



Reconnecting the Disconnect: Enhancing Interpersonal Skills Through Therapeutic Games Amidst Adolescents with Smartphone Addiction

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Abstract

Background

Overuse and difficulty in controlling one's use of smartphones can have a significant influence on day to day activities, sleep quality, focus, academic achievement and interpersonal connections. This research looks at how mending these connections can help reduce problematic phone use. It also explores the use of therapeutic board games to enhance adolescents' interpersonal interactions with smartphone addiction.

Aims and objectives

This study aims to determine the effect of therapeutic board games on enhancing interpersonal relationships among smartphone addicted adolescents. Children were selected according to the selection criteria. Outcome measures were used to assess the present level. The intervention was applied and the results were analyzed with statistical methods.

Materials and methods

This is a quasi-experimental study which involved a convenient sampling method. 42 adolescents were screened with PUMP scale as they were addicted with the smartphones. From this addicted adolescent only 30 adolescents met with the inclusion criteria. 30 participants were selected according to the selection criteria who were then split into two groups: a control group (n=15) and an experimental group (n=15). In this study, smartphone addiction was assessed using PUMP scale as a screening tool and interpersonal relationship levels was assessed using the FIRO-B scale as an assessment tool for pre-test and post-test. Pre-test was administered to all the participants to find out the level of interpersonal relationship in adolescents with smartphone addiction. Therapeutic board games were used as an intervention tool for the experimental group, while education was the intervention given to the control group. Post test was conducted to measure changes. The study was conducted for three months, three sessions per week and each session lasted for 45 minutes. Statistical analysis was performed using IBM SPSS version 23.0 with significance set at a 5% alpha level.

Result

The pre-test and post-test data was analyzed using FIRO-B scale. The P-value of the experimental group was 0.001, leading to the acceptance of alternate hypothesis. Thus, the results showed marked progress in the experimental group compared to the control group.

Conclusion

In this study, there was a significant improvement in interpersonal skills among adolescents with smartphone addiction which demonstrated the value of therapeutic board games and their positive effects on adolescents with smartphone addiction.

Keywords

Smartphone addiction, adolescents, interpersonal relationships, therapeutic board games



Introduction

Occupational therapists help individuals perform daily activities that are meaningful and productive, enhancing their overall health and well-being. They focus on areas such as activities of daily living (ADL), work and leisure. Occupational therapy intervention aims to improve engagement, participation and performance in these occupations. In occupational therapy, activities are crucial as they are designed to enhance engagement in meaningful tasks. ^[1] In mental health settings, occupational therapists work to enhance client's independence and quality of life by promoting self-care, productivity and leisure. They provide assessment and intervention in areas like independent living skills, psychosocial functioning and daily activities, tailoring their approach to the specific needs of each client. This is particularly important for adolescents with mental health issues, as it helps them develop skills for ongoing independence. ^[2] Interpersonal relationships refer to the connections between two or more individuals, either temporary or long-term. Interpersonal relationships involve interdependence, where individuals share feeling, thoughts and activities, fostering emotional bonds. For students, key relationships involve parents, teachers and peers and poor relationships can negatively impact academic performance and may even cause some students to give up on their learning. ^[3]

Interpersonal relationships in adolescents involve forming friendships, sharing emotions, and receiving peer acceptance, which is vital for healthy development. Lack of these relationships can lead to psychological issues and antisocial behaviors like aggression. Adolescents with strong interpersonal skills typically have close friendships, positive self esteem and perform well academically with lower risks of aggression, anxiety or depression. ^[4] When it comes to smartphones, using them is more prevalent than other behaviours in a person's life and that they are unable to stop using them, even in the face of detrimental social, psychological and bodily effects. The widespread popularity and multifunctionality of tech products, particularly smartphones, have contributed to a significant increase in screen time among adolescents, which has coincided with a decline in real life interpersonal interactions. This trend is primarily driven by the excessive use of these devices, particularly among young people. Research has shown that adolescents who spend more time engaged with screens tend to allocate less time activities that do not involve technology, such as face-to-face social interactions, physical activities like sports and participation in religious or community events. Smartphones have become the most prevalent tech devices used by adolescents, with their primary functions being social media engagement and online gaming. On average, young people dedicate over five hours per week to using smartphones, with more than three of those hours spent on social media platforms and over 1.5 hours on online gaming. This shift towards increased screen time raises concerns about the potential impact on adolescents' social skills, physical health and overall well-being, as time traditionally spent on enriching, real-world activities is increasingly being replaced by digital interactions. ^[5,6]

Occupational therapists in acute mental health settings focus on individual assessments, therapeutic groups, individual treatment and discharge planning. They utilize their expertise to conduct occupation-focused groups involving activities like art, music, movement and role play.



These groups aim to enhance client's life skills and interpersonal relationships through meaningful, engaging activities. ^[7] Board games, such as chess and go, involve moving pieces on a patterned board and come in various types, including educational ones like kaledo, which enhance nutrition knowledge. They foster skills like teamwork and creativity while offering a social interactive experience that contrasts with electronic games. The resurgence of board games aligns with cultural trends and provides benefits such as. Improved communication, reduced loneliness and healthier lifestyles for children and families. ^[8]

Therapeutic board games are commonly used in psychotherapy and research indicates that it can enhance knowledge comprehension, interpersonal interactions and motivation. Games like group therapy (1969) and the ungame (1972) reflected contemporary ideas about the value of open and genuine communication. Adapting these concepts for family and group plays an important role at home. While these games provide tools for more authentic and connected communication, they focused solely on broader social structures. By analyzing these therapeutic games, it highlights both their potential and limitations in envisioning better ways of relationships. Articles in 1960 and 1970 addressed that group therapy and the ungame offered families a playful means to examine and improve their communications habits, aligning them with era's ideals of liberated and authentic interaction. ^[9]

Smartphones today make it possible for people to speak with one other whenever and wherever they choose, which fosters interpersonal contacts. However, they may also disregard social context's group norms, undermining actual social relationships. This study established by Fu Yuan Hong et al., established the link between smartphone addiction and unhealthy interpersonal relationships. ^[10] A 2009 study by Isabelle.C Streng on the benefits of therapeutic board games for improving child mental health found that therapeutic board games are effective in assisting kids and teenagers in overcoming obstacles. ^[11] Therefore, the purpose of this study is to gather more information about how therapeutic board games can improve interpersonal relationships among adolescents with smartphone addiction.

Materials and methods

Study design and participants

Study design

It is a quantitative study and it employed a quasi-experimental design with a convenient sampling technique.

Setting

The research was conducted in two settings: Terapanth Jain Vidyalaya school and Ankur grand apartment.

Participants

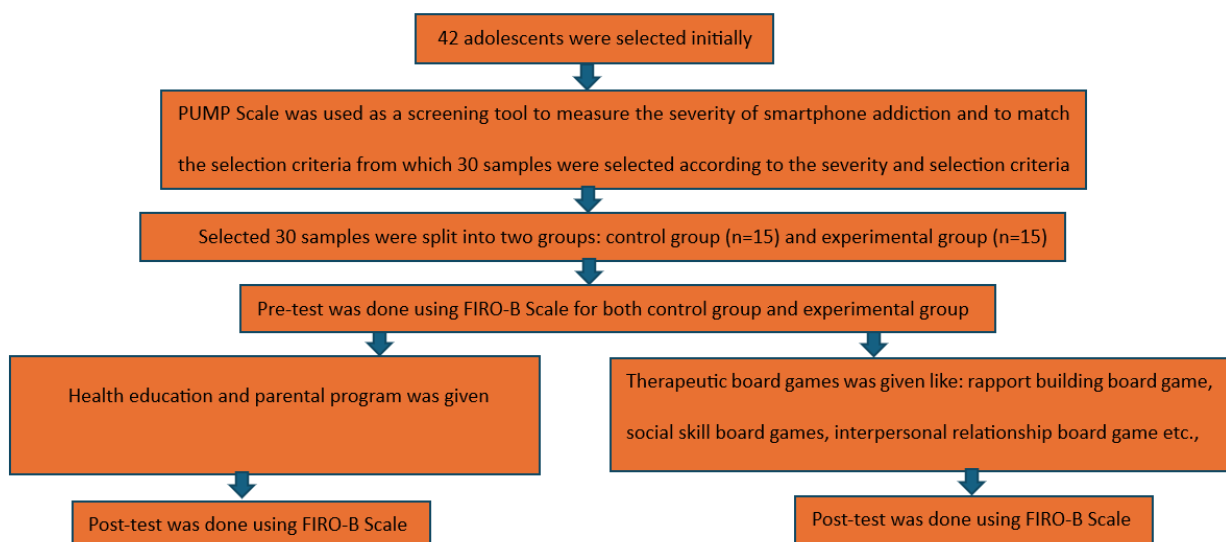
A total of 42 participants were initially selected for this study, of which only 30 participants met the selection criteria. These 30 participants were then divided into two groups: an experimental group (n=15) and a control group (n=15). The inclusion criteria of this study targeted adolescents



aged 14-18 who exhibited smartphone addiction and difficulties in interpersonal relationships. Both male and female participants were considered for this study. Adolescents under the age of 14, those with neurological conditions, non-cooperative individuals, and those without parental consent were excluded from the selection process. This study assessed both the severity of smartphone addiction and the quality of their interpersonal relationships. These measurements were conducted to provide comprehensive understanding of how smartphone use may be influencing their social interactions and overall relationship dynamics. The assessment aimed to quantify the extent of smartphone dependency and to evaluate the impact it had on participants ability to maintain healthy and effective interpersonal connections.

Intervention Procedure

A total of 30 adolescents were selected using PUMP Scale as a screening tool out of 42 participants according to the selection criteria. The samples were divided equally, 15 samples in the control group and 15 samples in the experimental group. Pre-test was administered using FIRO-B Scale to all the 30 adolescents to find out the level of interpersonal relationship level. The intervention was given to the sample who had a low and medium level of interpersonal relationship skill. After the baseline data was obtained the experimental group underwent the therapeutic board game intervention, while the control group received health education on interpersonal relationships and the effects of smartphone overuse. The intervention was conducted for 3 months, which included 36 sessions per week where each session lasted for 45 minutes.



Intervention protocol

The intervention program was conducted for both experimental group (n=15) and control group (n=15) where the experimental group underwent intervention program of therapeutic board games and the control group underwent intervention program of health education. Initial sessions covered topics on occupational therapy and research goals followed by pre-test administration, group formation and self-introduction. Each session of the therapeutic board game intervention began with a warm-up activity for 5 minutes, including group stretching, breathing exercises, group



clapping and name sharing to energize and encourage participants. Following the warm-up, therapeutic board games with weekly themes were conducted for 45 minutes to actively involve participants. Sessions involved themed board games of rapport building which fostered initial connections among group members, helping them to feel comfortable and begin establishing trust, roll a positive board games which encouraged positive reinforcement and recognition within the group. Participants took turns rolling dice and shared a positive feedback or affirmations about themselves and others, which helped them to build self-esteem and group cohesion, all about me board game focused on self-disclosure, which allowed participants to share personal interests, strengths, and experiences. It helped to deepen understanding and appreciation among group members, promoting stronger bonds, roll a topic board game introduced structured discussions on various topics that were relevant to the group's interests or therapeutic goals. It helped in developing communication skills and allowed participants to explore different viewpoints within a supportive environment, interpersonal relationship board game focused on exploring and understanding interpersonal relationships among participants and It involved scenarios that helped participants navigate and reflect on their interactions with others, enhancing their social skills and empathy and social skills board game targeted the development of key social skills such as communication, listening, and cooperation and participants engaged in this themed board game which allowed them to practice and refine these skills in a safe environment. Therefore, a twelve themed therapeutic board games was used for experimental group to enhance better interpersonal relationship. Each session was concluded with a wind-up segment for 10 minutes which focused on discussing lessons learned, guided discussions and integrated the participants experiences. Meanwhile, the control group received health education and awareness on interpersonal relationships and the effects of smartphone overuse on mental health. At the end of intervention program feedback was gathered and post-test evaluation was conducted for both experimental group and control group.

Screening tool for smartphone addiction

The Problematic Use of Mobile Phone (PUMP) scale was used as a screening tool to measure the severity of smartphone addiction among adolescents. The Problematic Use of Mobile Phone (PUMP) Scale is a 20-item measure of problematic mobile phone use. The PUMP questions are rated on a 5-point scale from 1 meaning strongly disagree to 5 meaning strongly agree. The scale consists of statements formulating possible thoughts, feelings and behaviour related to problematic smartphone use. The PUMP scale has good reliability with an overall Cronbach's α of .94 and a good concurrent validity with the Cellular Phone Dependency Questionnaire ($r = .76$) ^[12]

Assessment tool for interpersonal relationship

The Fundamental Interpersonal Relations Orientation-Behaviors (FIRO-B) Scale was employed as a pre-test and post-test assessment tool to evaluate the level of interpersonal relationships among adolescents with smartphone addiction. The FIRO-B instrument is a self-report assessment designed to measure behaviors associated with interpersonal needs. It consists of 54 items that assess three core interpersonal needs: Inclusion, Control, and Affection. Each need is measured



across two dimensions: expressed needs (the extent to which an individual prefers to initiate a behavior) and wanted needs (the extent to which an individual prefers others to initiate a behaviour towards them). Interpersonal needs were evaluated using one of two six-point Likert scales (1 = Never to 6 = Usually and 1 = Nobody to 6 = Most People). The reliability coefficients for all measures are satisfactory, ranging from .85 to .96. Test-retest reliability coefficients, reported in the FIRO-B Technical Guide, also indicate good reliability, ranging from .71 to .85 across three different samples. Research evidence further supports the validity of the FIRO-B instrument, with various studies demonstrating its relationship to measures of leadership (e.g., Fiedler's Least Preferred Co-worker scale, .43 to .46), personal values such as community service (.05 to .27), and relationships/friendships (-.03 to .27). Additionally, the FIRO-B instrument has shown correlations with other tools like the MBTI® Form M instrument (-.56 to .29) and the CPI™ instrument (-.48 to .51) ^[13]

Data analysis

Statistical method:

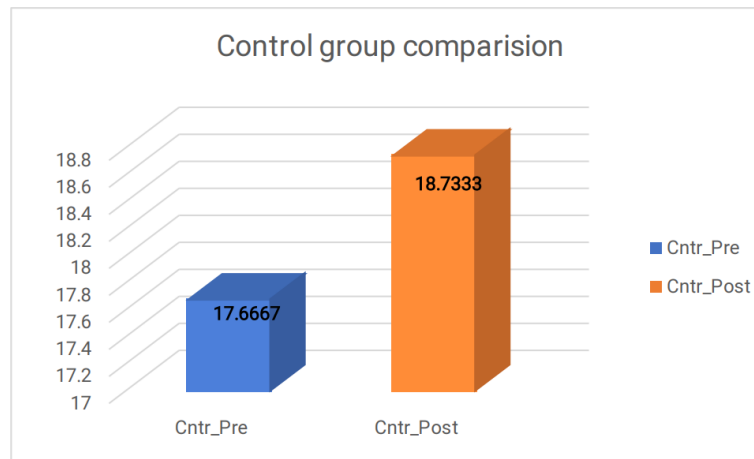
This study was carried out by the analysis of inferential statistics. Mean and standard deviation (minimum – maximum) was used as a measurement criterion on repeated basis for result. Initially, this study involved 42 participants from which only 30 participants were selected according to the selection criteria. Since the samples belonged to the sample size (30), a non-parametric method was used to test the statistical differences between pre-test and post-test scores of control and experimental groups. An alpha level of $P = 0.05$ was measured to be statistically significant. The statistical analysis was done with the help of IBM SPSS version 23.0

Table 1: Statistical analysis for pre-test and post-test scores of FIRO-B scale in control group

Test	Mean	SD	N	Z value	p value
Cntr_Pre	17.6667	6.85218	15	-2.889	0.004*
Cntr_Post	18.7333	6.76616	15		

*Significant at 5% alpha level

Since the p value of 0.004 is lesser than 0.05, alternate hypothesis is accepted. Hence, there is statistically significant difference between pre- test and post test scores in the Control Group of the FIRO-B. This suggests that the intervention received by the control group had significant improvement.

**Figure 1 Difference between pre-test and post-test scores of control group****Table 2: Statistical analysis for pre-test and post-test scores of FIRO-B scale in experimental group.**

Test	Mean	SD	N	Z value	p value
Expt_Pre	19.4667	7.58633	15	-3.457	0.001*
Expt_Post	23.1333	7.86372	15		

*Significant at 5% alpha level

In the Experimental group, since the p value of 0.001 is less than 0.05, alternate hypothesis is accepted. Hence, there is statistically significant difference in Experimental Group between pre-test and post test scores of FIRO-B. This suggests that the intervention received by the experimental group had significant improvement

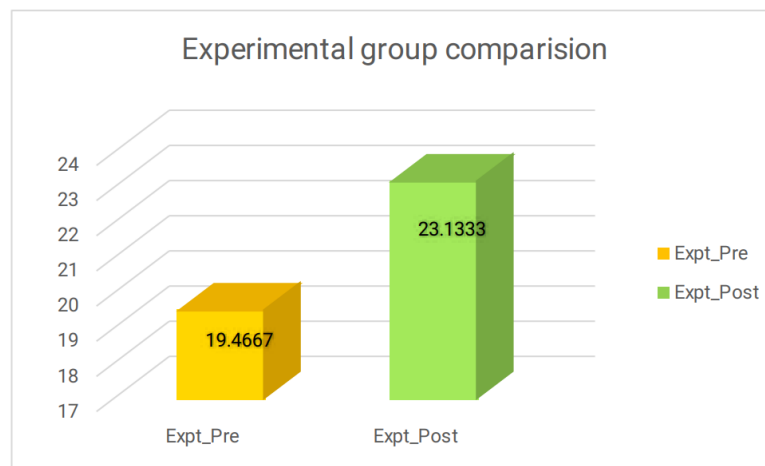
Figure 2 Difference between pre-test and post-test scores of experimentally group



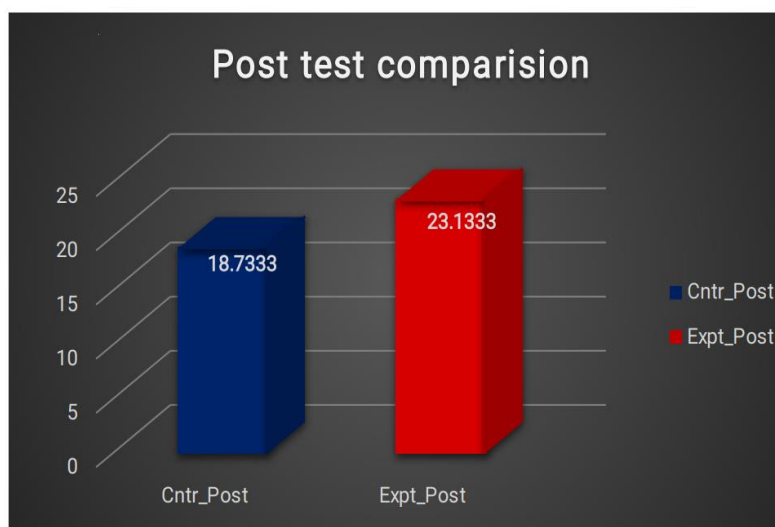
Table 3 Statistical analysis between the post-test scores of the control and experimental group

Group	Mean	SD	N	Z value	p value
Cntr_Post	18.7333	6.76616	15	-2.219	0.026*
Expt_Post	23.1333	7.86372	15		

*Significant at 5% alpha level

Since the p value of 0.026 is lesser than 0.05, alternate hypothesis is accepted. Hence, there is statistically significant difference in post test scores between Experimental and Control Group of the FIRO-B. This suggests that the intervention received by the experimental group had more improvement when compared to the control group.

Figure 3 Comparison of post-test scores of FIRO-B between control and experimental group



Results

The results obtained from the tests were analyzed statistically. The statistical analysis was done with significance at a 5% alpha level using IBM SPSS version 23.0. Wilcoxon signed rank test and Mann Whitney U test were used to analyze the pre and post-test data's collected from both groups. The pre and post-test data collected were compared and the significance was set at a p-value of 0.05.

Discussion

The purpose of this study was to assess the effectiveness of therapeutic board games in enhancing interpersonal relationships among adolescents struggling with smartphone addiction. The study was conducted for 3 months with 36 sessions. A total of 30 participants were randomly assigned to experimental group (n=15) and control group (n=15) after the pre-test. Smartphone addiction



levels were measured using the PUMP Scale and interpersonal relationship levels were assessed using the FIRO-B Scale. The intervention targeted participants with low to moderate interpersonal relationship skills. The experimental group was engaged in therapeutic board games, while the control group received only health education. Post-test evaluation was conducted for both groups and the results were analyzed.

The results presented in table 1, indicates that there was a statistically significant difference in the FIRO-B Scale scores for the control group between the pre-test and post-test suggesting that health education might enhanced the interpersonal relationships among adolescents. This aligns with a study by Linda Ross (November 2012), which emphasized the need to integrate teaching strategies with engaging activities to effectively develop interpersonal skills in students. ^[13]

Conversely, table 2 demonstrated a highly statistically significant improvement in the experimental group scores, highlighting the effectiveness of the therapeutic board game intervention among adolescents with smartphone addiction. This finding is supported by research from Oana A. David (March 2022), which concluded that game-based interventions are effective in promoting mental health and facilitating real-life improvements in the well-being of children and adolescents. ^[14]

Furthermore, the comparison of post-test scores shown in table 3 between control and experimental group, the experimental group showed greater statistical significant difference. This indicated that experimental group had more improvement than control group. This outcome is corroborated by a review conducted by Isabelle Streng, which advocated for the use of therapeutic board games to promote mental health in children. Streng's review highlighted that board games, as a familiar and engaging group activity, are particularly effective in helping children learn new behaviors, improve problem-solving skills and gain insight into their difficulties. ^[15]

This study strongly suggests that the therapeutic board game intervention was significantly more effective than health education in enhancing interpersonal relationships among adolescents. ^[11]

Study limitation and recommendation

The study was conducted on a small sample size and over a shorter duration, which may limit the generalizability of the findings. Additionally, the study focused on a confined age group and did not account for gender differences, which could have provided a more comprehensive understanding of the outcomes. To address these limitation, future research should consider a larger sample size and extend the study duration to capture a more accurate representation of the population. Furthermore, incorporating gender differences into the analysis could yield more nuanced insights. Expanding the study to include adolescents with other pathological conditions would also enhance the applicability of the findings.

Conclusion

The study concluded that there was a statistically significant improvement in the experimental group compared to the control, indicating that the therapeutic board games intervention has enhanced interpersonal relationship skills in adolescents with smartphone addiction. These results suggest that integrating therapeutic board games into conventional occupational therapy could lead to better outcomes in improving interpersonal relationship skills among this population. By doing



so, therapists can leverage this intervention to achieve more comprehensive and sustained improvements in interpersonal relationship skills, complementing traditional therapeutic approaches and leading to better overall outcomes for adolescents with smartphone addiction.

Conflicts of interest

The authors declare no conflict of interest

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