CHAPTER III
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METHOD

SAMPLE
The sample for the present study comprised of 150 male and 150 female adolescents in the stage of mid-adolescence with age range of 15-17 years. For selecting sample, the list of Government schools was obtained from Chandigarh Education Department and schools were approached for data collection. To select research sample, purposive-incidental sampling technique was employed. The inclusion and exclusion criterion was considered before selecting the participants.

Inclusion Criterion:
1. The participants were selected from non-clinical population.
2. There was no evidence of any substance abuse or alcoholism.
3. The sample was selected from different Government schools of Chandigarh.
4. The sample was limited to mid-adolescence (15-17 years).
5. All the participants belonged to intact families i.e. participants are residing with their parents.

Exclusion Criterion:
Participants with current and post historic psychiatric inpatient service were excluded.

DESCRIPTION OF TOOLS
The following tools were used for the collection of data for testing various proposed hypotheses:-

(1) Zung Self-Rating Depression Scale (ZSRDS: Zung, 1965)
Zung self-rating depression scale is intended to map complex behavioural changes, cognitive processes and their affective concomitants. The scale is said to be an excellent checklist of some twenty most common complaints comprising the modern concept of depression (Fabry, 1980). Content analysis of different depression measurements suggests that the ZSDS covers five of the nine Diagnostic and Statistical Manual of Mental Disorders (DSM-III, American Psychiatric Association, 1980) depressive symptoms completely, whereas four are partially covered.
Zung self-rating depression scale is easy to administer and widely used for quantifying symptoms of depression and it is designed as a sample scale which the patients and normal people are supposed to complete without assistance. The 20 item scale covers affective, psychological and somatic features. Of the 20 items used 10 are worded symptomatically positive and ten symptomatically negative. The items were worded in a positive as well as negative direction in order to break any tendency towards response set. The subject rates each item on a four point scale, ranging from 1 to 4, (1 = a little of the time, 2 = some of the time, 3 = a good part of the time, 4 = most of the time). The time frame is the present. To obtain a total severity score, positive items are reversed, and then all items are summed. Zung SDS scores are interpreted as follow: (a) <50, within normal range, (b) 50-59, minimal to mild depression, (c) 60-69, moderate to severe depression, (d) >70, severe depression. A severity index may be calculated by dividing the total score by 80 (the total possible score).

The reliability of Zung SDS indicated that the Split half-reliability studies in a psychiatric population found a correlation (r) of 0.73 (Zung, 1972). Cronbach’s alpha was also satisfactory, being equal to 0.79 (Knight, Waal-Manning, & Spear, 1983). A significant correlation was found with the Minnesota Multiphasic Personality Inventory Depression Scale (MMPI-D) (r = 0.65). In a study of 41 depressed outpatients (Biggs, Wilie, & Ziegler, 1978), there were strong correlations between the Zung SDS and the Hamilton Rating Scale for Depression (Ham-D) (range of r is 0.68-0.76).

The ZSDS has produced good discriminant validity as it was found to be the primary discriminating variable in distinguishing depressed from non-depressed participants (Thurber, Snow, & Honts. 2002). More recently, Romera, Delgado-Cohen, Perez, Caballero and Gilaberte (2008) examined the symptomatic dimensions of depression in a large sample of patients with major depressive disorder (MDD) in the primary care (PC) setting by means of a factor analysis of ZSDS and found a clinical interpretable four-factor solution consisting of a core depressive factor (I); a cognitive factor (II); an anxiety factor (III) and a somatic factor (IV) was extracted. The first factor (factor I) accounting for 23.8% of the scale variance, was composed of 8 items: depressed affect (item 1), crying spells (item 3), decreased libido (item 6), hopelessness (item 14), personal devaluation (item 17), emptiness (item 18), suicidal rumination (item 19) and dissatisfaction (item 20). The second factor (factor II) was...
composed of 4 items: confusion (item 11), psychomotor retardation (item 12),
indecisiveness (item 16) and fatigue (item 10). This factor accounted for 5.8% of
variance. The third factor (factor III), which accounted for 3.7% of variance, consisted
of 3 items: sleep disturbances (item 4), psychomotor agitation (item 13) and
irritability (item 15). Finally, factor IV, accounting for 3.5% of variance, consisted of
3 items: decreased appetite (item 5), weight loss (item 7) and tachycardia (item 9).

Despite some crucial concerns, as mentioned above, it can be asserted that it is
reliable and valid instrument for the assessment of severity of depression.

(2) The Hopelessness Scale (HS: Beck, Weissman, Lester, & Trexler, 1974)

Two sources were utilized in selecting items for the 20-items true-false
Hopelessness Scale. Nine items were selected from a test of attitudes about the future
structured in a semantic differential format (Heimberg, 1961). These items were then
revised to make them appropriate for present test. The remaining 11 items were drawn
from a pool of pessimistic statements pooled by psychiatric patients who were
adjudged by clinician to appear hopeless. The statements which seemed to reflect
different facets of the spectrum of negative attitudes about the future and which
recurred frequently in the patients’ verbalizations were selected (Beck, Weissman,
Lester, & Trexler, 1974).

The final format consisted of 20 true -false statements of which 9 were keyed
false and 11 were keyed true. For every statement, each response is assigned a score
of 0 or 1 and the “total hopelessness score” was the sum of the scores on the
individual items. Thus, the possible range of the scores is from 0 to 20.

A population of 294 hospitalized patients who had made recent suicide
attempts provided the data for determination of the internal consistency of the
Hopelessness Scale. The internal consistency of the scale was analyzed by means of
coefficient alpha (KR-20), which yielded the reliability coefficient of .93. The item-
total correlation coefficient ranged from .39 to .76. Moreover, the scale showed a high
reliability correlation with the clinical ratings of hopelessness and other self
administered measures of hopelessness.

The reliability and validity data presented for the hopelessness scale are
deemed sufficient to justify its use on a continuing basis. This measure has been
evaluated in a number of studies and has been found to be reliable, sensitive, and
easily administered. The Hopelessness Scale is an instrument that may be used by
both professionals and para-professionals involved in the detection of hopelessness as an important variable in many psychopathological processes (cf. Beck, Weissman, Lester, & Tresler, 1974).

(3) IPAT Anxiety Scale Questionnaire (ASQ: Cattell & Scheier, 1963)

The IPAT Anxiety Scale Questionnaire was developed from extensive research and practice (Cattell and Scheier, 1961; Cattell, 1956, 1957, 1959) as a means of getting clinical anxiety information rapidly, objectively and in standard manner. It gives an accurate appraisal of free anxiety level, supplementing clinical diagnosis and facilitating all kinds of research or mass screening operations where very little diagnostic or assessment time can be spent with each examinee.

It is based on a second order anxiety factor defined by five oblique first orders factors of 16 PF. It is a brief and clinically valid questionnaire. It is applicable to all but the lowest educational levels and appropriate to ages 14 or 15 years or upward throughout adult range. The questionnaire consists of 40 questions distributed among the five anxiety measuring factors as:

Table 3
IPAT Anxiety Scale Questionnaire Factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>No. of items</th>
<th>Covert</th>
<th>Overt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3</td>
<td>8</td>
<td>1,2,3,4</td>
<td>21,22,23,24</td>
</tr>
<tr>
<td>Covert Overt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q4</td>
<td>10</td>
<td>16,17,18,19,20</td>
<td>36,37,38,39,40</td>
</tr>
<tr>
<td>O</td>
<td>12</td>
<td>10,11,12,13,14,15</td>
<td>30,31,32,33,34,35</td>
</tr>
<tr>
<td>L</td>
<td>4</td>
<td>8,9</td>
<td>28,29</td>
</tr>
<tr>
<td>Covert Overt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>5,6,7</td>
<td>25,26,27</td>
</tr>
<tr>
<td>Covert Overt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>4</td>
<td>8,9</td>
<td>28,29</td>
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<td>4</td>
<td>8,9</td>
<td>28,29</td>
</tr>
</tbody>
</table>

ASQ provides reliable and valid results for measuring trait anxiety. It is easy to be administered individually or to a large group at one time.

Each question has three responses alternatives and any single item contributes to only one of the five components. The anxiety scale questionnaire is designed to
give a total composite anxiety score as well as the scores on five different components.

Three kinds of score are possible:

1. A single total anxiety score based on all 40 items.
2. A break down into:
   a) An unrealized, covert anxiety score, Score A, for 1-20 items; and
   b) An overt, symptomatic, conscious anxiety score, Score B, for 21 to 40 items.
3. A breakdown of total anxiety scores into the five components of anxiety. The five components of second-order factor of anxiety are as follow:
   a) Factor Q_3 (defective integration; lack of self sentiment)
   b) Factor C (ego weakness; lack of ego strength)
   c) Factor L (suspiciousness; paranoid insecurity)
   d) Factor O (guilt proneness)
   e) Factor Q_4 (frustrative tension; id pressure)

A vast amount of research, supporting and developing the rationale and validity of the anxiety scale, has been conducted (Cattell & Scheier. 1961; Cattell, 1956, 1957, 1959). The second order anxiety factors are especially robust and replicate well across many diverse populations (Karson & O’Dell, 1976; Krug & Laughlin, 1977). The reliability and validity of the questionnaire have been found to be satisfactory by the authors. The questionnaire has also been used extensively in India and found useful. The studies have found scale measures to be fairly reliable (Upmanyu & Singh, 1996; Upmanyu, Gill, & Singh, 1982; Hundal, Sudhakar, & Sidhu, 1972).

(4) Torrance Test of Creative Thinking-Verbal and Figural Form-A (TTCT: Torrance, 1966)

The TTCT was developed by Torrance in 1966. It has been normed 4 times: in 1974, 1984, 1990, and 1998. “E. Paul Torrance was an international leader in creativity research and was best known for developing the Torrance Tests of Creative Thinking (TTCT), which are used in the business world and in education to assess individuals’ capacity for creativity” (Kim. 2006).

The TTCT-Verbal and the TTCT-Figural are two versions of the TTCT. The TTCT-Verbal has two parallel forms, A and B, and consists of five activities: ask-
and-guess, product improvement, unusual uses, unusual questions, and just suppose. The stimulus for each task includes a picture to which people respond in writing (Torrance, 1966, 1974). The TTCT-Figural has two parallel forms, A and B, and consists of three activities: picture construction, picture completion, and repeated figures of lines or circles. For the purposes of this research, only the TTCT-Figural will be discussed. Ten minutes are required to complete each activity. In Activity I, the subject constructs a picture using a pear or jellybean shape provided on the page as a stimulus. The stimulus must be an integral part of the picture construction. Activity II requires the subject to use 10 incomplete figures to make an object or picture. The last activity, Activity III, is composed of three pages of lines or circles that the subject is to use as a part of his or her picture (Torrance, 1966, 1974, 1990, 1998; Torrance & Ball, 1984). Torrance (1966) recommended the creation of a game-like, thinking, or problem-solving atmosphere, avoiding the threatening situation associated with testing. Although there have been several revisions of the TTCT-Figural manual, the test itself has remained unchanged.

The stimuli of the TTCT of 1984 are identical to those of 1966 and 1974, but the scoring procedures were changed in the third edition, the TTCT of 1984. TTCT-Figural Manual (1998) estimates reliability as creative index from Kuder-Richardson 21 using 99th percentile scores as the estimates of the number of items ranged between .89 and .94. The TTCT-Figural Manual of 1990 states that the inter-rater reliability among the scorers for Scholastic Testing Service, Inc., was greater than .90. According to the TTCT manuals of 1966 and 1974, the test-retest reliability coefficients have ranged from .50 to .93, which is not so high. Treffinger (1985) concluded that, given the complexity of creative thinking, the TTCT can be seen as having reasonable reliability for group and research applications.

Plucker’s (1999) reanalysis of Torrance’s data concluded that the standardized path coefficient from the TTCT to adult creative achievement was .60. In terms of concurrent validity, Gonzales and Campos (1997) studied the correlations between TTCT and the Spatial Test of Primary Mental Abilities (PMA) and the Gordon Test of Visual Imagery Control. The correlation between resistance to premature closure and PMA was .33 ($p < .001$), and resistance to premature closure and the Gordon test was .26 ($p < .01$).

The TTCT-Figural has had 25 years of extensive development and evaluation (Millar, 2002). It has one of the largest norming samples, with valuable longitudinal
validations (Davis, 1997) and high predictive validity over a very wide age range (Cropley, 2000).

In conclusion, the TTCT appears to be a good measure, not only for identifying and educating the gifted but also for discovering and encouraging everyday life creativity in the general population.

(5) Affective Dysregulation Subscale (DI-A: Mezzich, Tarter, Giancola, & Kirisci, 2001)

Affective dysregulation is a 28-items subscale of Dysregulation Inventory (DI) developed by Mezzich, Tarter, Giancola, and Kirisci (2001). The DI measures several temperament characteristics associated with increased risk for developing substance use disorders (Mezzich et al., 2001). Respondents are asked to indicate how often each statement is true in describing their behaviour. Responses are scored from 0 for “never true” to 3 for “always true.” Items were summed for the 28 items comprising the affective dysregulation subscale (Cronbach’s α=.884, range 0 to 84). Higher scores on the affective dysregulation subscale (DI-A) indicate high emotional reactivity and low control over one’s emotional state, the author hypothesized would be a risk factor for suicide ideation. The psychometric properties of dysregulation inventory shows that affect dysregulation is correlated significantly with the affective difficult temperament index, assessed by the Dimensions of Temperament Scale (Windle & Lerner, 1986) and the State Trait Anxiety Scale score (Spielberger, 1973) in the Centre for Education and Drug Abuse Research (CEDAR) and the female adolescent samples.

Concurrent validity (Cronbach, 1970) was determined by correlating the score of the affect DI scale with established measures obtained simultaneously from the subjects. The affect dysregulation reported by self and mother in the CEDER sample and by self in the female adolescent sample correlated with depressive and anxiety recorded from the Kiddie schedule for affective disorders - epidemiological version (K-SAD-E) interview (Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982).

The Item Response Theory (IRT) analyses revealed that the DI scales have superior reliability as indicated by the marginal reliability coefficients (Embretson & Reise, 2000). In the CEDAR and female adolescents sample, the marginal reliability coefficients ranged from .90 - .97. In the sample of undergraduates, the coefficients ranged from .86 - .93. In the Peruvian sample, they ranged from .67 - .87.
In summary, the DI sub-scales appear to be psychometrically sound based on results obtained in four samples using both classical and IRT methods. The three scales are also the indicators of a single construct of psychological dysregulation.

(6) The Family Environment Scale (FES: Moos & Moos, 1994)

The Family Environment Scale (FES) is one of 10 social climate scales. The family environment scale is composed of 10 subscales that measure the actual, preferred and expected social environment of families. These ten FES subscales assess three underlying sets of dimensions: relationship dimensions, personal growth (or goal oriented) dimensions and system maintenance dimensions. The relationship and system maintenance dimensions primarily reflect internal family functioning, whereas the personal growth dimensions primarily reflect the linkage between the family and the larger social context.

The FES has three forms:

- The Real Form (Form R) measures people’s perception of their current family environment.
- The Ideal Form (Form I) measures people’s preferences about an ideal family environment.
- The Expectations Form (Form E) measures people’s expectations about family environment.

In the present study, the author used Family Environment Scale (The Real Form) Form R comprising of 90 true-false items which helps people to describe their current family as they perceive it. Clinicians, consultants and program evaluated use of this form to:

- Understand individual’s perceptions of their conjugal and nuclear families, for example, as part of family counseling or education programs.
- Formulate clinical case descriptions and understand the impact of the family on adaptation.
- Monitor change and promote improvement in families.
- Describe and compare family climates and contrast partners’ perceptions or parents’ and children’s’ perceptions.
- Predict and measure the outcome of treatment.
- Focus on how families adapt to life transitions and crises.
- Understand the impact of the family on children and adolescent...
Family Environment Scale is consisted of ten subscales with three basic dimensions. (A) Relationship Dimension; (1) Cohesion: the degree of commitment, help and support family members provide for another; (2) Expressiveness: the extent to which family members are encouraged to express their feelings directly; (3) Conflict: the amount of openly expressed anger and conflict among family members. (B) Personal Growth Dimension; (4) Independence: the extent to which family members are assertive, are self-sufficient and make their own decisions; (5) Achievement Orientation: how much activities (such as school and work) are cast into an achievement-oriented or competitive framework; (6) Intellectual-cultural orientation: the level of interest in political, intellectual and cultural activities; (7) Active-recreational orientation: the amount of participation in social and recreational activities; (8) Moral-religious emphasis: the emphasis on ethical and religious issues and values; (C) System Maintenance Dimensions; (9) Organization: the degree of importance of clear organization and structure in planning family activities and responsibilities; (10) Control: how much set rules and procedures are used to run family life.

While the scale has been traditionally used to assess family environment from different perspectives within the family (Cole & McPherson, 1993), the scale has also been used to assess family environment from just one family member's perspective (Nelson, 1984). The internal consistency (Cronbach’s alpha coefficient) ranges from .61 to .78 for ten subscales.

(7) Beck’s Scale for Suicide Ideation (BSI: Beck, Kovacs, & Weissman, 1979)

The Beck’s Scale for Suicide Ideation (BSI) is a clinician-rating scale and is presented in a semi-structured interview format (Beck, Kovacs, & Weissman, 1979). It consists of 19 items that evaluate three dimensions of suicide ideation: active suicidal desire, specific plans for suicide, and passive suicidal desire. Each item is rated on a 3-point scale from 0 to 2. It is considered that higher the total score, greater the severity of suicide ideation. The Beck’s Scale for Suicidal Ideation (BSI) (Beck, Kovacs, & Weissman, 1979) was designed to measure the intensity, pervasiveness, and characteristics of suicidal ideation in adults. It also aims to assess the risk of later suicide attempt in individuals who have thoughts, plans, and wishes to commit suicide (Beck, Kovacs, & Weissman, 1979). It is a well established clinician-rating scale and is presented in a semi-structured interview format.
In some previous studies on adult suicidality a score of 6 or more has been used as a cutoff threshold for clinically significant suicidal ideation (Sokero et al., 2003). The psychometric properties of the BSI have been evaluated for adult psychiatric patient population; the internal consistency of the scale was found to be good (α = 0.89), and factor analysis yielded the three above-mentioned dimensions (Beck, Kovacs, & Weissman, 1979).

The reliability for Scale for Suicide Ideation as Cronbach’s α was 0.95 for the whole sample, 0.81 for the community sample and 0.95 for the outpatient sample. The internal consistencies (Cronbach’s α) of the originally reported (Beck, Kovacs, & Weissman, 1979) three dimensions were “active suicidal desire” α = 0.92, “preparation” α = 0.69, and “passive suicidal desire” α = 0.79. The construct validity of the SSI was checked by Principal Component Analysis, which yielded 3 theoretically meaningful and coherent factors, only slightly different from the original ones, with good internal consistencies. This suggests good construct validity. The first factor (“active suicidal desire”) was nearly identical to Beck’s original one (Beck, Kovacs, & Weissman, 1979). The second factor (“passive suicidal desire”) included theoretically coherent items, two of which were identical to Beck’s original factor of similar content. The third factor was also theoretically meaningful, including three items concerning final preparations, and had one item in common with Beck’s original “preparations” factor (Holi et al., 2005).

BSI appears to be a reliable and a valid measure of suicide ideation with a cutoff threshold value of four or more of total SSI score being appropriate for detecting significant suicidal ideation.

**PROCEDURE**

After obtaining the list of schools from Chandigarh Education Department, schools were approached for the selection of the sample. After enquiry about inclusion and exclusion criteria about the participants, testing procedure was stated. The participants were recruited randomly from the different Government schools of Chandigarh. Prospective participants were given a verbal description of the study and those interested in participation were given different questionnaires. The completion of the questionnaires was voluntary and participants gave informed consent to participate. All participants completed the questionnaire during the school working hours. The participants were assisted as needed.
The general testing conditions were satisfactory. Sincere efforts were made to establish rapport with the subjects in order to elicit reliable and authentic information. Subjects were told that the information was being collected purely for research purpose. They were also assured that the information to be collected would remain strictly confidential and would be presented only in a form in which no person could be identified.

**Ethical Consideration**

The ethical principles of research were considered during the present research work. No students were marginalized or disempowered through this research. The purpose of the research was explained to the participants and written consent was obtained from the participants. The research posed no risks to students as no manipulation of variables took place. Participants were informed that they could withdraw at any stage and the data obtained would be kept confidential, and used exclusively for research purpose. Only the researcher and the statistical consultation services of the university had access to the data. Tests and questionnaires were completed anonymously in order to disassociate names from responses. Data were checked for accuracy before reporting the findings.

**SCORING**

The tests were scored strictly in accordance with the procedure suggested by the authors of different tests and scoring was done by using separate keys for respective tests used in the present study.

Suicide Ideation Scale was scored for a measure of suicide ideation. Hopelessness Scale was scored for a measure of hopelessness about future perspective of life. Zung Depression Rating Scale was scored for a measure of depressive symptoms. Family Environment Scale was scored for a measure of current family environment and it’s functioning including subscales such as Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization and Control. IPAT Anxiety Scale Questionnaire was scored for a measure of anxiety. Affective Dysregulation Inventory was scored for a measure of affective/emotional dysregulation. Flexibility Dimension of Torrance Test of Creative Thinking was scored for a measure of cognitive rigidity.
ANALYSES

Keeping in view the objectives and hypotheses of the present study, the data were analyzed as follow:

(a) Descriptive statistics were used for examining the normality of scores on different variables included in the present study.

(b) t-test of significance was used to examine gender differences on different variables.

(c) Multiple regression analyses were done to identify salient correlates and predictors of suicide ideation