METHODOLOGY

The main purpose of this chapter is to provide details regarding selection of the sample, tools used, procedure undertaken and statistical techniques applied. It is significant to emphasize that the empirical verification of the purposed hypothesis, however, is dependent firstly, on the reliable measurement of the variables of interest and secondly, on the methods and procedures employed for deriving conclusions:

1. Selection of an adequate sample.
2. Selection of appropriate tools that could be profitably used for reliable measures.
3. Method and procedure employed for deriving conclusions from different measures.

Thus, it seems appropriate to describe the sample, the tools used and the method and procedure employed in completing the research being reported. The present chapter sheds light on the formulated design, description of the sample used for collecting reliable measures pertaining to the objectives of the study, the information concerning different tests and the procedure followed for the administration and scoring of the psychological tests used and the analysis of data.

DESIGN

A research design may be defined as “the sequence of those steps taken ahead of time to ensure that the relevant data will be collected in a way that permits objective analysis of the different hypotheses formulated with respect to the research problems” (Singh, 1997). Thus, the research design helps the researcher in testing the hypotheses by reaching valid and objective conclusions regarding the relationship between independent and dependent variables. The main aim of the present investigation was to study the influence of negative cognition, stress and gender on depression at different levels of social support in a non-clinical sample of 400 high school adolescents (200 male and 200 female adolescents) in the age range of 15 – 17 years (period of mid-adolescence). They were recruited from the various Secondary
and Senior Secondary public schools in and around Chandigarh and belonged to the category of middle or upper middle class income groups. It was a cross-sectional and factorial design and the main objectives were to examine the main effects and interaction effects of negative cognition, stress and gender at different levels of social support on the criterion variable of depression. To investigate the group differences for the independent variables i.e., social support (Satisfaction with available support: qualitative) and social support (perceived availability of number of supportive persons: quantitative), gender and dependent variable i.e., depression. To accomplish this purpose, the subjects were assessed on various self-report instruments i.e., Zung's Self-Rating Depression Scale yielding a measure of depression, Negative Automatic Thought Questionnaire providing a measure of negative cognition, Social Support Questionnaire pertaining to a measure of perceived social support and the Perceived Stress Scale pertaining to a measure of perceived stress. After the administration, the scoring was done in accordance with the guidelines provided by the respective manuals of the psychological scales applied. The data was then analyzed using appropriate descriptive, parametric and non-parametric statistics were applied.

In accordance with the focal theme of the present investigation, the predictor variables i.e., negative cognition, stress and gender and their influence on the dependent variable i.e., depression was examined at two levels of social support i.e., high and low social support. P 50 was used for classifying subjects into two groups and the median value was employed for the purpose of segregating the independent variable i.e., social support as derived from the Social Support Questionnaire (SSQ) developed by Sarason, Levine, Basham, & Sarason (1983) utilizing the SSQ-S (Satisfaction with available support: qualitative) and SSQ-N (Perceived availability of number of supportive persons: quantitative) scores.

SAMPLE

The present investigation comprised of a non-clinical sample of 400 adolescents (200 male adolescents and 200 female adolescents) in the age range of 15 to 17 years (period of mid-adolescence). They were recruited from the Secondary and
Senior Secondary public schools in and around Chandigarh (Ambala, Chandigarh and Mohali) and most of them were from middle or upper middle class income groups.

The demographic characteristics of age, marital status, educational status, socioeconomic background, employment and place of residence were controlled in the sense that adolescents were in the age range of 15–17 years (period of mid-adolescence), unmarried, from grades 10\textsuperscript{th} through 12\textsuperscript{th}, middle or upper middle class income groups, unemployed and belonged to urban area. It is significant to emphasize that in addition to the advantage of homogeneity, which resulted from this type of control, there is also an increased danger of bias. The sample was limited to subjects who were available to participate in this study, thus limiting the assumption of randomization. However, this type of control is appropriate from the viewpoint of the focal theme of the present study undertaken.

In relation to the induction of participants in the study the following exclusion criteria were considered:

1. Presence of any chronic medical illness, organic brain syndrome or surgery.
2. Any self-reported or medically diagnosable visual or auditory impairment.
3. No evidence of any substance abuse i.e., drug addiction or alcoholism.
4. Any case seeking treatment for any diagnosable psychiatric disorder.

For this purpose information was obtained from their teachers, classmates and parents.

**TOOLS**

Keeping in view the variables to be measured, the aims of the study, and the nature of the sample, appropriate instruments with satisfactory psychometric properties were selected.

(a) Zung's Self-Rating Depression Scale (ZSRS; Zung, 1965)
(b) Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983)
(c) Automatic Thought Questionnaire (ATQ; Hollon & Kendall, 1980)
(d) Perceived Stress Scale (PSS-10; Cohen & Williamson, 1988)
1. ZUNG'S SELF-RATING DEPRESSION SCALE (ZSDS: Zung, 1965)

Zung's Self-Rating Depression Scale is intended to map complex behavioral 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 (Farby, 1980). Content analysis of various 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.

The Zung's Depression Rating Scale is a self-reporting instrument and was originally developed in order to assess depression symptoms without the bias of an administrator affecting the results. The items in the ZDRS scale may also help patients to discuss previously nebulous symptoms, especially those patients who present with physical symptoms of depression such as headache or insomnia.

The ZDRS is a well known and world-wide used self-rating scale for the measurement of depression. Along with the Beck Depression Inventory (Beck et al., 1961) and the CES-D (Fountoulakis et al., 2001; Radloff, 1977) these are the most popular self-administered instruments for the assessment of depression. They are supposed to be used as screening tools rather and not substitutes for an in-depth interview (Zung et al., 1965). They can also be an efficient tool for screening patients for depression (Carrell, 1978) and have been used successfully for many years in the primary care setting.

The Zung's Self-Rating Depression Scale is a 20-item scale measuring the frequency of depressive symptomatology. Affective, psychological and somatic features associated with depression are assessed by 20 items. Out of these 20 items included in the scale, 10 are worded symptomatically positive and 10 symptomatically negative. The scale appears well balanced with equal number of positive and negative statements. The items were worded in a positive as well as negative direction in order to break any tendency towards response set. A brief description of the 20 depressive symptoms is given below:
<table>
<thead>
<tr>
<th>ITEM</th>
<th>SYMPTOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sadness</td>
</tr>
<tr>
<td>2.</td>
<td>Diurnal variation</td>
</tr>
<tr>
<td>3.</td>
<td>Spells of crying</td>
</tr>
<tr>
<td>4.</td>
<td>Sleep disturbance</td>
</tr>
<tr>
<td>5.</td>
<td>Anorexia</td>
</tr>
<tr>
<td>6.</td>
<td>Loss of Libido</td>
</tr>
<tr>
<td>7.</td>
<td>Weight Loss</td>
</tr>
<tr>
<td>8.</td>
<td>Constipation</td>
</tr>
<tr>
<td>9.</td>
<td>Tachycardia</td>
</tr>
<tr>
<td>10.</td>
<td>Fatiguability</td>
</tr>
<tr>
<td>11.</td>
<td>Loss of concentration</td>
</tr>
<tr>
<td>12.</td>
<td>Psychomotor retardation</td>
</tr>
<tr>
<td>13.</td>
<td>Psychomotor agitation</td>
</tr>
<tr>
<td>14.</td>
<td>Hopelessness</td>
</tr>
<tr>
<td>15.</td>
<td>Indecisiveness</td>
</tr>
<tr>
<td>16.</td>
<td>Irritability</td>
</tr>
<tr>
<td>17.</td>
<td>Self-depreciation</td>
</tr>
<tr>
<td>18.</td>
<td>Emptiness</td>
</tr>
<tr>
<td>19.</td>
<td>Suicidal thoughts</td>
</tr>
<tr>
<td>20.</td>
<td>Dissatisfaction</td>
</tr>
</tbody>
</table>
The maximum contribution of behavioural and somatic features to the full scale is 50 percent (items 2 to 10, 13). Some of the important symptoms covered by ZSRS refer to; suicide (item no. 19), insomnia (item no.4), work and interest (item no. 8 and 20), agitation (item no.13), psychological anxiety (item no. 15), somatic anxiety (item no.9), gut symptom (item no. 5 and 8), general somatic (item no. 10 and 12), weight loss (item no. 7), depression (item no. 1,3,14, 17), etc. For each item, respondents indicate the frequency with which they have experienced a specific feature in terms of symptoms or feelings described, during the preceding month by selecting one of the four response alternatives ranging from 'a little of the time' to 'most of the time'. The response alternatives are given a score of 1 to 4 and 4 to 1 for positively and negatively worded items respectively. The scores range from 20 to 80, with higher scores indicating the more severe depression (Marder, 1995). The maximum possible ZSRS score is 80, while a score of 20 indicates the complete absence of depressive symptoms.

Except for the use of raw ZDRS score, another way to rate is the SDS index, which is obtained by dividing the ZDRS raw score with 80, which is the maximum score. Minimum score is 20. It is expected that most people with depression score above 50 (SDS index 0.62). A subject with ZDRS score below 50 is considered normal, with a score of 50 – 59 (SDS 0.62 – 0.74) is considered to suffer from mild depression, with score 60 – 69 (SDS 0.75 – 0.86) is considered to suffer from moderate depression and with score 70 – 80 (SDS 0.87 – 0.97) is considered to suffer from severe depression (Carroll, Fielding, & Blashki, 1973).

In the original study (Zung, 1965), this scale was found to be able to differentiate between depressed patients and normal comparison subjects. Later studies showed the relationship of the scale with the clinician’s assessment of severity, the Beck Depression Inventory, the D dimension of the MMPI and unstable relationship with the Hamilton Rating Scale (Fountoulakis et al., 2001).

Zung (1965) reported some normative data for the ZSRS from several psychiatric patient groups and for 1000 normal subjects, clearly demonstrating the
validity of the scale. The author has extensively documented psychometric properties of the scale. A number of other authors, especially Tanka-Matsumi & Kameoka (1986), Gabrys & Peters (1985), and Scaefer et al. (1985) have also found that the scale possesses adequate psychometric characteristics.

In an extensive study, Gabrys & Peters (1985) reported alpha coefficient of 0.91 for 282 family escorts, 0.88 for 369 depressed clients, 0.93 for 218 non-depressed clients. A split-half (odd-even) reliability coefficient of 0.94 (correlated for length) was found for a total of 869 depressive checklists. The authors concluded that the findings support the scale’s reliability by judges or self-report and the predictive and discriminant validities with functionally diverse groups.

Scaefer et al. (1985) found good internal consistency, as evidenced by a coefficient alpha of 0.90 (Psychiatric ward) and 0.86 (Chemical dependency ward). The authors also found that the results favor the Zung Self-Rating Depression Scale over the MMPI-D scale, and to a lesser degree, the Beck Depression Inventory as a measure of depressive symptomatology in men.

Another study (Tanka-Matsumi & Kameoka, 1986) reported cronbach alpha coefficient of 0.81 for a sample of 391 normal college students. The authors also found evidence for convergent validity but the discriminant validity was not clearly demonstrable as pairs of anxiety and depression scores correlated strongly.

Fountoulakis et al. (2001) assessed the reliability, validity and psychometric properties of the Greek translation of the Zung Depression Rating Scale (ZDRS) in a sample of 40 depressed patients (mean age 29.65 years) and 120 normal comparison subjects (mean age 27.23 years). In 20 of them (12 patients and 8 comparison subjects) the instrument was re-applied 1-2 days later. Translation and back translation was made. Clinical diagnosis was reached by consensus of two examiners with the use of the SCAN v.2.0 and the IPDE. Results revealed that the both the sensitivity and specificity of the ZDRS exceeded 90.00 at 44/45. Cronbach’s alpha for the total scale was equal to 0.09, suggesting the scale covers a broad spectrum of symptoms. Factor analysis revealed five factors (anxiety-depression, thought content,
gastrenterological symptoms, irritability and social-interpersonal functioning). The test-retest reliability was satisfactory (Pearson’s R between 0.92). Thus, its properties similar to those reported in the international literature, though the literature is limited.

The problem of the specificity of various self-report instruments, particularly with regard to the distinction between anxiety and depression has attracted the attention of a number of authors. Zung has addressed himself to this question and claims that the scale can distinguish depressive reactions from anxiety reactions and from other personality disorders. This concern with specificity becomes important only when one attempts to use the scales as diagnostic instruments, a purpose for which they were never intended (Carroll, Fielding, & Blashki, 1973).

Despite some concern about discriminant validity of the scale, the review of literature in the Indian context (e.g., Upmanyu, Upmanyu & Dhingra, 1993; Upmanyu, Upmanyu, & Dhingra, 1992; Upmanyu & Reen, 1990, 1991) revealed that Zung Self-Rating Depression scale has been extensively used by researchers as self-report measures of depressive tendencies. Kaur (1989), Verma (1994), Kaur (1994), Modgil (1998) and Dehestani (1998) have also used the scale successfully in India.

2. SOCIAL SUPPORT QUESTIONNAIRE (SSQ; SARASON, LEVINE, BASHAM, & SARASON, 1983):

Social Support Questionnaire (SSQ) was developed by Sarason, Levine, Basham, & Sarason (1983) and consists of 27 items. Each of the 27 items asks a question to which a two-part answer is requested. The item asks the subject (a) to list the people to whom they can turn and on whom they can rely in given sets of circumstances, and (b) indicate how satisfied they are with these supports on a 6-point Likert Scale (very satisfied, fairly satisfied, a little satisfied, a little dissatisfied, fairly dissatisfied and very dissatisfied).

The SSQ yields two scores:
Perceived availability of the number of supportive persons listed (Quantitative: SSQ-N): The number (N) score for each item of the SSQ is the number of support persons listed.

Satisfaction with available support (Qualitative: SSQ-S): The social support available to deal with a given problem is rated on a scale ranging from a “very satisfied” to “very dissatisfied”. It yields a satisfaction (S) score for each item that ranges between 1 and 6. The overall N and S scores are obtained by dividing the sum of N or S scores for all items by 27, the number of items included in the Social Support Questionnaire.

Sarason et al. (1983) administered SSQ for 602 students and obtained the alpha coefficient of 0.97 and 0.94 for N and S scores respectively. The obtained reliability for the number and satisfaction subscales reported by Furukawa et al. (1999) was also satisfactory with cronbach alpha above 0.85. The reliability coefficient for measure of social support questionnaire computed by Livarjani (2003) was 0.96 for SSQ-N and 0.95 for SSQ-S. The obtained reliability coefficient is similar to that reported by the authors (Sarason et al., 1983).

In respect of the validity of social support questionnaire, Sarason et al. (1986) conducted a separate factor analysis for the scores of the number of support person listed (N) and rate of satisfaction (S) for each item. Each of these analyses showed a very strong support for factorial validity of the questionnaire. Furukawa et al. (1999) also factor analyzed the social support questionnaire using two samples: psychiatric and normal populations. The factoring procedure showed a two-factor structure for the number and satisfaction subscales.

Livarjani (2003) found the factorial validity of SSQ as satisfactory. For the purpose factor analysis for the SSQ was employed involving the total sample (N = 372) of orthopaedically (N = 182) and visually (N = 190) handicapped students in Iran. Factor I i.e., SSQ–S factor was characterized by significant loadings on all twenty-seven measures of SSQ-S and the range of significant loadings was found to be from 0.54 to 0.97 for measure of SSQ-S. Factor II was also characterized by
significant loading on twenty-four of twenty-seven measures of SSQ-N. The range of significant loadings was found to be from 0.44 to 0.99 for the measure of SSQ-N. Thus, all the loadings for the measures of SSQ-S and SSQ-N were found to be positive and were identified as a factor of SSQ-S (perceived availability of the number of supportive persons) and SSQ-N (satisfaction with available support).

The Social Support Questionnaire has been found to have a number of desirable psychometric properties. It was found to have (a) stability over a 4-week period of time, and (b) high internal consistency among items. The authors concluded that the modest correlation between SSQ-N and SSQ-S provides a strong basis for analyzing social support into its components. The perceived availability of support reflected by the SSQ-N score, and the satisfaction with the support that is available, reflected by the SSQ-S score, each appear to be worthy of study and analysis.

Kumari and Sharma (1990), however, concluded that very high SSQ-N / SSQ-S correlation observed in Indian culture, raises some doubt about the cross-cultural generalizability. Sarason et al. (1983) claims that social support is not a unitary concept when assessed by the SSQ, and the perceived availability of support and satisfaction with the support that is available are worthy of study and separate analysis. The authors of two SSQ scales in India and other Asian cultures will, however, be desirable before a firm statement on this issue can be made. Despite these concerns which are significant, it can be stated that SSQ is a useful tool for research aiming at examining the role of social support. The scale has been successfully used in the Indian setting by Livarjani (2003). The psychometric properties of the scale have been fairly well documented in the Indian set up by Gupta (1999), Grover (2002) and Livarjani (2003).

3. AUTOMATIC THOUGHT QUESTIONNAIRE (ATQ; HOLLON & KENDALL, 1980):

The Automatic Thought Questionnaire is a self-report questionnaire that measures negative automatic thoughts. The respondents rate on a 5-point scale how often they have experienced depression related cognitions during the past week
The items are rated on a 5-point scale: 1 = "not at all", 2 =
"sometimes", 3 = "moderately often", 4 = "often" and 5 = "all the time". Examples of
typical items are: "I am no good", "My life is a mess", "I am a failure", "I am
worthless", "I hate myself", and "My future is bleak". Factor analysis has indicated a
four factor solution (Hollon & Kendell, 1980):

a) Personal maladjustment and desire to change (e.g., What’s the matter with
me?)

b) Negative self-concept and negative expectation (e.g., My future is bleak)

c) Low self esteem (e.g., I am worthless)

d) Giving up / Hopelessness (e.g., It’s just not worth it)

Scores on the 30 items are summed to give total scores for ATQ negative. It
yields a score ranging from 30 to 150, with higher scores indicating more frequent
negative thoughts.

Hollon & Kendell (1980) reported high internal reliability, strong correlation
with severity of depression, and good item total statistics. In 348 college students, the
Automatic Thought Questionnaire correlated significantly with both the Beck
Depression Inventory and The Minnesota Multiphasic Personality Inventory -
Depression Scale, the coefficients of correlation ranged from 0.45 to 0.70. Also using
a college sample, Dobson & Breiter (1983), and Harrell & Ryan (1983) also
reported high internal reliability and correlation with severity of depression. The ATQ
was the most sensitive measure related to the level of depression.

The scale has been shown to differentiate depressed and non-depressed
samples (Dobson & Breiter, 1983) and to have greater specificity to depression than
the Dysfunctional Attitude Scale (Hollon, Kendell, & Lumry, 1986). The
questionnaire has been administered to a sample of employed women in Indian set up
and demonstrated to possess adequate psychometric characteristics (Upmanyu &
Reen, 1991). The psychometric properties of the scale have been fairly well

4. **PERCEIVED STRESS SCALE (PSS-10; COHEN & WILLIAMSON, 1988):**

It is a common assumption, among health researchers, that stressful life events are not, in and of themselves, sufficient cases of pathology and illness behavior. Stressful events are assumed to increase the risk of disease when they are appraised as threatening or otherwise demanding, and when coping resources are judged as insufficient to address that threat or demand. An important part of this view is that even elicited disorders are not based solely on the intensity or any other inherent quality of an event, but are dependent on personal and contextual factors as well. Perceived stress can be viewed as an outcome variable measuring the experienced level of stress as a function of objective stressful events, coping processes personality factors and so on.

Previous work has employed a number of approaches to assess both global and event specific levels of perceived stress. For example, several investigators have modified stressful life events scales in an attempt to measure global perceived stress. The modification involved asking respondents to rate the stressfulness or impact of each experienced event. In general, life stress scores based on self ratings of event stressfulness are better predictors of health-related outcomes than are scores derived from either a simple counting of events (i.e., unit weighting) or event scores based on weights assigned by external judges (e.g., Sarason, Johnson & Seigel, 1978; Vinokur & Selzer, 1975).

Subjective measures of response to specific stressors have also been widely used, e.g., measures of perceived occupational stress (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). There are, however, some practical and theoretical limitations of measures of specific stressors. Practically, it is difficult and time consuming to develop and psychometrically validate an individual measure every time a new stressor is studied. Theoretically, there is an issue of whether measures of perceived stress...
response to a specific stressor. There is, in fact, evidence that people often misattribute their feeling of stress to a particularly salient source when that stress is actually due to another source (Keating, 1979; Worchel, 1978; Worchel & Teddlie, 1976). Another problem with the measure of response to specific stressors is that such measures imply the independence of that event in the precipitation of disease. However, it is likely that the illness process is affected by global stress level, not just by the response to a particular event.

The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one’s life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find in their lives. These three issues repeatedly have been found to be central components of the experience of stress (Cohen, 1978; Lazarus, 1977, 1966; Seligman, 1975; Averill, 1973; Glass & Singer, 1972). The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The original scale contained 14 items. Four item (PSS4), and 10 item (PSS10) versions of the scale have also been validated.

The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. The items are rated on a 5-point scale: 0 = “never”, 1 = “almost never”, 2 = “sometimes”, 3 = “fairly often”, and 4 = “very often”. Examples of typical items are:” In the last month, how often have you felt nervous and stressed?” or “In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?” . The PSS-10 item scale scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short item scale can be made from the questions 2, 4, 5 and 10 of the PSS 10 item scale.
The PSS is not a diagnostic instrument, so there are no cut-offs. There are only comparisons between people in your own sample. The authors published some normative data on the PSS based on a 1983 Harris Poll of a representative U.S. sample and are given below.

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>926</td>
<td>12.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Female</td>
<td>1406</td>
<td>13.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>645</td>
<td>14.2</td>
<td>6.2</td>
</tr>
<tr>
<td>30-44</td>
<td>750</td>
<td>13.0</td>
<td>6.2</td>
</tr>
<tr>
<td>45-54</td>
<td>285</td>
<td>12.6</td>
<td>6.1</td>
</tr>
<tr>
<td>55-64</td>
<td>282</td>
<td>11.9</td>
<td>6.9</td>
</tr>
<tr>
<td>65 &amp; older</td>
<td>296</td>
<td>12.0</td>
<td>6.3</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1924</td>
<td>12.8</td>
<td>6.2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>98</td>
<td>14.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Black</td>
<td>176</td>
<td>14.7</td>
<td>7.2</td>
</tr>
<tr>
<td>Other minority</td>
<td>50</td>
<td>14.1</td>
<td>5.0</td>
</tr>
</tbody>
</table>

The evidence in support of the validity for the scale is reflected in the findings that other investigators have reported that relatively higher PSS scores were prospectively associated with failure to quit smoking (Glasgow, Klesges, Mizes, & Pechacek, 1985), and failure among diabetics to control blood sugar levels. In a cross sectional study, higher PSS scores were associated with greater vulnerability to stressful life events elicited depressive symptoms (Kuiper, Olinger, & Lyons, 1986b). The PSS scale has also been used as an outcome variable, with life events, coping processes, and personality factors prospectively predicting changes in perceived stress (e.g., Linville, 1987). Cohen et al. (1983) showed the relationship of health status with PSS i.e, PSS was found to be correlated with variables such as stress measures, self-reported health and health services measures, health behavior measures, smoking status and help seeking behavior. The PSS scale has been utilized successfully in the Indian setting by Maini (2001) and Grover (2002).
PROCEDURE

Prior to the administration of the tools, permission was sought from the concerned authorities in charge of the schools. All the subjects were apprised about the nature and purpose of research and their willingness ascertained before targeting them for participation. The respondents for testing sessions were contacted personally in their classrooms in order to obtain their co-operation and inform them about the testing schedule. Respondents were assured that the information given would be kept strictly confidential and will be used for research purposes only. There were about 8 to 10 respondents for each session. Participants were seated individually at desks, and were asked to remain silent while filling out the questionnaire. Respondents were given the questionnaires in a typed booklet form. Subjects were requested to respond truthfully according to instructions given earlier. The doubts of subjects were removed before permitting them to take the test. Each form was checked prior to administration to see if any omissions were there, and if so, the particular subject was asked to complete the questions. Questions about the meaning of a word, format, etc. were addressed to the researchers. Participants were advised that they could stop at any stage during the session. Strict supervision was exercised in order to see that the subjects do not discuss or take help from each other while performing on the tests. The general testing conditions were satisfactory. Sincere efforts were made to establish rapport with the subjects in order to elicit reliable and authentic information.

Testing schedule started asking the participants to fill in the general information portion and then proceed on to responding to the tests one after another until all the questions were answered. The sequence of administration was kept as confidential and used for research purposes only. Tests were administered strictly in accordance with the instructions given in response manuals and in classroom situation. There was no time limit for these tests. However, each of these tests approximately took twenty minutes to half an hour. Therefore, each testing session lasted about an hour and a half. As the questionnaire addressed sensitive items, at the conclusion of each session, participants were given contact telephone numbers of people who could assist if they wished to talk about any of the issues raised in the questionnaire. Students were debriefed at the end of the session. The scoring technique
used for all given tests was done as per the instructions provided in the scoring manual of the different tests. Appropriate parametric and non-parametric tests were applied to analyze the data.

ETHICAL CONSIDERATIONS:

1. All the subjects were apprised about the nature and purpose of research and their willingness ascertained before targeting them for participation.

2. Informed consent was obtained prior to the administration of the psychological assessment scales.

3. They were assured that they had the right to withdraw at any time from the study.

4. The researcher ensured that no attempt was made to invade into the personal identities of the subjects and it would not form the subject of research.

5. Respondents were assured that the information provided would be kept strictly confidential and will be used exclusively for research purposes only.

INSTRUCTIONS

The instructions that were provided for the appropriate completion of the tools as per their respective manuals are given below:

1. **ZUNG'S SELF-RATING DEPRESSION SCALE (ZSDS: Zung, 1965):**

   The instructions for the Zung Self-Rating Depression Scale are as follows:

   “In this questionnaire there are 20 statements. Please read each statement carefully, and decide how much you agree or disagree with the statement. There are four alternatives given in front of each statement. Encircle the appropriate alternative given in front of each statement of the answer sheet in the following fashion: I = “Not at all”, II = “Moderately often”, III = “Often” and IV = “All the time”.
2. **SOCIAL SUPPORT QUESTIONNAIRE (SSQ; Sarason, Levine, Basham, & Sarason, 1983):**

The instructions given for the Social Support Questionnaire are as follows:

"The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the person’s initials and their relationship to you (see example). Do not list more than one person next to each of the letters beneath the question. For the second part, circle how satisfied you are with the overall support you have. If you have no support for a question, check the words “No one”, but still rate your level of satisfaction. Do not list more than nine persons per question. Please answer all questions as best as you can. All your response will be kept confidential”.

3. **AUTOMATIC THOUGHT QUESTIONNAIRE (ATQ: Hollon & Kendall, 1980):**

The instructions for the Automatic Thought Questionnaire are as follows:

"Listed below are a variety of thoughts that pop into people’s heads. Please read each thought and indicate how frequently if at all, the thought occurred to you over the last week. Please read each item carefully and circle the appropriate answers on the answer sheet in the following fashion: 1 = “not at all”, 2 = “sometimes”, 3 = “moderately often”, 4 = “often” and 5 = “all the time”.

4. **PERCEIVED STRESS SCALE (PSS-10: Cohen & Williamson, 1988):**

The instructions for the Perceived Stress Scale are as follows:

"The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought in a certain way".
SCORING

The tests were scored strictly in accordance with the respective manuals of the various psychological scales and hand scoring was done by using separate keys for respective tests in the study. The Zung's Self-Rating Depression Scale (ZSRS) was used as a measure pertaining to depression and yielded a global score. The Social Support Questionnaire (SSQ) was used as a measure pertaining to social support and yielded two scores i.e., SSQ-S (Satisfaction with available support: qualitative) score and SSQ-N (perceived availability of number of supportive persons: quantitative) score. The Automatic Thought Questionnaire (ATQ) was scored for the measure pertaining to negative cognition and yielded a global score. The Perceived Stress Scale (PSS-10 item version) was scored for measure pertaining to stress and yielded a global score. Thus, as a result of scoring different tests, five measures were obtained. The scoring procedure of each of the scale has been provided below.

1. **ZUNG'S SELF-RATING DEPRESSION SCALE (ZSDS: Zung, 1965)**

   Affective, psychological and somatic features associated with depression are assessed by 20 items. Out of these 20 items included in the scale, 10 are worded symptomatically positive and 10 symptomatically negative. For each item, respondents indicate the frequency with which they have experienced a specific feature in terms of symptoms or feelings described, during the preceding month by selecting one of the four response alternatives ranging from a 'a little of the time' to 'most of the time'. The response alternatives are given a score of 1 to 4 and 4 to 1 for positively and negatively worded items respectively. The scores range from 20 to 80, with higher scores indicating the presence of higher depressive symptoms. The maximum possible ZSRS score is 80, while a score of 20 indicates the complete absence of depressive symptoms.

2. **SOCIAL SUPPORT QUESTIONNAIRE (SSQ; SARASON, LEVINE, BASHAM, & SARASON, 1983):**

   Social Support Questionnaire (SSQ) consists of 27 items and each of the 27 items asks a question to which a two-part answer is requested. The SSQ yields two
scores: (a) perceived availability of the number of supportive persons listed (SSQ-N), and (b) satisfaction with available support (SSQ-S). The number (N) score for each item of the SSQ is the number of support persons listed. The social support available to deal with a given problem is rated on a scale ranging from a "very satisfied" to "very dissatisfied". This yields a satisfaction (S) score for each item that ranges between 1 and 6. The overall N and S scores are obtained by dividing the sum of N or S scores for all items by 27, the number of items included in the social support questionnaire.

3. AUTOMATIC THOUGHT QUESTIONNAIRE (ATQ: HOLLON & KENDALL, 1980):

The Automatic Thought Questionnaire is a self-report questionnaire that measures negative automatic thoughts. The respondents rate on a 5-point scale how often they have experienced depression related cognitions during the past week. The items are rated on a 5-point scale: 1 = "not at all", 2 = "sometimes", 3 = "moderately often", 4 = "often" and 5 = "all the time". Scores on the 30 items are summed to give total scores for ATQ negative. It yields a score ranging from 30 to 150, with higher scores indicating more frequent negative thoughts.

4. PERCEIVED STRESS SCALE (PSS-10: COHEN & WILLIAMSON, 1988):

The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. The PSS-10 item scale scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short item scale can be made from the questions 2, 4, 5 and 10 of the PSS 10 item scale. The PSS is not a diagnostic instrument, so there are no cut-offs, with higher scores indicating higher intensity of perceived stress.

STATISTICAL ANALYSIS

The data was analyzed using SPSS (version 11.00) package with the help of following statistical techniques:
1. Frequency distributions, means, standard deviations, skewness and kurtosis to ascertain the nature of distribution (normality).

2. $P_{50}$ was used for classifying subjects into two groups and the median value was employed for the purpose of segregating the independent variables into two different groups (high vs low score groups) [except for the depressed vs non-depressed groups, which were divided at the cut off point of 50 on ZSRS (Carroll, Fielding, & Blashki, 1973; Fountoulakis et al., 2001)].

3. $t$-test and Chi-square were used to specifically locate the significant mean group differences.

4. Analysis of variance (2x2) to test the main effects and second-order interactional effects among the independent variables (for low and high social support groups separately).

5. Analysis of variance (2x2x2) to test the main effects, second-order and third-order interactional effects among the independent variables (for low and high social support groups separately).

ABBREVIATIONS AND CODES USED

For the purpose of providing a comparative analytical, economic and judicious presentation of the results, abbreviations and codes for both dependent variable and independent variables are provided. This was also felt necessary for easy interpretation and understanding.

<table>
<thead>
<tr>
<th>S.No</th>
<th>VARIABLE</th>
<th>CODE</th>
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<tbody>
<tr>
<td>1</td>
<td>Depression</td>
<td>Depr</td>
</tr>
<tr>
<td>2</td>
<td>Negative Cognition</td>
<td>Neg Cog</td>
</tr>
<tr>
<td>3</td>
<td>Social support (satisfaction from available support: qualitative)</td>
<td>SSQ-S</td>
</tr>
<tr>
<td>4</td>
<td>Social support (perceived availability of number of supportive persons: quantitative)</td>
<td>SSQ-N</td>
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