in young school going children. It is, however, a fact that depression or depression like symptoms in school going children is often unrecognized as it is difficult to assess emotional disturbance in children. Their low grades, decreasing interest in studies or withdrawn behavior, is usually taken as poor motivation and low ability; behavioral remedies are, therefore, prescribed to the teachers or parents (Afzal, Rana, & Mehmood, 2008).

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The prevalence of major depression increases from childhood to adolescence with 3% in prepubertal children and up to 9% in adolescence (Cooper & Goodyer, 1993; Fleming & Offord, 1990). Adolescents experiencing social and academic problems are more vulnerable to develop depression which predisposes them to school failure and interpersonal difficulties (Eley & Stevenson, 2001; Seroczynski, Cole, & Maxwell, 1997). Thus, school failure seems to have a transactional relationship with childhood depressive symptoms which may lead to a major depressive episode in emerging adulthood (McCarty et al., 2008). There is growing evidence that earlier emotional disturbances lead to functional and emotional disturbances in adult life (Harrington, Fudge, Rutter, Picles, & Hill, 1990; Kandel & Davies, 1986; Marttunen, Henriksson, Aro, & Lonnqvist, 1991; Rao, Weissman, Martin, & Hammond, 1993).

It is generally agreed upon that manifestation of depressive symptoms in children is different from that in adults and it usually goes unrecognized. Adolescents cannot express their feelings of distress and thoughts as adults can. One of the main differences between adult and adolescent depression is that depression in adolescents usually involves more social and interpersonal difficulties which directly leads to self-esteem problems. Aggression and an obsession with death often accompany their depression. Adolescents are prone to think about suicide in response of their helplessness (Lamarine, 1995); that is why the behavioral measures used for assessment of depression in adults are not suitable for use with children.

The risk for developing depression exists in both genders, however, adolescent girls have been reported to experience depression two to three times more than boys (Wade, Cairney, & Pevalin, 2002). The difference could be due to both biological and psychosocial factors and can also be contributed by an early onset of puberty (Kaltiala-Heino, Marttunen, Rantanen, & Rimpela, 2003). The epidemiological and community based studies also establish that girls typically have been found to display higher levels of depressive symptoms than boys (Avison & McAlpine, 1992; Compas et al., 1997). A Turkish study reported that the ratio of depression in boys and girls to be 0.8:1. The study also reported that the frequency of depression increased more with age in girls than in boys (Toros et al., 2004).

The issue assumes a different context in Pakistan where girl child is reared differently. Girls are expected to fulfill more than one role and associated responsibilities compared to boys. Adolescent

girls are, therefore, seen to be more at risk for developing depression also because of being more receptive to the stressors faced by parents (Afzal et al., 2008). Though, both girls and boys experience the challenges, they are different in their reactions in response to these challenges; boys usually tend to externalize their emotional reactions and girls on the other hand internalize (Sarah & Brend, 1990). One must keep these differences in mind while developing assessment indicators.

It seems, therefore, quite pertinent to keep these gender differences in focus while exploring the phenomenology of depression as experienced by adolescent schoolgirls. The current study is especially designed to capture the unique expression of depressive symptoms among Pakistani adolescent schoolgirls. This exploration will lead to the development of an assessment tool for the early detection of depressive expression which can help to improve school performance and preempt clinical depression in adulthood and improve school performance. The school attending children are seldom assessed for their emotional health until their symptoms warrant the attention of a professional. Moreover, in Pakistan there exists no appropriate instrument to assess depressive symptoms in young girls.

Although, the Children Depression Inventory (Kovacs, 2007), most commonly used instrument to assess depression in children, focuses on clinical depression; given that the psychological stressors of Pakistani adolescence girls may be different from those of other (Western) countries (see e.g., Achenbach & Rescorla, 2001; Joshi, Capozzoli, & Coyle, 1990; Toros et al., 2004), it may miss out culture specific expressions of depressive experiences. The problem with these scales is that these measure clinical symptoms and seems useful in clinical settings but when used in general settings as in schools to identify undetected signs of depression they may result in more false negatives. A psychometric tool, moreover, depends on normative structure of responses; therefore, the use of those tools which consist of the norms of another culture appears ethically inappropriate (Anastasi, 1990). As the psychological stressors of Pakistani adolescence girls may be different, these scales may miss out culture specific expression of depressive experience.

There is a strong need to develop an indigenous scale for screening of depressive symptoms in female adolescents. The present study, thus, aims to explore the phenomenon of depression in adolescence schoolgirls and develop an instrument based on that phenomenology of depression among them. Further, the psychometric properties of the scale will be established.

Method

Considering the purpose of the present research, to develop an indigenous depression scale for adolescent schoolgirls, this study was conducted in three phases.

Phase I: Exploring Phenomenology about Depression

Sample. Purposive sampling was used to select the sample. Sample consisted of 87 adolescent schoolgirls from the three Government High Schools of the Lahore city. This sample was taken from the 6th, 7th, 8th, and 9th grade. The age range of the sample was 12-15 years (M = 13.32, SD = 1.05). The girls with ages of less than 12 or above 15 were excluded from the sample.

Instrument. A semi-structured interview schedule and 10 emoticons (Beder, 2004) depicting variations of mood (happiness, content, anger, sadness, guilt, worry, confusion, fear, bored, tired) were used to determine the client's present mood. Instructions were "I have some emoticons, look at them carefully and select one with which you identify yourself. In which situation you feel like this? What do you usually think when you feel this? What is your behaviour in such situations?" These questions were developed to tap the emotional, behavioural, and cognitive aspect of depressive symptoms in adolescent schoolgirls.

Procedure. The teachers were asked to select those girls who appeared sad, isolated, and did not participate in class activities. The adolescent schoolgirls (N = 87) who were referred by the teachers were assessed for their mood with the help of different emoticons. These 87 girls who selected emoticons expressing unhappy feelings as their current mood were interviewed. They were then asked to describe those situations when they felt depressed and then to describe their thoughts, feelings, and behaviors in those situations; for this a semi-structured interview schedule was used. Their verbatim were recorded in the form of complete sentences, then the repetitions in verbatim were excluded and 40 common verbatim were collected.

Phase II: Establishing the Content Validity

The purpose of the second phase was to determine the content validity of the verbatim. Ten practicing clinical psychologists were requested to evaluate the list of 40 verbatim with regard to their

relevance to the concept of depressive symptoms. As all the verbatim obtained more than 50% endorsement from the judges, hence were retained for the final scale. Four point rating scale (0-3) — 0 stands for *never*, 1 stands for *sometimes*, 2 for *often,* and 3 was indicative of *always* — was then selected to assess the intensity of each verbatim in the main study. The judges' consensus led to the rewording of 4 items in positive way to counter the response set in respondents. These 40 items, henceforth, referred as Depression Scale for Adolescent Girls (DSAG) was studied for their psychometric properties in the third phase of the study.

Phase III: Determining the Psychometric Properties of DSAG

The purpose of the main study was to establish the psychometric properties of the DSAG.

Sample. Schoolgirls of 12 to 15 years age were included in the sample. Girls having age less than 12 years and more than 15 years were not included in the sample. Sample size was 500 adolescent schoolgirls from 6th (22.4%), 7th (26.4%), 8th (38.2%), and 9th (13%) class selected through stratified sampling. Sample was taken from three government schools of Lahore city and classes were taken as 4 stratas. It was decided to take 50% students from each class. Every other child sitting in the class was selected through randomization. The number of students in each class was not the same as percentages of sample indicated that 7th and 8th class are larger than 6th and 9th class.

Instrument. In this phase, Children Depression Inventory (CDI) (Kovacs, 2007) was used to establish the concurrent validity of DSAG being the most commonly used scale for the screening of depressive symptomatology in children and adolescents. The CDI contains 27 items including questions about depressive symptoms. Each item is rated on 3-point rating scale for the evaluation of its intensity. This scale has respectable values of reliability, sensitivity and specificity as reported in different studies (Kovacs, 2007; Sorensen, Frydenberg, Thastum, & Thomsen, 2005; Rivera, Bernal, & Rossello, 2005).

In the present research CDI was translated, back translated, and tried out for its comprehensibility in 20 girls which helped us to ensure its use in main study. The process of translation and back translation was followed to enhance the understanding and efficacy of this tool in our culture (Jones & Kay, 1992). These 20 girls were taken from the youngest age group of the sample. Translated version of CDI

seemed easy to understand as they reported no difficulty regarding the understanding that ensures its use for main study because understanding of this tool in a younger group ensure its use in older age group as well.

Procedure. The permission for data collection was obtained from the headmistresses of the schools. Classes were large that's why every other child sitting in class was selected as a research participant and taken in a different room for test administration. Verbal informed consent was obtained from the participants. The issues of confidentiality and right to withdraw from research were also discussed with the participants. All the girls who were approached participated as no one refused to take part in this research activity. Group administration was used in this procedure. The initial form of DSAG and the CDI were administered on schoolgirls. They were also debriefed after they filled the scales.

Results

Factor analysis was carried to give structure to the scale and for final selection of the items. Different statistical analyses were used to establish the psychometric properties of DSAG. The result section consists of reliability estimates, concurrent validity, and sensitivity and specificity of this scale which are the main components of an indigenous scale development.

Exploratory Factor Analysis

Factor analysis is a strong method of determining the construct validity of a psychological test. In this study Principle Component Analysis Varimax rotation was used to determine the factor structure of DSAG. After factor analysis on 40 items, 36 items were retained for the final scale. The criteria of selecting factors were a minimum of .30 loading of an item on a particular factor. Four items were removed due to their lack of relevance with major constructs of this scale. Three items had loadings less than .30 and fourth item was discarded due to its dubious nature as it contained high factor loadings on all three factors. Table 1 shows factor loadings of only selected items distributed in three main factors in the DSAG.

These factors were named then on the basis of their content and consensus between the researcher and two clinical psychologists with the experience of more than 20 years in relevant field.

Table 1

Factor Loadings, Eigen Values, Cumulative Percentages, and Variance of Items of DSAG on Three Factors (N = 500)

Item no.	*F1*	*F2*	*F3*
1	.386		
2	.469		
3	.432		
9	.539		
16	.646		
17	.612		
20	.474		
26	.545		
27	.449		
28	.489		
29	.492		
32	.505		
37	.607		
38	.578		
4		.318	
5		.337	
11		.549	
12		.508	
14		.326	
18		.472	
19		.484	
22		.377	
24		.589	
30		.385	
33		.408	
34		.313	
40		.699	
6			.366
7			.572
10			.512
15			.392
21			.687
23			.439
35			.433
36			.431
39			.425
Eigenvalues	4.873	3.669	3.230
Variance	12.183	9.172	8.074
Cumulative percentage	12.183	21.355	29.429

Note. Factor loadings of only selected items on respective scales are given.

Items in each factor (Table 1) indicate variations of one construct (factor title) as factor one is showing manifestation of isolation, withdrawal, rejection, sadness, and loneliness (14 items) hence named "Loneliness". Items (13) in factor two are indicators of irritability like feeling irritable, beating some one, do not feel like talking to anyone, therefore, named as "Irritability". Factor three contains 9 items that reflect signs of apprehension about different things, difficulty in making decision, feeling anxious etc. hence named "Anxiety" (for further information contact first author).

Convergent Validity of DSAG

A significant positive correlation ($r = .68$, $p < .01$) between CDI and DSAG computed through Product Moment Correlation ($N = 500$) shows that DSAG has sufficient convergent validity, hence ensures that DSAG is a valid scale for measuring depression among schoolgirls.

Concurrent Validity

To obtain the sensitivity and specificity index of the DSAG a cutoff (48) was determined on the basis of 1 *SD* (15) above the mean (33.35) of DSAG. Then those participants from the sample ($N = 500$) who scored above and below the cutoff of CDI (19) and DSAG (48) were compared. CDI is known screening tool as a criterion, is also important, for comparison with a newly developed scale to establish its sensitivity and specificity. It also determines its accuracy (Portney & Watkines, 1993). On the basis of the values of these scorers, the index of sensitivity and specificity were determined. The value of specificity is significantly high (91%) which indicates that DSAG has ability to obtain a negative test when the condition is really absent whereas the high value of sensitivity (65%) indicates that DSAG is a sensitive tool to assess the presence of depressive symptoms in adolescent girls.

The positive and negative predictive value of DSAG is determined to calculate the values of true positives, false positives, false negatives, and true negatives from the sample ($N = 500$). The optimum positive predictive value (60%) of DSAG indicated that DSAG has the ability to predict depressive symptoms in school adolescent girls. The significantly high negative predictive value (93%) indicated that DSAG has high accuracy to predict absence of depressive symptoms in adolescent schoolgirls. Results indicate that DSAG is a valid measure for screening depression in adolescent schoolgirls.

Reliability Estimates

Table 2 shows that values of Alpha-Coefficient, Split-half reliability, and Spearman-Brown correction of DSAG are highly satisfactory. The analysis of Spearman Brown is used to predict the reliability of a test after changing the test length. This relationship is particularly vital to the split-half and related methods of estimating reliability (Brown, 1910; Spearman, 1910). These findings clearly indicate that DSAG has satisfactory reliability.

Table 2

Alpha Coefficient, Split-half Reliability, and Spearman-Brown Correction of DSAG (N = 500)

Scales	*Items*	*M*	*SD*	*Alpha Coefficient*	*Split-Half Reliability*	*Spearman-Brown Correction*
DSAG	36	33.35	14.54	.88	.85	.85
Half I	18	-	-		.78	-
Half II	18	-	-		.81	-

Discussion

Depression appears to be a common affliction and colors all facts of life. There is a noticeable downward trend in its occurrence with regard to age, which gets pronounced as the person reaches adolescence. To add to this, there are increasing stresses to be faced as one ushers into puberty. Evidence supports those who experience depression or depression like symptoms in childhood are more likely to suffer clinical depression as adults (Cuijpers & Smit, 2004).

Expression of sadness and feeling bad about oneself is often observed in adolescence and more so in girls. In Pakistan, girls face many challenges. They sometimes are made to assume many responsibilities even before they are prepared for such roles (Afzal et al., 2008; Niaz & Hassan, 2006). This along with academic demands and the turbulence of teenage sets the scene of experiencing gloom. School plays a very important role in the psychological functioning of adolescence (Seroczynski et al., 1997). This functioning is also dependent on the emotional world of the person. A low mood leads to low self-esteem and vice versa, which lowers the academic functioning. It is pertinent therefore, to understand and assess the

depressive thoughts or depression like symptoms in adolescents (Kirkcaldy, Siefen, & Furnham, 2003; Kovacs & Goldston, 1991). This study specifically focused on girls as the literature guides that adolescent boys and girls differ in their reactions to stressful situations. Boys tend to externalize by engaging in acting out behaviors, whereas girls internalize, blaming themselves and considering themselves responsible for the problematic situation. They often feel helpless and anger is turned towards their own selves (Kaltiala-Heino et al., 2003). It is important, therefore, that early assessment of girls is carried out so that they can be counseled and helped. Therefore, the present study aimed to develop an assessment tool based on the phenomenology of depressive symptoms in adolescent schoolgirls.

The findings of the newly developed scale DSAG demonstrate that such an exercise is pertinent. The mean obtained is 36.69 and *SD* 15.69 which shows that there is significant endorsement of items by each respondent in one of the response category. The *SD* also shows that there is variability in the response tendency as well. The reason for large SD could be that the sample was not clinically depressed; hence, much variability existed in their responses to the items. The strong internal consistency signifies that items are conceptually unified. The reliability index is also promising (Anastasi, 1968).

Varimax rotation was used in the factor analysis of DSAG, because in the process of scale development and measurement of an independent variable, it is important to pick the simplest solution from the infinity of rotations. Varimax predicts the precision and clear interpretation of each factor. We can understand the each factor of DSAG independently with the help of varimax (Kaiser as cited in Kline, 1994).

The three factors that emerged through factor analysis reflect the underlying construct of Loneliness, Irritability, and Anxiety which is how a female adolescent usually presents her depression (Karnani & Pomm, 2006; Witvliet, Brendgen, Lier, Koot, & Vitaro, 2010). These were named on the basis of their content as each factor contains different manifestation of each construct. Items in factor one are the representation of withdrawal, lack of social contact, and experience of isolation. Loneliness refers to a decline in social interaction with others. This is an alarming sign as it is also reported in other works where nearly 75% of school children with depressive symptoms (Kevin & Stark, 1990). In Factor 2, agitation, anger, fatigue, and mood disturbance leads to irritability (Stark, 1990). Factor 3 contains symptoms of anxiety i.e., apprehensions, fear, indecisiveness, worries, and feeling of distrust on others. We cannot see depression or

depressive symptoms in a vacuum because most of the time it is accompanied with different emotional states i.e., anxiety, anger or irritability, and somatic complaints. Researches also proved that the high prevalence of depression or sub-clinical depression in girls/women appears in the form of anxious somatic depressive symptoms. So, we can say that anxiety is the part of depressive symptoms (Silverstein & Lynch, 1998)

Anger is also seen to accompany depression in adolescents. Anger as manifested by depressed children has many characteristics and its manifestation differs according to its severity, duration and environmental factors. The manifestation of the severity of the feeling of anger ranges along a continuum from mild irritability or feeling of annoyance to temper outbursts (Burn–Back, Dielz-Schmitl, & Weinberg as cited in Kevin & Stark, 1990). The present study also indicates that irritability is a major factor of childhood depressive ideation. The third factor of anxiety indicates low mood and irritability. It is common observation that adolescent tend to get irritated and therefore frustrated. This could be an expression of depressive symptoms. It is important to note that girls are choosing to express their emotions in terms of loneliness and irritability. They are not hiding behind somatic concern as generally thought. This finding highlights the importance of attending to signs of loneliness, irritability, and anxiety in adolescent as indicative of emerging depression (Sharp & Lipsky, 2002). This is an important finding, as usually the tendency here is to snub such expression or ignore them as signs of misbehavior (Leon, Kendall, & Garber, 1980). The scale has a high sensitivity and positive predictive power (60%) and its specificity (91%) and prediction of presence of depressive symptoms is also respectably high.

This is understandable as the adolescent girls were selected from school and they were not known depressed. It is needed, therefore, to reexamine the psychometric properties of DSAG in future through adolescents who have sought help for their depression. On the other hand, the fact that DSAG has more specificity can be taken as its strength to rule out depressive ideation reducing the error of over estimation of signs of depression when they are transient or insignificant.

As the verbatim were obtained from schoolgirls, it was considered necessary to check the validity of these verbatim against a scale which is known to tap depression, CDI was also administered along with DSAG on schoolgirls ($N = 500$) and the significantly high correlation index (.68) points toward the fact that the items of DSAG are measuring depressive symptoms. One might say that why not

adapt CDI instead of developing a new scale. The answer lies in the expressions and reactions in the language which is reflective of a culture. There are many depression scales developed in West (see for example Joshi et al., 1990; Kovacs, 2007; Reynolds, 1986, 1989) and they correlate very significantly, but each contribute to the assessment of depression in a different way. No indigenous scale in Pakistan for school children and adolescence is available but an indigenously developed scale for adult depression Siddiqui Shah Depression Scale (Siddiqui & Shah, 1997) is available with cultural norms. The researcher, therefore, considered it important to find the relationship of DSAG with CDI to establish the fact that what we are observing in schoolgirls is a reflection of same domain.

There were certain expressions like, *mujhe zindgi me kisi chees ki kami mehsoos hoti he* [I feel, there is something missing in my life]; *mujhe apna ap uljha hua mehsoos hota he* [I feel confused]; *mujhe choti choti cheezo k liye pachtawa hota he* [I regret even for the smallest mistakes]; *mujhe lagta he k mjhe koe nahe samjhta* [I feel as if no one understands me]; *mujhe apna ap thukraya hua lgta he* [I feel rejected]; *and apne ap ko nochne ko dil krta he* [I feel like scratching/hurting myself]. These express a sense of rejection, worthlessness, and despise with oneself, not found in other developed scales. A positive correlation with CDI does not minimize the importance of developing indigenous scale. The user of tests developed elsewhere tends to be skeptical of their validity due to variation in cultural permissiveness in experience.

It must be noted that the content of depressive ideation was derived from school going girls' students; therefore, the high score does not necessarily indicate presence of clinical depression. Instead, it may be regarded as sub-clinical depression which signals early intervention to preempt more pronounced symptoms of depression (Beardslee & Gladstone, 2001). The scale requires future validation against clinical population which would help optimize the cutoff points for accuracy in screening. We know that adolescent usually don't seek help or be approached for any intervention whereas school provides us not only a context but also an opportunity to screen and identify those at risk (Spence & Shortt, 2007). The development of DSAG is a first step forward to early detection and possibility of timely provision of needed help. The researchers intend to extend the follow up studies to strengthen its validity and reliability with reference to known depressed adolescent. This is the limitation of study that it focused at adolescent schoolgirls; therefore it is restricted to assessing depressive ideation in schoolgirls only. We also need a criterion group to further determine the index of validity of DSAG.

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Received November 6, 2009
Revision received October 26, 2010