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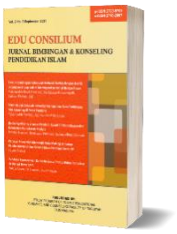

Cognitive Behavioral Counseling Vs Family Counseling: Which Motivational Interviewing Is More Effective to Reduce Game Addiction in Adolescents?

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Keywords:
Family Counseling Motivational Interviewing;
Game Addiction;
Cognitive Behavioral Technique;
Adolescents.

Abstract

Game addiction is a phenomenon that can interfere with adolescents' social relationships, leading to emotional, behavioral or mental disorders. The COVID-19 pandemic has contributed to an increase in game addiction behavior, largely due to feelings of loneliness. The consequences faced by adolescents as a result of game addiction can significantly impact their personal, social, learning, and career aspects. Therefore, it is crucial to employ appropriate counseling techniques to effectively reduce this addiction. Empirical and practical evidence showed that Family Counseling and Motivational Interviewing Techniques were effective in addressing game addiction. This study aimed to show the effectiveness of the Family Counseling Motivational Interviewing (FCMI) technique in reducing game addiction, as compared to Cognitive Behavioral Counseling (CBC). A quantitative approach was utilized, with a randomized controlled trial as the study design. The hypothesis was analyzed using the Wilcoxon and Mann-Whitney Tests. A total of 90 adult students participated in this study and were classified into FCMI as the experimental group and the CBC as the control. The results showed that the FCMI technique was more effective in reducing game addiction than CBC. Significant improvements were also observed in the aspects of tolerance and mood modification, which experienced a notable decrease.

Kata Kunci:
Family Counseling Motivational Interviewing;
Kecanduan *Game*;
Teknik Kognitif Behavioral;
Remaja.

Abstrak

Kecanduan *game* merupakan fenomena yang dapat mengganggu hubungan sosial remaja sehingga menimbulkan gangguan emosi, perilaku, atau mental. Pandemi COVID-19 berkontribusi pada peningkatan perilaku kecanduan *game*, sebagian besar disebabkan oleh perasaan kesepian. Akibat yang dihadapi remaja akibat kecanduan game dapat berdampak signifikan pada aspek pribadi, sosial, pembelajaran, dan kariernya. Oleh karena itu, sangat penting untuk menggunakan teknik konseling yang tepat untuk mengurangi kecanduan ini secara efektif. Bukti empiris dan praktis menunjukkan bahwa Teknik *Family Counseling Motivational Interviewing* (FCMI) efektif dalam mengatasi kecanduan game. Penelitian ini bertujuan untuk menunjukkan efektivitas teknik *Family Counseling Motivational Interviewing* (FCMI) dalam mengurangi kecanduan game dibandingkan dengan *Cognitive Behavioral Counseling* (CBC). Pendekatan kuantitatif dengan uji coba terkontrol secara acak sebagai desain penelitian. Hipotesis dianalisis menggunakan Uji Wilcoxon dan Mann-Whitney. Sebanyak 90 siswa berpartisipasi dalam penelitian ini dan

diklasifikasikan ke dalam FCMI sebagai kelompok eksperimen dan CBC sebagai kontrol. Hasil penelitian menunjukkan bahwa teknik FCMI lebih efektif dalam mengurangi kecanduan *game* dibandingkan CBC. Peningkatan signifikan juga terlihat pada aspek toleransi dan modifikasi *mood*, yang mengalami penurunan signifikan.

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Introduction

Game addiction is a common phenomenon that leads to various issues in individuals, including behavioral and emotional disorders, as well as social isolation in adolescent relationships with Family & Friends (Mahamid & Bdier, 2021; Zandi Payam & Mirzaeidoostan, 2019). The increasing global number of users has made game addiction among children and adolescents a significant problem, with negative effects on their health and social lives (Keser et al., 2016; Keya et al., 2020; Sayi & Şahin, 2021). This addiction can cause several problems in adolescents.

Game addiction is classified as a mental disorder that encompasses several symptoms. The Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5) identifies the negative effects of gaming on adolescent, listing symptoms of game addiction as Internet Gaming Disorder (IGD) criteria, which require further study. These symptoms include preoccupation, withdrawal, intolerance, inability to reduce or stop gaming, negligence of other activities, persistent gaming despite problems, fraud, gaming as a means of escape, and the risk of strained relationship (King et al., 2017; Maroma et al., 2019; Petry et al., 2015); King et al., 2017). Game addiction is a psychiatric disorder that has recently garnered significant attention, emphasizing the need for intervention to reduce its prevalence.

In general, recent meta-analysis data indicated that the prevalence of game addiction was approximately 3.05% (95% confidence interval, based on a representative sample study) (Király et al., 2022). Some statistical data from the World Health Organization (WHO) in 2018 also showed that 3–4% of people were addicted to video games globally, with 13% being Asian (Keya et al., 2020). The prevalence of adolescents with game addiction in Korea increased from 10.4% in 2011 to 10.7% in 2012, 11.7% in 2013, and 12.5% in 2014 (Chun et al., 2017). Meanwhile, a survey conducted in Europe revealed that 1.6% met the full criteria for game addiction and 5.1% were at risk of developing addiction. (Bonnaire & Phan, 2017). In China, the prevalence ranged from 3.5 to 17%, higher than the global average (Long et al., 2018). These statistics highlight the need for specialized treatment to address game addiction.

Adolescents with game addiction commonly experience psychological and social problems, loneliness, depression (Nugraha et al., 2021; Stevens et al., 2019; J.-L. Wang et al., 2019), and aggressive behavior (Karunanayake et al., 2020; Mahamid & Bdier, 2021); Emre, 2020). With students spending more time at home, feelings of isolation and loneliness have increased (Pawlikowska et al., 2022; Ramli et al., 2023), leading to high levels of stress and various psychiatric problems among adolescents (T. sun Han et al., 2022). Students often cope with this loneliness by excessively using gadgets, resulting in a tenfold increase in digital addiction, which negatively

impacts their lives and social development (Niu et al., 2022; Şenol et al., 2023). The impact of game addiction has been further exacerbated by the COVID-19 pandemic.

Previous studies identified the potential effectiveness of several interventions in reducing game addiction, including medical treatment and Cognitive Behavioral Counseling (CBC) (Stevens et al., 2019; Zajac et al., 2020), as well as Art Therapy, Motivational Interviewing (MI), Integrative Therapy, and Solution-focused Therapy (Chun et al., 2017). However, meta-analyses previously conducted highlighted that CBC required a long-term duration of intervention and consistent efforts (Chun et al., 2017; Hidayati et al., 2020). Although, CBC, as a psychosocial intervention, was commonly used to reduce game addiction due to its high level of effectiveness, it typically required a lengthy intervention period, often exceeding 10 counseling sessions (He et al., 2021; Kochuchakkalackal, 2020; Krisnanda et al., 2022; Torres-Rodríguez et al., 2018; Wölfling et al., 2019), and primarily focused on individuals phenomena, potentially leading to cognitive dysfunction (Hidayah et al., 2023; Hidayah & Ramli, 2017; Schoneveld et al., 2020; Suranata et al., 2017). Nevertheless, current concerns extended beyond individual issues and encompassed family relationships.

The rapidly and constantly changing technological developments has also posed numerous challenges for families as well as emotional turmoil, including those caused by game addiction (Karayağiz Muslu & Aygun, 2020; Zhou & Xing, 2021). Family problems and conflicts arising from game addiction require the function of a cohesive and harmonious family (Y. Wang, 2022; Yayman & Bilgin, 2020). The family also plays a crucial role in creating a peaceful and safe atmosphere for its members, although the reverse is not necessarily true (Zhou & Xing, 2021; Handari et al., 2022), as children and youth are mostly influenced by family, community, and school stressors in ways that hinder their learning and well-being (Gerrard, 2023; Kucukkaragoz, 2020; Wahyuningsih et al., 2020). Therefore, to address the issue of game addiction, the role of the family is essential, as it offers children a more positive perspective on the world and significantly impacts their psychological development and self-esteem (Küçükkaragöz & Karakayoun, 2020; Şahin et al., 2019; Zhou & Xing, 2021). Studies revealed that family factors had bio-psycho-social effects on individuals (Yildirim, 2018; Yilmaz & Ozkan, 2022). It was also found that conflict-free family could protect children from the effects of game addiction (Ji et al., 2022). Therefore, family counseling is considered one of the ways to restore healthy roles and relationships for those affected by game addiction.

Family counseling is highly recommended for individuals struggling with addiction, whether it be substance or game addiction (D. H. Han et al., 2012; Nuryono et al., 2023a). Family counseling performed by a psychological therapist is an easy and effective form of intervention (Hambali, 2016; Long et al., 2018). Through psychoeducational sessions, each family member can be educated about the nature and background of the disorder, allowing them develop strategies to respond to maladaptive adolescent behavior affecting the entire family. This process empowers families to maximize their roles and functions within the family unit (Carlson & Dermer, 2019). Family counseling is a systematic and continuous individual approach carried out by counselors to successfully promote adaptive behavior and facilitate adjustment within oneself and the family environment (Sabarudin et al., 2022).

MI is recognized as an effective approach for reducing game addiction (Lundahl et al., 2010; Nugraha & Khasanah, 2023; Nuryono et al., 2023b). It is a person-centered approach aimed at changing non-adaptive behaviors to adaptive (Dieris-Hirche et al., 2021), characterized by collaborative, evocative, and respectful of client autonomy (Kouimtsidis et al., 2021). However, the

counseling techniques used to address game addiction are still conventional, highlighting the need for modified approaches that suit the needs of students (Prasetiawan et al., 2023). Based on available data, both Family Counseling and MI have demonstrated effectiveness in reducing game addiction. These techniques can be combined into eclectic and modification-based integrative counseling approach that builds upon previous studies. This combined approach not only addresses individual aspects but also considers the environmental factors. This study was not limited to high-risk students, as all students were considered potential participants using a randomized controlled trial technique (Zabor et al., 2020).

This study aims to show the effectiveness of the Family Counseling Motivational Interviewing (FCMI) technique in reducing game addiction, as compared to CBC. It also seeks to investigate the extent to which the technique reduces game addiction and related problems. As a result of these objectives, the following research questions were formulated: Are the CBC and FCMI techniques effective in reducing game addiction? Which of CBC or FCMI techniques is more effective in reducing game addiction?, and What is the description of the effectiveness of FMTI in reducing game addiction in adolescents? The study hypotheses are as follows (1) FCMI is more effective in reducing game addiction than CBC, (2) CBC is more effective in reducing game addiction than FCMI, (3) FCMI is at least as effective as CBC in reducing game addiction.

Method

This study adopted a quantitative approach, as well as a pre-test and post-test design with both experimental and a control groups (Creswell, 2012). Furthermore, a randomized controlled trial was implemented in two parallel groups to assess the effects and impact of the two interventions. This design was an experimental study conducted under controlled and randomized conditions. It evaluated the effect of an intervention and compared with a comparison group, under the condition that students did not refuse to participate in the study and comply with the criteria (Bhide et al., 2018).

The experimental group received integrative FCMI, while the control received CBC. This study was conducted from May 2022 to April 2023, covering the initial assessment process through the completion of the intervention. The CBC intervention group underwent 7 sessions, while the experimental group had 5 intervention sessions. The study design is presented below:

Table 1. Study Design

Experimental Group (45 Participants)	**Pre-test**	**Family Counseling Motivational Interviewing**	**Post-test**	**5 counseling sessions**
Control Group (45 Participants)	Pre-test	Cognitive Behavioural Technique	Post-test	7 counseling sessions

This study included a population of 23 Junior High Schools and a total of 62 counselors. Among the participants, 156 subjects met the criteria for game addiction, ranging from 11 to 15 years of age. The counselor conducted assessments using the Game Addiction Scale instrument. Randomization was performed to determine the counseling approach utilized by school counselors. Both the experimental and control groups consisted of 45 children each. The research procedure followed a randomized controlled trial (Dieris-Hirche et al., 2021), with 156 students participating

in the assessment. This design ensured that participants attended and did not refuse to participate based on the predetermined criteria. A total number of 45 students were selected for the control group, receiving CBC intervention, while the experimental group comprised 45 students receiving FCMI. This process is presented in the figure below:

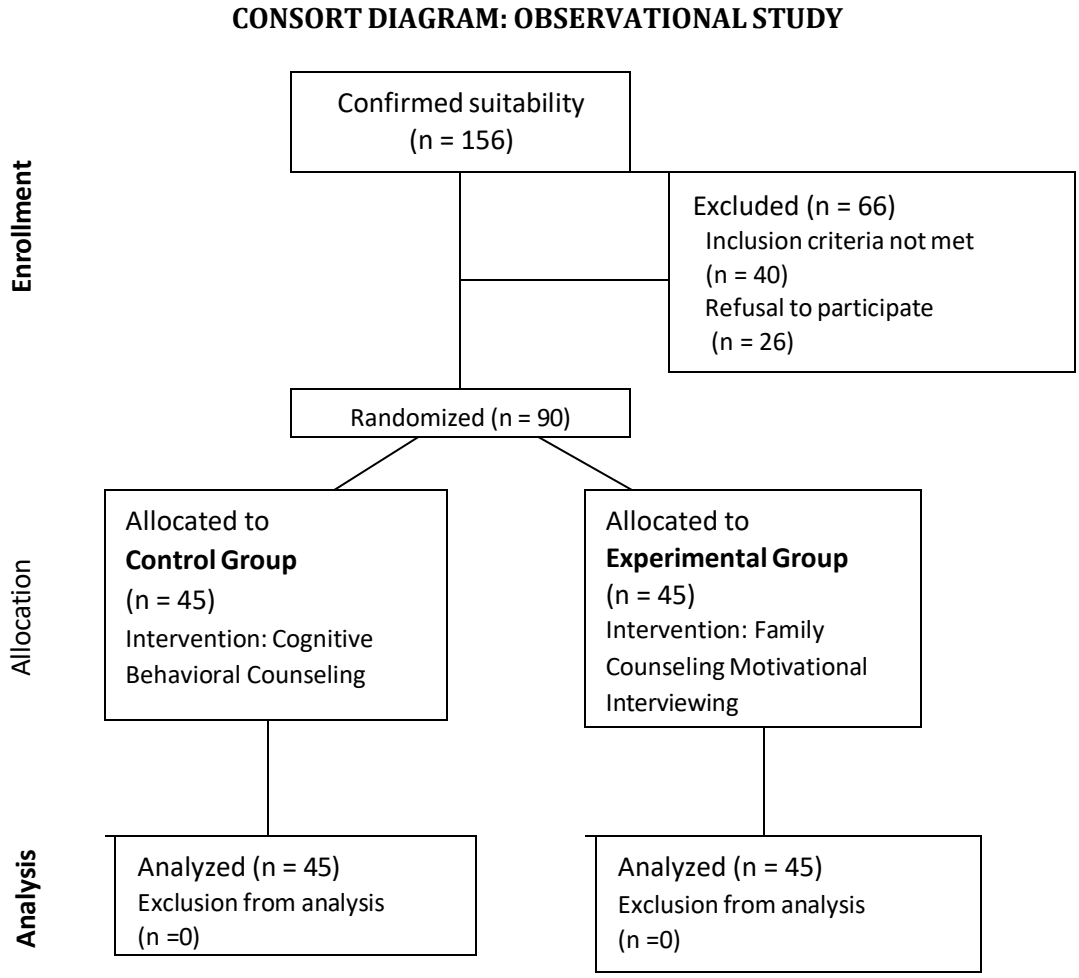

Figure 1. Randomized Controlled Trials Design

The instrument used in this study was adapted from the Game Addiction Scale for youth developed by Lemmens (Lemmens et al., 2009). This was a validated game addiction scale with a confidence level of 5% and a Cronbach's alpha value of 0.770, tested on 856 subjects. The scale consisted of 26 statements categorized into four scales, namely very appropriate, appropriate, sometimes, and not appropriate. It was used to measure seven aspects, namely mood modification, salience, tolerance, withdrawal, relapse, problems, and conflict.

The data analysis process involved the following stages, with the aim of addressing the hypotheses: a nonparametric Wilcoxon test was conducted to assess the differences between the pre- and post-tests within each group, as the data in both groups were not normally distributed ($p<0.05$); a nonparametric Mann-Whitney U test was employed to examine the differences between the results of the CBC group and the FCMI group, as the data in both groups were not normally distributed ($p<0.05$).

Result

This study identified differences in the mean profiles between the pre- and post-tests of the control and experimental groups receiving CBC and FCMI interventions, as shown in the table below:

Table 2. Difference in mean scores before and after the test between the control group and the experimental group

Aspect	Control Group			Experimental Group		
	Mean Pre-tes	Mean Post-tes	Mean difference	Mean Pre-tes	Mean Post-tes	Mean difference
Salience	2.10	1.12	0.98	2.76	1.03	1.73
Tolerance	2.35	1.03	1.32	3.23	1.04	2.19
Mood Modification	2.21	1.16	1.05	3.27	1.09	2.17
Withdrawal	1.84	1.24	0.61	2.47	1.19	1.28
Relapse	1.86	1.30	0.56	2.86	1.44	1.42
Conflict	1.71	1.29	0.42	2.65	1.61	1.05
Problems	2.04	1.45	0.59	2.69	1.55	1.14

The results above showed that all the values before and after the test decreased in both the control and experimental groups. The figures below depict the pre-test and post-test scores for both groups:

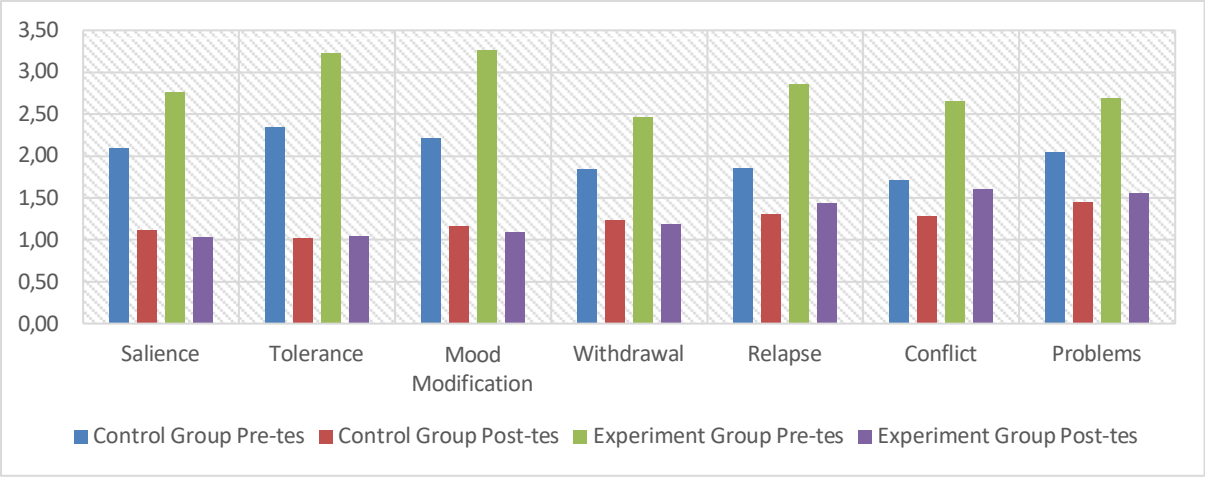

Figure 2. Mean indicators in control and experimental groups

The figure shows that all pre-test scores from both the control group who received the CBC intervention and those who received the FCMI intervention were higher compared to the post-test results. The control group had the highest pre-test value of 2.35 in the tolerance aspect, while the lowest value of 1.71 was observed in the conflict aspect. In the average post-test for the control group, a lowest score of 1.03 was recorded for tolerance and problems aspect had the highest score

of 1.45. In the experimental group receiving FCMI intervention, the mood modification aspect had the highest average score of 3.27 in the pre-test group and withdrawal recorded the lowest with 2.47. In terms of the experimental group's post-test scores, the conflict aspect had the highest mean of 1.61 and salience recorded the lowest with 1.03. The figure below shows the difference in the mean scores between the experimental and control groups:

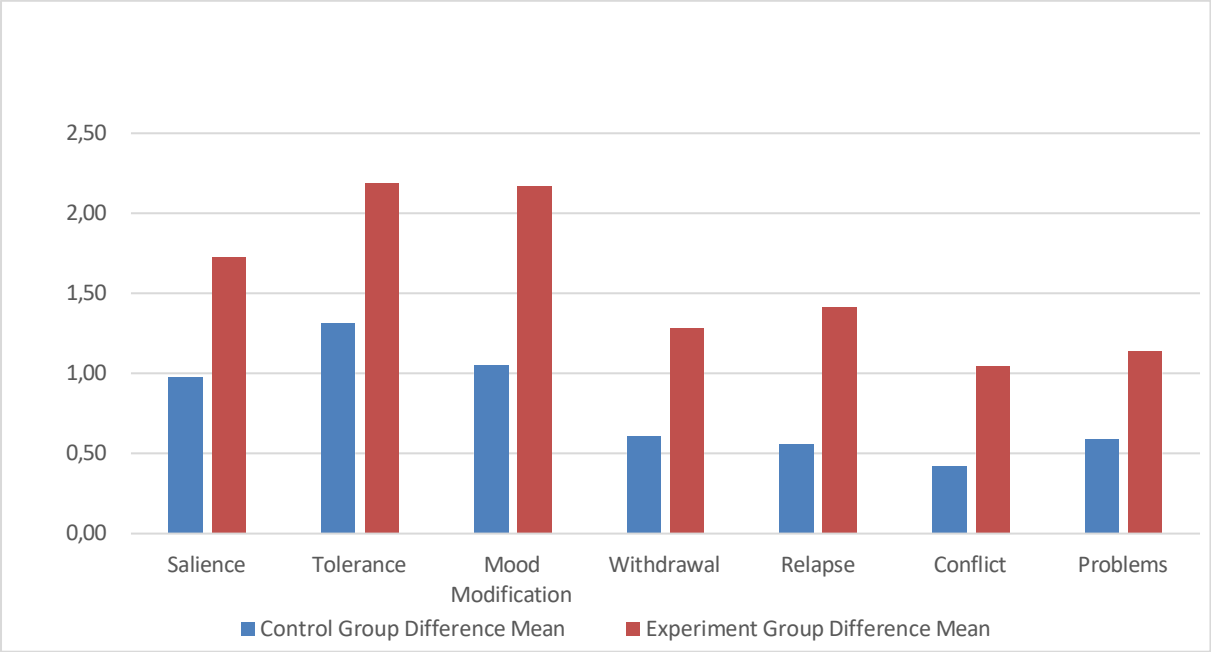

Figure 3. Mean difference indicators in control and experimental groups

The average results presented above shows that tolerance aspect in the experimental group, or FCMI, has the highest average difference score of 2.19, followed by mood modification with a score of 2.17. On the other hand, conflict in the control group exhibited the lowest score of 0.42. Based on the average difference, conflict aspect recorded the lowest scores of 0.42 and 1.05, while tolerance had the highest scores of 1.32 and 2.19 in the CBC and FCMI groups, respectively.

The pre-test results were compared with various test analyses. Post hoc tests utilizing the CBC Advisory Group Wilcoxon test are presented in Table 3.

Table 3. Results of the Wilcoxon Test Analysis in the CBC Counseling Group

Group		Number of Samples (n)	Descriptive (mean rank)	Asymp. Sig (2-tailed)
CBC	Negative ranks	40	25.50	**0.000***
	Positive ranks	0	0.00	
	Ties	5		
	Total	45		

Description: (*) Significance vs. pre-test ($p < 0.05$)

The different test analyses conducted using the Wilcoxon test in the CBC Counseling Group showed a significant difference between pre-test and post-tests scores ($p<0.05$). This indicated there was a significant difference between both tests. Specifically, during the comparison (negative rank), 40 data (samples) exhibited lower test scores, with an average decline of 25.50, indicating

similar data outcomes. In the analysis of pre- and post-test to post-test scores (tied), there were up to 5 data (samples) with no noticeable increase between pre- and post-test (positive rank).

A comparison of the pre-test results with different test analyses, is presented in Table 4, including the Post hoc tests conducted using the Wilcoxon test in the FCMI group.

Table 4. Results of the Wilcoxon test analysis in the FCMI group

Group		Number of Samples (n)	Descriptive (mean rank)	Asymp. Sig (2-tailed)
FCMI	Negative ranks	45	23.00	**0.000***
	Positive ranks	0	.00	
	Ties	0		
	Total	45		

Description: (*) Significance vs. pre-test (p < 0.05)

The analysis conducted using the Wilcoxon test in the FCMI group showed a significant difference between the pre-test and the post-test scores (p<0.05). This indicated that out of the 45 data (samples), test scores decreased (negative rank) between pre-test and post-test, with an average decrease of 23.00. None of the data showed an increase (positive ranking) or similarity (relevance) before and after testing. Table 5 presents an analysis of various tests conducted on all post-test scores between CBC and FCMI.

Table 5. Mann-Whitney U test analysis results for all groups

Gro p		Number of Samples (n)	Descriptive (mean rank)	Asymp. Sig (2-tailed)
Post-test	CBC	45	38.67	**0.012***
	FCMI	45	52.33	
	Total	90		

Description: (*) Significance vs. pre-test (p < 0.05)

The comparison of post-test scores between the CBC and FCMI group showed a significant difference (p<0.05). This indicated that the CBC group obtained a mean final score of 38.67, while the FCMI group was 52.33.

Discussion

The results showed the experimental group that received the FCMI intervention obtained a significant higher mean score of 52.33 compared to the CMC group with 38.67. This indicated that family motivational learning was more effective in reducing game addiction behavior than CBC, hence, the null hypothesis was rejected. The MI approach did not only address psychological characteristics but also environmental factors and motivation to change maladaptive behavior (Ji et al., 2022). Moreover, Integrative Family Counseling and MI counseling have proven effective in reducing addictive behaviors. Previous studies supported its effectiveness, particularly in relation to certain substances (Carlson & Dermer, 2019). Currently, there is a growing body of evidence that supported the use of MI in a variety of behaviors and goal-setting, including (a) medical compliance, (b) dental hygiene, (c) diabetes management, (d) eating disorders, (e) diet, (f) domestic violence, (g) dual diagnosis (mental illness and substance abuse), (h) game addict, and (i) health promotion

(Forrester et al., 2018). Therefore, MI can be considered a promising intervention for addressing psychological problems, health-related issues, and substance addiction.

There is a significant evidence base for the effectiveness of MI interventions in facilitating behavior change, particularly in situations that are relatively sedentary and more intense (Forrester et al., 2018), compared to CBC. Unlike an authoritative counseling style, MI is a positive, empathetic, and non-confrontational approach that helps clients clarify and resolve ambiguities regarding certain behavior changes (Tanana et al., 2016). The following elements are provided by counselor when carrying out motivational interview in the form of knowledge and skills (Lundahl et al., 2010): (a) Empathy: The subjects feel understood and learn to express empathy in their daily lives, enabling them to explore their inner thoughts and motivations; (b) Discrepancy of development: Subjects contemplate changes resulting from increased awareness, by recognizing the gap between their values and problematic behavior; (c) Rolling with resistance: Subjects' reluctance to change is acknowledged and respected by the counselor, who regards this as normal rather than pathological. Therefore, the counselor avoids using defensive or aggressive techniques; (d) Self-efficacy: Encouraging subjects to believe in their ability to change is crucial to supporting overall behavioral change.

By utilizing the skills summarized in MI, subjects can recover and develop adaptive behaviors. Combining MI with Family Counseling yielded significant results in reducing addictive behavior. This combination, in form of FCMI not only promotes individual healing from within but also improves relationships with the family environment as a support system (Sabarudin et al., 2022). Previous studies also showed significant results regarding students' interpersonal skills (Nugraha & Khasanah, 2023).

In addition to assessing the overall effectiveness of the intervention, this study examined the effectiveness of specific aspects. The FCMI technique proved particularly effective in reducing tolerance with 2.19 and mood modification with 2.17. Tolerance refers to the frequency and intensity of game playing, while mood modification is a subjective experience of excitement or calmness during gaming (Jain & Jain, 2021; Soledad Fabito et al., 2020). These two aspects significantly decreased following the FCMI intervention.

In the aspect of tolerance, adolescents with game addiction often struggled to stop playing due to the fear of missing out on rewards that motivated their gameplay (Kharisma et al., 2020). They rather prefer to continuously experience feelings of excitement and calmness (Fitri et al., 2018), reinforcing the belief that games are indispensable. However, this present study showed a significant decrease in these two aspects following the FCMI intervention. This conclusion empowers students to exert control over their gaming habits and make conscious choices about when to stop playing.

Collective cultural aspects also influence motivational interviewer counseling, as the view of knowledge in individualism is personal and idiosyncratic (Cohen & Abedallah, 2021; Hargreaves & Elhawary, 2021). Therefore, in providing integrative counseling, it is important to respect the uniqueness of each individual and consider the influence of technological advancements, culture, or behavioral changes, including game addiction (Findyartini et al., 2022; KaradisRek & Genç, 2022). Counselors also need to be sensitive to personal values, culture, and environmental changes. Unlike CBT, which only focuses on individual culture (Stavropoulos et al., 2021), counseling approaches in the current era should align with the collective system rather than individual.

Conclusion

In conclusion, with the rapid advancements in technology, it was imperative to acknowledge the need for mitigating the negative effects of game addiction. This addiction not only affect students but also the family environment. Even though CBC had been widely employed to address game addiction, its limitation lies in its inability to generate intrinsic motivation, which was essential for achieving long-lasting and more intense behavioral changes. FCMI presented a suitable solution to address the shortcomings of previous studies in reducing addictive gaming behavior. This study aimed to examine the effectiveness of FCMI among adolescents attending secondary schools in Surabaya. The Youth Game Addiction Scale was used as an instrument to measure addiction levels. Hypothesis tests, including Wilcoxon and Mann-Whitney tests, were conducted to confirm the effectiveness of each approach (CBC and FCMI). The results showed FCMI was more effective than CBC and significantly influenced two aspects, namely mood modification and tolerance.

This study specifically focused on Junior High Schools in the Surabaya area, involving teenagers within the age range of 12-15 years, and was limited to the use of quantitative methods. The developed techniques can be applied to students of advanced age, specifically those over 15 years. It is expected that the FMTI technique will be applied periodically by Guidance and Counseling Teachers to students to achieve more significant results, particularly for those in the high category scale. Integrative collaboration plays a vital role by involving families in counseling, making family intervention highly valuable.

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