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METHODOLOGY

3.1 INTRODUCTION

Previous chapter included the reviews of the literature and the rational for formulated hypotheses. In the present chapter, the methodological aspects, such as, operational definitions of the variables, hypotheses, sample, tools, procedure of data collection and statistical analyses of the data are described.

3.2 OPERATIONAL DEFINITIONS OF VARIABLES IN THE STUDY

In this section the definitions proposed by the author of the tools used in particular. The variables employed in the present piece of research have been operationally defined in this section and these definitions are based on the explanations of the terms found in relevant literature in general.

3.2.1 Personality

Personality can be assumed as patterns of beliefs, emotions and behaviors which can differentiate people from each other which persist in different times and situations (Phares, 1991). The changes which reflect events and feelings during the lifespan only affect the surface and not the core character. Profound changes in personality are usually consequences of major life changes or deliberate effort (Costa & McCrae, 1992).

It is important that the individuals adapt to their circumstances in life at the same time as they retain the feeling of a solid inner core. Some adaptations seem to be general and follow a certain pattern. Sensation seeking is one example of characteristics which diminish over time from adolescence to middle age in all cultures (Costa & McCrae, 1992).

According to Costa and McCrae (1992), NEO-FFI scale which has 5 items, namely Neuroticism, Extroversion, Openness to experience, Conscientiousness and Agreeableness.
These terms are operationally defined in the following way.

I. **Neuroticism:** Neuroticism refers to the general tendency to experience negative affects such as fear, sadness, embarrassment, anger, guilt and disgust (Costa & McCrae, 1992).

II. **Extraversion:** Extraversion refers to the general tendency to experience suitableness, liking people, preferring large groups and gatherings, and to be assertive, active, and talkative (Costa & McCrae, 1992).

III. **Openness to experience:** Openness to experience refers to fantasy, aesthetics, feelings, actions, ideas and values. Openness to experience is a measure of depth, breadth and variability in a person's imagination and urge for experiences. (Costa & McCrae, 1992).

IV. **Agreeableness:** Agreeableness is the measure of the general tendency to experience altruism, sympathetic to others, eagerness to help others and believing that others will be equally helpful in return. The agreeableness scale is linked to altruism, nurturance, caring and emotional support versus competitiveness, hostility, indifference, self-centeredness, spitefulness and jealousy. (Costa & McCrae, 1992).

V. **Conscientiousness:** Conscientiousness is a measure of the general tendency to experience purposeful, strong will and determined, associated with academic and occupational achievement, punctual and reliable. Conscientiousness is a measure of goal-directed behavior and amount of control over impulses. (Costa & McCrae, 1992).

3.2.2 **Mental health**

According to Derogatis (1983), mental health is the measure of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism.

**These terms are operationally defined as follows.**

a) **Somatization:** The somatization dimension reflects distress arising from perceptions of bodily dysfunction such as complaints focused on cardiovascular, gastrointestinal, respiratory, and other system with strong
autonomic mediation and it refers to headaches, pain and discomfort of the gross musculature and additional somatic equivalents of anxiety. (Derogatis, 1983).

b) **Obsessive-compulsive**: The obsessive-compulsive dimension refers to the measure of thoughts, impulses, and actions that are experienced as unremitting and irresistible by the individual but are of an ego-alien or unwanted nature and behaviors and experiences of more general cognitive performance attenuation. (Derogatis, 1983).

c) **Interpersonal-sensitivity**: The Interpersonal-sensitivity dimension focuses on feelings of personal inadequacy and inferiority, particularly in comparisons with others. (Derogatis, 1983).

d) **Depression**: The symptoms of the depression dimension reflect a broad range of the manifestations clinical depression such as withdrawal of life interest, hopelessness, thoughts of suicide, and other cognitive and somatic complaints (Derogatis, 1983).

e) **Anxiety**: The anxiety dimension refers to a set of symptoms and signs that are associated clinically with high levels of manifest anxiety, such as nervousness, tension and trembling, as are panic attacks and feelings of terror and feelings of apprehension and dread, and some of the somatic correlates of anxiety. (Derogatis, 1983).

f) **Hostility**: The hostility dimension reflects thoughts, feeling or actions that are characteristics of the negative affect state of anger. The selection of items includes all three modes of manifestation and reflects qualities such as aggression, irritability, rage and resentment. (Derogatis, 1983).

g) **Phobic anxiety**: Phobic anxiety is defined as a persistent fear response to a specific person, place, object, or situation which is characterized as being irrational and disproportionate to the stimulus, and which leads to avoidance or escape behavior. (Derogatis, 1983).

h) **Paranoid ideation**: The present dimension represents paranoid behavior fundamentally as a disordered mode of thinking such as projective thought, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions are viewed as primary reflections of this disorder. (Derogatis, 1983).
i) **Psychoticism:** The psychoticism refers to withdrawn, isolated, schizoid lifestyle, symptoms of schizophrenia, such as hallucinations and thought-broadcasting. (Derogatis, 1983).

### 3.2.3 Self-concept

Self-concept refers to all the perceptions, feelings, attitudes, aspirations and values of concerning oneself as a result of experiences, forms attitudes which he or she organizes into a self-consistent system and defends against threats and attacks, so the person also forms attitudes toward himself (Deo, Pratibha. 1998).

### 3.2.4 Internet Addicted and Non-internet addicted

Internet addicted were defined as those persons having score 70 and above on Internet Addiction Test and Non-internet addicted were defined as those persons having score of 20 to 39 on Internet Addiction Test (Young, 1998).

### 3.2.5 Iranian and Indian Students:

a) **Iranian students** are those who are having the nationality of Iran and studying at under graduate level in Pune and Mumbai city.

b) **Indian students** are those who are having the nationality of India and studying at under graduate level in Pune and Mumbai city.

### 3.3 HYPOTHESES

On the basis of the theoretical background and logical supposition, in the present study the following hypotheses are framed.

1. Internet addicted students would score high on neuroticism, extroversion and agreeableness and low on openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to non-internet addicted students.
2. Iranian students would score high on neuroticism, extroversion and agreeableness and low on openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian students.

3. Female students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to male students.

4. Iranian internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Iranian non-internet addicted students.

5. Indian internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian non-internet addicted students.

6. Iranian non-internet addicted students would score low on neuroticism and agreeableness and high on extroversion, openness and conscientiousness and they would also have good self-concept and mental health (high score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Iranian internet addicted students.

7. Iranian non-internet addicted students would score low on neuroticism and agreeableness and high on extroversion, openness and conscientiousness and they would also have good self-concept and mental health (high score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian internet addicted students.
anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian non-internet addicted students.

8. Female internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to female non-internet addicted students.

9. Male internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to male non-internet addicted students.

10. Female internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to male internet addicted students.

11. Female non-internet addicted students would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to male non-internet addicted students.

12. Iranian female would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Iranian male.

13. Indian female would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-
compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian male.

14. Iranian female would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian female.

15. Iranian male would score high on neuroticism and agreeableness and low on extroversion, openness and conscientiousness conscientiousness and they would also have poor self-concept and poor mental health (higher score on somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) compared to Indian male.

3.4 METHOD

This section contains description of the sample, criteria’s of the sample selection, variables, research design, details of the tools used and the procedure of the present study.

3.4.1 Sample

The sample for the present research consists of 400 students (both male and female) studying at Arts, Commerce and Science stream at undergraduate and postgraduate levels in various colleges from Pune and Mumbai cities of Maharashtra. In this study equal number of internet addicted and non-internet addicted male and female Iranian and Indian students, age ranging from 18 to 30, were selected as participants. The proportionate stratified random sampling was used for collecting the data.
Table 3.1: The gender wise, nationality wise and addiction wise distribution of the sample was as follows -

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Groups</th>
<th>Nationality (A)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Iranian (A1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Internet Addicted Students (B1)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Non-Internet Addicted Students (B2)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

General Criteria for Selection of Sample

i. The participants were divided into two groups based on their score on Internet Addiction Test. Participants with score in the range of 71 to 100 were selected for internet addicted group and participants with score in the range of 20 to 39 were selected for non-internet addicted group.

ii. Sample was consists of students who can understand, read and write English.

iii. Students studying various colleges in Pune and Mumbai cities at undergraduate and postgraduate level were only included in the present study.

iv. Students’ age ranging from 18 to 30 were considered for selecting the sample.

3.4.2 Variables and Research Design

Independent Variables:

(i) Nationality – Iranian and Indian students

(ii) Sex – Male and Female students

(iii) Internet Addiction – Addicted students and Non-addicted students
Dependent Variables

1) **Personality** – (a) Neuroticism, (b) Extraversion, (c) Openness, (d) Agreeableness, (e) Conscientiousness

2) **Self-concept** -

3) **Mental Health** – (a) Somatization, (b) Obsessive- compulsive, (c) Interpersonal, (c) Sensitivity, (d) Depression, (e) Anxiety, (f) Hostility, (g) Phobic anxiety, (h) Paranoid ideation, (i) Psychoticism.

**Research design:**

For the present study 2 x 2 x 2 factorial research design was employed. Three variables namely, nationality of the participants and gender of the participants and internet addiction status were treated as independent variable. Nationality was varied as two levels, Iranian and Indian, gender was varied at two levels, male and female and internet addiction status was varied at two levels, addicted and non-addicted. Variables such as personality, self-concept and mental health were treated as dependent variables in this study.

3.4.3 **Tools**

For the present study the researcher used four standardized tests and one personal data sheet. Description of the four standardized tools is as follows:

(A) **Personal Data Sheet**

The personal data sheet was constructed which comprises the demographical details of the students such as their name, date of birth, age at the time of the testing, their gender, college, education and the other details regarding their hobbies and interests, number of hours spend on internet, purpose behind using internet, nature of the family (joint or nuclear), number of family members, father's occupation and family's annual income. This personal data sheet required to be filled by students before they complete Internet Addiction Test, NEO-FFI, Self- Concept Rating scale and Symptom Check List (SCL).
(B) **Internet Addiction Test (IAT) by Young, K. (1998)**

Young's (1998) test of internet addiction is extensively used instrument in psychological researches on internet addiction. This test is a five point rating scale which consists of 20 items and the participants are asked to respond them by selecting any one option from number one to five. Here, 1 means ‘Not at All’, 2 means ‘Rarely’, 3 means ‘Occasionally’, 4 means ‘Often’ and 5 means ‘Always’. The score on this questionnaire ranges from 20 to 100. The score of 20 to 39 on this test indicates average use of internet with complete control over internet use, score of 40 to 69 indicates frequent problems due to internet use and score of 71 to 100 shows significant problems due to excessive internet use. This test is having moderate to good internal consistency i.e. alpha coefficient ranges from 0.54 to 0.82.

Score on this test was used to divide the participants into two groups, namely, internet addicted (score of 71 to 100) and non-internet addicted (score of 20 to 39).

(C) **NEO -Five-Factor Inventory-R by Costa and McCrae (1992)**

To measure the five factors of personality such as neuroticism, extroversion, agreeableness, openness and conscientiousness, a test designed by Costa and McCrae (1992) is used. The NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) is an abbreviated 60-item version of the 240-item of NEO-PI-R. The NEO-FFI was constructed by first selecting the 12 items with the largest structure coefficients for each of the five factors (Costa & McCrae, 1992). Subsequently, 10 substitutions were made to permit reverse keying of some items in each scale, diversify item content, and eliminate items with joint coefficients.

In a sample of 1,539 employees of a large national corporation, Costa and McCrae found coefficients of internal consistency ranging from .68 for agreeableness to .89 for neuroticism. The test-retest reliability calculated on a sample of 208 college students with an interval of three months shown that the temporal reliability of NEO-FFI is good. The test-retest reliability for neuroticism is .79, for extroversion is .79, for openness is .80, for agreeableness is .75 and for conscientiousness is .83.
(D) Self-Concept List by Deo, Pratibha. (1998)

This scale is constructed and standardized by Pratibha, Deo (1998). It comprises 212 adjective and which measures six dimensions, namely, Intelligence, Emotional, Social, Character, Aesthetic. The test-retest reliability is .89; the internal consistency ranging from scores .84 to .98, which indicates high standard of the test. Validity is ranging from .60 to .89.

(E) Symptom Check List (SCL) 90-R by Derogatis, L. R (1983)

The SCL 90-items self-report symptom inventory is designed to reflect the psychological symptom patterns of psychometric and medical patients. Preliminary version of the scale was introduced by Derogates (Derogatis, 1983) and, based on early clinical experiences and psychometric analysis, was modified and validated in the present (Revised) form (Derogatis, 1983). Each item of the "90" is rated on a '5-point scale' of distress (0-4), ranging from "not at all" at one pole to "extremely" at the other.

The "SCL-90" is scored and interpreted in terms of 9 primary symptom dimensions and 3 global indices of distress. They are labeled as somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism.

The internal consistency reliability coefficient was the minimum for psychoticism 0.77 and the maximum for depression 0.90. The test-retest reliability was the minimum for hostility 0.78 and the maximum for the phobic anxiety 0.90.

3.4.4 Procedure of Data Collection

Sample for the study was randomly selected from different college in Pune and Mumbai city. All four standardized tests along with personal data sheet were administered in disturbance free environment after seeking the cooperation from the participants. English version of these tests was used for data collection. Testing done in small group and tests was administered in following sequence – (i) Personal Data Sheet, (ii) Internet Addiction Test, (iii) NEO-FFI-R and (iv) Self-Concept List (v) and
Symptom Check List (SCL) 90-R. Researcher took all the efforts to clarify the doubts of the participants about the research and the tests.

To select the research sample, initially, 18 to 30 years old students who were studying in first year to third year of their graduation in Arts, Commerce and Science stream in University of Pune and University of Mumbai have been divided into four groups including Indian girls, Indian boys, Iranian girls and Iranian boys. Afterwards, a sample, two and a half times bigger than the sample size of students was randomly selected. Then, after providing the questionnaire for the selected final sample, internet addicted and non-internet addicted have been found among four understudied groups of male and female Iranian and Indian students as the sample size according to the table. Consequently, the mentioned eight groups were determined. As a result, 50 persons were selected from each group and the results of their questionnaires (400 samples) were analyzed and interpreted statistically.

3.4.5 Statistical Analysis

1. The responses of the participants were scored as per the instructions given in the test manuals.

2. The raw scores were used for the analysis of the obtained data.

3. Normality of ratios of all variables was tested by using graphical method.

In the analysis of the data, descriptive statistics such as mean and SD was calculated for eight different groups or conditions for different dependent variables such as personality (neuroticism, extraversion, openness, agreeableness, conscientiousness), self-concept and mental health (somatization, obsessive-compulsive, interpersonal, sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism). This information used to facilitate the interpretation of the obtained results.

4. One-way ANOVA was used to study main differences between nationality, gender and internet addiction status in terms of personality, self-concept and mental health.

5. Statistical analysis of the data was carried out by using SPSS version 18.
3.5 SUMMARY

This chapter discussed in detail the methodology of the present study. Hypotheses framed on the basis of literature reviewed were presented. Four tools were employed. They were: Internet Addiction Test (IAT), NEO-Five-Factor Inventory-R, Self-Concept List, Symptom Check List (SCL) 90-R. All the employed tools had adequate and satisfactory reliability and validity. The sample taken for the present study included 400 Iranian and Indian male-female students with Internet Addiction and Non-Internet Addiction. The data were analyzed with the help of the statistical techniques like: descriptive statistics and One-way ANOVA by using SPSS version 18.