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Research Paper

Addiction to Transition: Efficacy of Harm Reduction Behavioral Intervention Technique for Nomophobia

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ABSTRACT

Indian adolescents are greatly affected by high Smartphone engagement and are currently driving Smartphone's market in India. With the rapid rise of smart phone usage in recent years, smart phone devices have become a ubiquitous part of our culture and revolutionized how we live. The present study focused on analyzes the efficacy of Behavioral recovery techniques on Craving, & impaired Control. The samples composed of 80 students were screened, out of which 100 students selected randomly from Bathinda, Patiala and Mansa. For this purpose, Nomophobia Questionnaire (Yildirim & Correia, 2014), Mobile Phone Addiction Craving Scale (Durán AL, Becoña E., 2006) and Brief Self-Control Scale (Tangney et al., 2004) were used to assess the efficacy of Behavioral recovery techniques on Craving, & impaired Control respectively. It was hypothesized that 1) Behavioral recovery techniques would lower down craving for smart phone usage i.e., post-Intervention craving scores would be significantly less in comparison to their Pre-Intervention craving scores. 2) Behavioral recovery techniques would enhance controllability over for smart phone usage i.e., post-Intervention control scores would be significantly better as compared to their Pre-Intervention control scores. Analysis of variance (ANOVA) to evaluate the mean differences following pre and post intervention on carving and self-control behavior. The f-ratio came out to be significant {F (197.513) = p>.01}. There was a significant difference between pre and post of craving score and the f-ratio came out to be significant {F (70.329) = p<.01}. It also showed that there was a significant difference between pre and post of self-control behavior.

Keywords: *Nomophobia, Craving, Impaired Control*

World is rapidly changing due to advancement in realm of science and technology, and it's impossible to escape its presence, one such advancement is in field of Internet/smartphones. Both Internet and smartphones are closely related because of their similar features (Kwon, Kim, Choi, Gu, Hahn & Min, 2013). Smartphone and internet addiction are distinct is in the usage gratifications and usage context of the two (Ghose, Goldfarb, & Han, 2012). Smartphones have become an ingrained part of our culture and are considered a necessary part of life daily by most people. There are many people who start their day by checking mobile phone and end the day also by mobile phone it implies

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that they are either addicted to a mobile phone or tends to addict. When it comes to teenagers and their phones, this connection is probably even stronger, as they've grown up with smartphones as a normal and functioning part of their lives. However, for some teens, common cell phone use can become an addiction, characterized by teens having an unrelenting need or fixation with their phones. They develop the fear of not having access to their mobile phone. YouGov termed this condition as Nomophobia (JB, B., Preeti, M., Praveen, C. T., & Jinto, P. (2013). Addiction is considered by WHO (2013) as dependence, as the continuous use of something for the sake of relief, comfort, or stimulation, which often causes cravings when it is absent. According to Dr. Howard Shaffer, "Addiction is not simply a qualitative shift in experience, it is a quantitative change in behavior patterns: things that once had priority become less important and less frequent behaviors become dominant. Addiction represents an intemperate relationship with an activity that has adverse biological, social, or psychological consequences for the person engaging in these behaviors. The two major categories of addiction involve either substance addiction, e.g., "drugs or alcohol addiction" or "behavioral addiction such as internet/smartphone addiction. There are three categories of problematic smartphone usage i.e., dangerous usage, inappropriate usage and overuse (Walsh, White, & Young, 2007). All three usage types are considered as important indicators that someone is on the path to smart phone addiction (Chóliz, 2012), and is Nomophobic. ***Nomophobia***, a disorder of the contemporary digital and virtual society and refers to discomfort, anxiety, nervousness or anguish caused by being out of contact with a mobile phone especially smartphones or computer, is considered a modern age phobia introduced to our lives. It is the pathological fear of remaining out of touch with technology. The age group of 25-34 is found to have the highest Smartphone usage rate of 62%. 50% of Android Smartphone's and 43% of Apple iPhone users are younger than 34 years (Katz JE, Akhus M., 2002). 53% of Smartphone users are male and 47% are female (Entner, 2010). **South Korea** is one of the most digitally connected nations in the world. However, it comes with its own drawbacks with continuing and increasing use over time. **Indian teens** are currently driving Smartphone's market in India. The age group of 16-18 years using Smartphone's have shown a rapid rise from 5% in 2012-25% in early 2014. Recently in 2013, there were around "51 million" Smartphone users in Urban India and rate of rise from year 2012 was 90% (Katz JE, Akhus M., 2002). Indian adolescents are greatly affected by this high smartphone engagement. The life-time prevalence for problem and pathological gambling is between 5 and 10% in the adult population of North America. ***The prevalence is even higher for adolescents. Studies also indicate that the prevalence has increased over the last decade (Shaffer, Hall & Vander Bilt 1999), consequently the need for effective treatment seems to be evident.*** It's a "first world problem" that's showing no signs of slowing down, regardless of age. Smartphone addicts make the internet urgency more vital than family, friends and work. Smartphone overuse has become an epidemic in our digital era now and is becoming a public health concern. Moreover, this prevalence is expected to rise in the future due to the easy availability and swift changes & addition of new applications to smartphone technology. Despite the well-established harm caused by smartphone dependence and a pressing need to develop and implement effective prevention, there are a limited number of scholarly accepted and empirical treatment methods for it. The proposed treatments primarily consist of a combination of psychotherapy and some pharmacological interventions. Only a handful of studies examine specific treatment outcomes to deal with this participant population. ***The present study focused on the efficacy of Behavioral recovery techniques on 2 C's as psychological triggers of nomophobia Craving, & impaired Control.***

Craving: The anticipation of pleasurable relief and an overwhelming emotional experience that takes over our body and produces a unique motivator of behaviour to seek more and more is called craving. Wise (1988) describes it as the memory of the positively rewarding effects of substance behaviour addiction. In the context of behaviour addiction, it is not much different from physical need, such as craving water when you're thirsty and craving food when you're hungry. The internet has become associated with a vital, life-giving action, even though it's the absolute opposite. Craving makes it difficult to think of anything other than the substance or activity and manifests itself physically through a feeling of restlessness, lack of sleep & appetite.

Control (Impaired): Controllability of the addictive behavior in internet addiction is often mentioned as a key diagnostic factor. Impaired control over the behavior even one has desire to have control means that the person can no longer maintain his/her cravings and the use of smartphone/internet increases drastically. The persons can no longer control their actions and begin to use dishonesty to mask the truth of their actions. People stopped going outside without their smartphones because a feeling of fear can emerge due to disconnection. Due to the accessibility of other contacts afforded by smartphones, people feel more secure and in control. Ko C-H, Liu G-C, et al. (2009). This mechanism of Internet addiction also involved the core symptoms "impaired control" in smartphone addiction and shared the same psychobiological model of substance related disorders.

Intervention Strategies for Nomophobia/Smartphone Addiction

Given the need for the use of technology in daily living, controlled, safe, healthful and mindful use has taken precedence over complete abstinence by prohibiting smartphone use as the goal of treatment for technology addictions. The basic purpose is to minimize Nomophobia or the severity of smartphone addiction up to manageable level. These strategies represent a continuum from safer use, to managed use, to abstinence. Harm and risk reduction open a range of options that individuals can define as attainable goals in terms of smartphone use and other risks, while allowing the young person to invest in treatment and recovery. Although a variety of methods have been presented for the treatment of this problem but there is no widely accepted categorization of behavioral or psychosocial interventions, which can be suggested as being the golden standard for its treatment because they are in their beginning stages and studies are in progress in this field. The term, psychosocial interventions, is generally applied to a broad range of types of interventions, which include ***psychotherapies*** (e.g., psychodynamic therapy, cognitive-behavioral therapy, interpersonal psychotherapy, problem solving therapy, motivational enhancement therapy), ***community-based treatment*** (e.g., assertive community treatment, first episode psychosis interventions); ***vocational rehabilitation, peer support services, and integrated care interventions***. Ostrov, Offer, and Howard (1989) reported that ***increasing self-awareness*** about smartphone addiction should be considered one of the most promising strategies for intervention programs among adolescents. At the same time, this study confirmed the results of previous studies that ***self-regulation*** was an important factor in smartphone addiction in adolescence (Gökçearslan, Mumcu, Haşlaman, &Çevik, 2016; Kwon, Lee, Won, et al., 2013; van Deursen, Bolle, Hegner, & Kommers, 2015). In a meta-analysis of treatment intervention for Internet addiction among adolescents (Chun, Shim, & Kim, 2017), the authors reported a substantial effect of ***cognitive behavioral therapy,*** a brief therapy that includes structured sessions and specific objectives. Its systematic practice is based on explicit goals and tasks. Both the patient and the therapist have active roles. **Dr. Young** expanded initial theories of CBT to develop the first model to treat internet addiction i.e.,

CBT-IA. **CBT-IA is a three-phase model** combining CBT with **Harm Reduction Therapy** (HRT). The same model can be applied to mobile phone addiction (Young, 2011). HRT is used to identify the underlying issues contributing to addiction.

Given the risks young adults face, treatment approaches should integrate strategies that reduce negative consequences associated with smartphone use and other potentially injurious behavior. So, the imperative need is to conceptualize effective interventions for smartphone addiction**.** ***The present study focused on efficacy of the intervention for smartphone addiction based on Young's CBT-IA therapeutic recovery technique,*** primarily aiming at moderate & legitimate smartphone use, while targeting abstain the use of problematic net application. This approach accepts small, incremental steps in the direction of harm reduction by focusing on the person's strength & capacity to change the starting point for success, using individual/group techniques to help them after they are home. Outcomes of these interventions encompass desired changes in three areas (Substance Abuse and Mental Health Services Administration, 2012):

This Behavioral recovery intervention, based on cognitive-behavioral method, focuses on *seven step counseling practice* to control trigger factors leading to smartphone addiction and enhance healthy internet use. The intervention period was of 12-16 weeks. Each week shall have one session of one hour. Homework exercises were given during the time gap between sessions. The intervention was consisting of total 7 sessions. ***The first two sessions will focus on symptoms followed by three sessions on functioning and two sessions on well-being.*** The last session was about taking feedback from the participants, their parents and friends. After termination of intervention, follow-up session was conducted for one month.

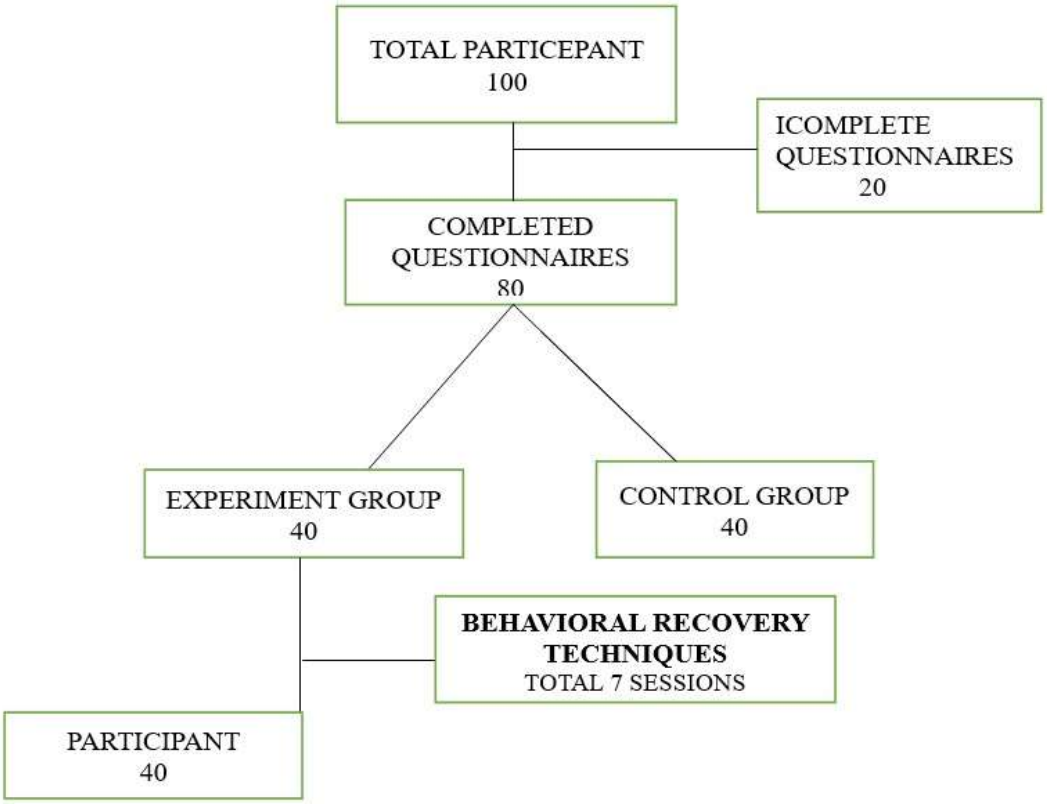
***Hypotheses*:**

- Behavioral recovery techniques would lower down craving for smartphone usage i.e. Post-Intervention craving scores would be significantly less in comparison to their Pre-Intervention craving scores.
- Following Behavioral recovery techniques, individuals in Experimental Group would exhibit less craving as compared to individuals in Control Group.
- Behavioral recovery techniques would enhance controllability over for smartphone usage i.e., Post-Intervention control scores would be significantly better as compared to their Pre-Intervention control scores.
- Following Behavioral recovery techniques, individuals in Experimental Group would exhibit better control as compared to individuals in Control Group.

METHODOLOGY

***Sample*:** The sample of present study consists of 80 for the efficacy of behavioral recovery techniques. School students in the age range of 18-24 years randomly selected from different schools of Punjab. Consent of the respective authorities and subjects were taken in advance. All the participants were very comfortable with English language in written as well as in spoken form. Out of total 100 students, 80 were screened in on the basis of Nomophobia Questionnaire scores. Incidental sampling procedure was used to collect the data.

Design*:* To analyze the impact of Behavioral recovery techniques on Craving, & impaired Control. The present research follows the experimental and control group design in order to verify the efficacy of intervention. Analysis of variance repeated measure was applied.



Tools Used: Following tools were used in the present study:

- Nomophobia Questionnaire (Yildirim&Correia, 2014)
- Mobile Phone Addiction Craving Scale (Durán AL, Becoña E., 2006)
- Brief Self-Control Scale (Tangney et al., 2004)

RESULTS

The objective of the present research was to examine the efficacy of Behavioral recovery techniques to ameliorating Nomophobia.

In the light of stated hypotheses, means, standard deviations and analysis of variance (Anova) repeated measure) were computed. To see the effect of Behavioral recovery techniques on Craving, &impaired Control., the data was processed using ANOVA. To examine the effect of Behavioral recovery techniques on psychological trigger factors Craving, & impaired Control. The results are described in a tabular form in Table No.1 to 6. Graphical representations of the findings are depicted in Figures 1and 2.

TABLE NO. 1: Comparison of control and experimental group on Pre-intervention scores of Craving.

Condition	Groups	N	Mean	SD	F
Pre	Control Group	40	51.98	12.94	0.000
	Experimental Group	40	51.98	12.94	
	Total	80	51.98	12.86	
Post	Control Group	40	52.38	11.31	197.513**
	Experimental Group	40	22.93	6.91	
	Total	80	37.65	17.50	

TABLE NO. 2: ANOVA Summary for the Comparison of control and experimental group on Pre & Post intervention scores of Craving.

Condition		Sum of Squares	Df	Mean Square	F	Sig.
Pre	Between Groups	0.000	1	0.000	0.000	1.000
	Within Groups	13069.950	78	167.563		
	Total	13069.950	79			
Post	Between Groups	17346.050	1	17346.050	197.513	.000
	Within Groups	6850.150	78	87.822		
	Total	24196.200	79			

Table No. 1&2 depict that there is difference in the pre and post intervention craving mean scores of pre experimental (M= 51.98, SD= 12.94) and control group (M= 51.98, SD= 12.94). The f-ratio came out to be non-significant {F (0.000) =P>.01}. Similarly, result has been seen in post intervention craving mean scores of experimental (M= 22.93 SD= 6.91) and control group (M= 52.38, SD= 11.31). The f-ratio came out to be significant {F (197.513) = p>.01}. There was a significant difference between pre and post of craving score. The results led to the acceptance of the hypothesis that Behavioral recovery techniques, individuals in Experimental Group were exhibit less craving as compared to individuals in Control Group.

Graph No. 1: Mean difference of control and experimental group on Pre and post intervention scores of Craving.

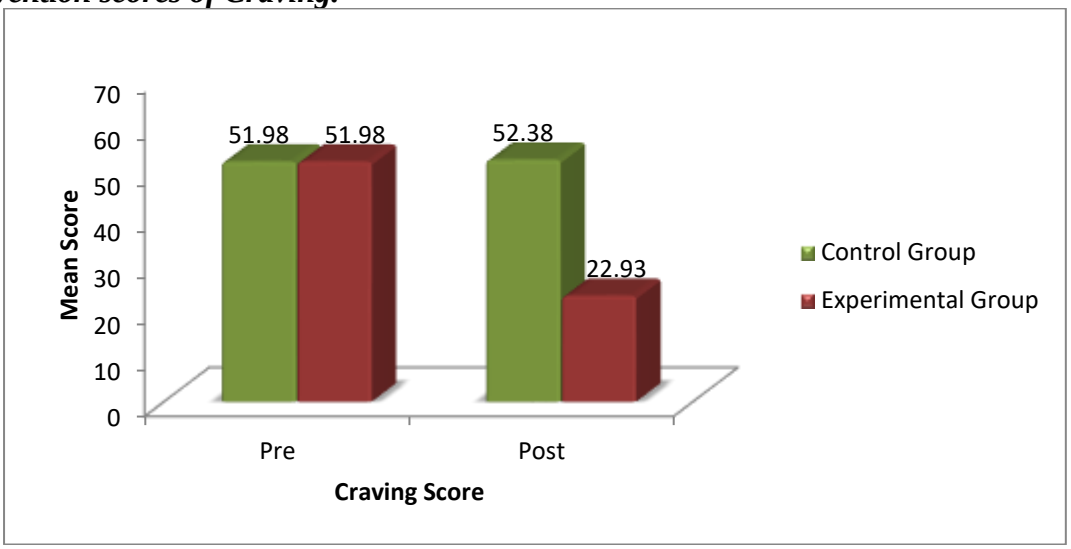


TABLE NO. 3: Comparison of control and experimental group on Pre & Post intervention scores of self-control.

Condition	Groups	N	Mean	SD	F
Pre	Control Group	40	18.03	5.74	0.000
	Experimental Group	40	18.03	5.74	
	Total	80	18.03	5.70	
Post	Control Group	40	20.35	8.10	70.329**
	Experimental Group	40	36.23	8.82	
	Total	80	28.29	11.60	

Table No.4: ANOVA Summary for the Comparison of control and experimental group on Pre &Post-intervention scores of Self-control.

Condition		Sum of Squares	df	Mean Square	F	Sig.
Pre	Between Groups	0.000	1	0.000	0.000	1.000
	Within Groups	2569.950	78	32.948		
	Total	2569.950	79			
Post	Between Groups	5040.313	1	5040.313	70.329	.000
	Within Groups	5590.075	78	71.668		
	Total	10630.388	79			

Table No. 3&4 show that there is significant difference in the pre and post intervention self-control mean scores of experimental group (M= 18.03, SD= 5.74) & control group (M= 18.03, SD= 5.74). The f-ratio came out to be non-significant {F (0.000) =p<.o1}. Similarlypost intervention self-control mean scores of experimental (M= 36.23, SD= 8.82) and control group (M= 20.35, SD= 8.10) were found to be significantly different. The f-ratio came out to be significant {F (70.329) = p<.01}.It also showed that there was a significant difference between pre and post of self-control behavior. This shows that subjects who scored low on nomophobia also scored high on self-control behavior. The results led to the acceptance of the hypothesis that Behavioral recovery techniques, individuals in Experimental Group were exhibit better control as compared to individuals in Control Group.

Graph No. 2: Mean difference of control and experimental group on Post-intervention scores of Narcissism and Ethical Behavior

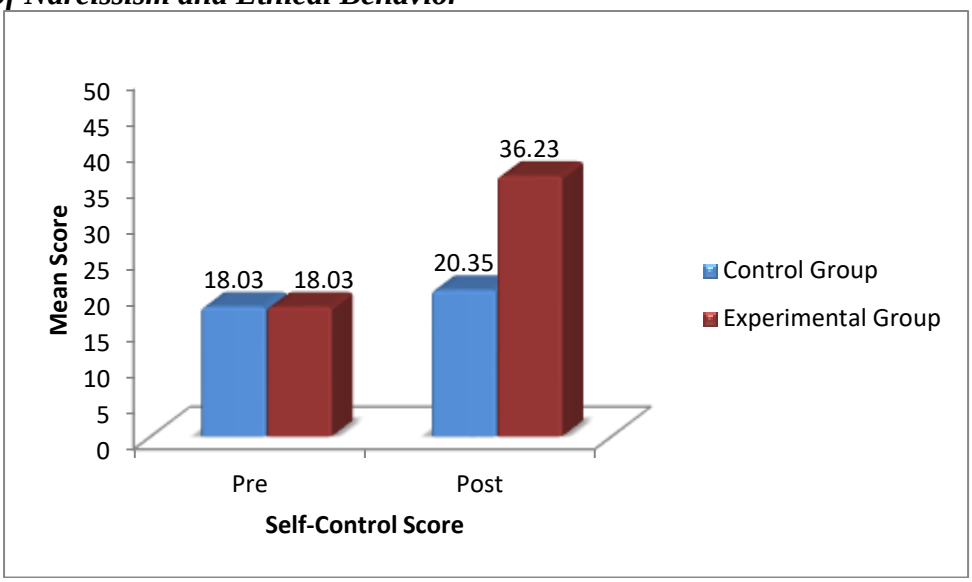


TABLE NO.5& 6: Comparison of pre and post intervention scores of experimental groups on Craving and Self-control behavior

Craving Score	N	Mean	SD	F value
Pre	40	51.98	12.94	346.089**
Post	40	22.93	6.91	

Source	Sum of Squares	df	Mean Square	F	Sig.
factor1	16878.050	1	16878.050	346.089	0.000
Error	1901.950	39	48.768		

TABLE 6 Self-control behavior

Self-Control Score	N	Mean	SD	F value
Pre	40	18.03	5.74	164.946**
Post	40	36.23	8.82	

Source	Sum of Squares	df	Mean Square	F	Sig.
factor1	6624.800	1	6624.800	164.964	0.000
Error	1566.200	39	40.159		

From Table No. 5& 6, it is evident from the table that there is significant difference in the pre post intervention craving and self-control mean scores of experimental groups. On the pre intervention scores of craving are (M= 51.98, SD= 12.94) and post intervention craving scores are (M= 22.93, SD= 6.91). The f-ratio came out to be significant {F (346.0089) =p<.01}. Similarly, significant difference has been found between pre post intervention self-control mean scores of experimental group. On the pre intervention scores of self-control are (M= 18.03, SD= 5.74) and post intervention self-control scores are (M= 36.23, SD= 8.82). The f-ratio came out to be significant {F (164.946) = p<.01}.

DISCUSSIONS

Indian teens are currently driving Smartphone's market in India. The age group of 16-18 years using Smartphone's have shown a rapid rise from 5% in 2012-25% in early 2014. Recently in 2013, there were around "51 million" Smartphone users in Urban India and rate of rise from year 2012 was 90% (Katz JE, Akhus M., 2002). Indian adolescents are greatly affected by this high smartphone engagement. ***Psychosocial interventions*** capitalize on interpersonal or informational activities, psychological or social techniques or strategies to produce change in psychological, social, biological as well as functional outcomes (Montgomery P, et al., 2013).

Results of the present study showed that all the hypotheses regarding the ameliorating nomophobia have been accepted. All the findings are in consonance with the theoretical argument of the present investigation.

The hypothesis that following Behavioral recovery techniques, ***Behavioral recovery techniques would lower down craving for smartphone usage i.e. Post-Intervention craving scores would be significantly less in comparison to their Pre-Intervention craving scores*** has been accepted. As depicted in Table No.1&2 after intervention, individuals in experimental group showed significantly lower level of carving as compared to those in control group.

Results, as depicted in Table no.5and 6showed that post-intervention scores of experimental group on carving were significantly lower than their pre-intervention scores. It indicates that Behavioral recovery techniques sessions helped nomophobic adolescents. Substantial research supports our first hypothesis Adolescent personality traits that correlated positively with internet addiction included high harm-avoidance, reward dependence, low self-esteem,

and low cooperation (Weinstein and Lejoyeau, 2010). Previous studies indicate that personality traits affect addiction (Mehroof M, Griffiths MD, 2010). Specifically, novelty or sensation-seeking traits are significantly stronger among drug users than among nonusers (Masse LC, Tremblay RE, 1997; Malatesta VJ, Sutker PB, Treiber FA, 1981). studies indicate that the mechanism of psychological needs shift on internet game addiction (IGD), that through increasing satisfaction of psychological needs from daily life activities (e.g., doing sports, adaptive interpersonal communicating) to reduce the dependence of Internet gaming and also craving for gaming, which further supported prior findings (Liu et al., 2012). Similarly, an interventional study on adolescents with IGD using family therapy approach aiming through enhancing family cohesion and affection has reduced craving and improved perceived family cohesion (Han et al., 2012). Online-gaming craving as a maladaptive desire may "hijack" basic processes of privileging certain stimuli and information that has adaptive values (Volkow and Baler, 2014; Sayette, 2016).

As hypothesized in present research work that ***Behavioral recovery techniques would enhance controllability over for smartphone usage i.e., Post-Intervention control scores would be significantly better as compared to their Pre-Intervention control scores*** has been accepted. As depicted in Table No.3&4 after intervention, individuals in experimental group showed significantly enhance controllability over for smartphone usages compared to those in control group.

Results, as depicted in Table no. 5 & 6 showed that post-intervention scores of experimental group on controllability were significantly enhance than their pre-intervention scores. It indicates that Behavioral recovery techniques sessions helped nomophobia adolescents. Previous research supports our second hypothesis Poor decision making relative to controls has been exhibited in problematic Internet gamers relative to controls in a dice game (Pawlikowski& Brand, 2011) and in inhibition trials such as go/no-go sequences (Littel et al., 2012). The poor control has been attributed to Internet addicts' relatively enhanced sensitivity to rewards and their insensitivity to punishments in general decision making tasks (Dong, Huang & Du, 2011). Another way of thinking about controllability is the ability to change one's own emotional state, now commonly known as affective regulation. Jeong, S.R.; Yu, H.K et al. (2014) revealed Smartphone interventions for adolescents using group counseling have considered self-control, alternative activities, and maintaining impulse mechanisms to control smartphone addiction and have proven their effectiveness. Out-of-control smartphone use is also one of the main characteristics of individuals with Smartphone addiction (Jameel, Shahnawaz, & Griffiths, 2019). Enhancing inhibition control skills in students with SPA is an effective method to reduce pathological smartphone use. Ge et al. (2015) found that after 18 weeks (three times a week, 2 hrs per session) of a volleyball exercise intervention, smartphone usage duration and addiction index of the individuals with SPA were significantly lower than those of the control group; negative emotions were reduced, while self-confidence, interpersonal communication skills, and learning efficiency were improved. Another study demonstrated that mindfulness-based cognitive therapy could significantly decrease uncontrolled response, withdrawal, and inefficiency regarding smartphone addiction among college students (Zhang & Zhu, 2014). (Shonin et al., 2013). In this study, the key content in the first 3-week intervention involved constructing correct cognition of smartphone use by clarifying the root purpose of smartphone use, the behavior itself, and the consequences.

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Conflict of Interest

The author declared no conflict of interests.

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