

Comparing the Effectiveness of Communication Skills Training and Emotion Regulation Training on Psychological Well-Being and Loneliness among Adolescents with Internet Addiction

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ABSTRACT

The present study aimed to compare the effectiveness of communication skills training and emotion regulation training on psychological well-being and loneliness among adolescents with internet addiction. This applied study was conducted using a quasi-experimental pretest-posttest design with two experimental groups and one control group. The statistical population consisted of female adolescents aged 15–18 years with internet addiction studying in upper secondary schools during the 2024–2025 academic year. After initial screening using Young's Internet Addiction Test, 45 eligible students were selected and randomly assigned into three equal groups ($n = 15$): communication skills training, emotion regulation training, and control. The first experimental group participated in eight sessions of communication skills training, and the second experimental group received eight sessions of emotion regulation training, while the control group received no intervention. Data were collected using Ryff's Psychological Well-Being Scale and the UCLA Loneliness Scale. Data analysis was performed using descriptive statistics, analysis of covariance (ANCOVA), and Bonferroni post hoc test in SPSS software. The results of analysis of covariance showed a significant difference among the three groups in psychological well-being after controlling for pretest scores ($F = 31.26$, $p = 0.001$, $\eta^2 = 0.604$). Both communication skills training and emotion regulation training significantly increased psychological well-being compared with the control group. Moreover, a significant group effect was found for loneliness ($F = 32.88$, $p = 0.001$, $\eta^2 = 0.616$), indicating that both interventions significantly reduced loneliness among adolescents with internet addiction. The Bonferroni post hoc test revealed no significant difference between communication skills training and emotion regulation training in improving psychological well-being or reducing loneliness ($p > 0.05$). The findings indicated that both communication skills training and emotion regulation training are effective psychological interventions for enhancing psychological well-being and reducing loneliness among adolescents with internet addiction.

Keywords: Communication Skills Training; Emotion Regulation Training; Psychological Well-Being; Loneliness; Internet Addiction; Adolescents.

1. Introduction

The rapid expansion of digital technologies has transformed adolescents' everyday lives, patterns of communication, emotional experiences, learning habits, and social relationships. Internet-based platforms, smartphones, social networking sites, and short-form video applications have become central parts of adolescent life, creating opportunities for learning, entertainment, identity exploration, and peer interaction. However, excessive and uncontrolled use of these technologies has also produced growing concern regarding internet addiction and related forms of problematic digital behavior. Contemporary research increasingly describes internet addiction not merely as frequent use of the internet, but as a dysregulated behavioral pattern characterized by loss of control, excessive preoccupation, difficulty reducing use, functional impairment, and persistence despite negative psychological or social consequences (Dong et al., 2025; Lu et al., 2024). This concern is particularly important during adolescence because this developmental period is marked by heightened sensitivity to peer approval, identity formation, emotional reactivity, and increased reliance on digital communication. Therefore, internet addiction in adolescents should be understood as a multidimensional psychosocial phenomenon that may affect emotional adjustment, perceived social connectedness, and psychological well-being.

Adolescents' vulnerability to internet addiction is closely related to the developmental functions that digital environments serve. For many adolescents, online spaces provide immediate access to social interaction, entertainment, emotional distraction, and opportunities for self-presentation. At the same time, these environments may reinforce compulsive use through instant feedback, social comparison, algorithmic stimulation, and continuous availability of digital content. Studies on social media and internet dependence show that adolescents may use online platforms as a way to regulate emotions, escape unpleasant experiences, compensate for social difficulties, or reduce feelings of isolation (Mu et al., 2022; Wang & Shen, 2025). Research on short-form video addiction and social media addiction also indicates that digital platforms may become especially reinforcing when adolescents experience stress, social insecurity, or emotional vulnerability (Ciacchini et al., 2023; Jiang & Yoo, 2024). In this sense, internet addiction is not simply a technological problem; rather, it is connected to adolescents' psychological resources, emotional

regulation capacities, interpersonal experiences, and perceived social support.

Psychological well-being is one of the most important positive indicators of adolescent mental functioning in the context of internet addiction. Unlike symptom-based approaches that focus only on psychological problems, psychological well-being emphasizes positive functioning, self-acceptance, autonomy, purposeful living, personal growth, environmental mastery, and positive relationships with others. Adolescents with higher psychological well-being are more likely to experience adaptive self-regulation, meaningful relationships, emotional balance, and a stronger sense of competence in daily life. In contrast, adolescents with internet addiction may show weaker psychological well-being because excessive internet use can reduce engagement in real-life activities, disrupt social routines, weaken self-control, and limit opportunities for meaningful interpersonal interaction. Evidence suggests that problematic internet use is linked to lower well-being, reduced happiness, and poorer lifestyle balance among adolescents (Bottaro & Faraci, 2022; Lesinskienė et al., 2024). Similarly, studies examining adolescent digital media use during recent years have emphasized that the psychological impact of online activity depends not only on the amount of use, but also on the motives, emotional context, and interpersonal functions of that use (Hall, 2024; Marciano et al., 2022).

Loneliness is another core variable in understanding internet addiction among adolescents. Loneliness refers to the subjective experience of insufficient or unsatisfying social relationships, and it may occur even when the adolescent is surrounded by others. In internet-addicted adolescents, loneliness may function both as a risk factor and as a consequence. On the one hand, adolescents who feel lonely may turn to the internet to seek companionship, reduce discomfort, or escape from social dissatisfaction. On the other hand, excessive internet use may gradually replace face-to-face interaction, weaken real-life communication skills, and intensify perceived isolation. This reciprocal relationship has been highlighted in studies asking whether loneliness leads to internet addiction or whether internet addiction leads to loneliness (Lestari, 2024). Empirical findings also show that loneliness is associated with internet addiction and psychological well-being in adolescents, suggesting that loneliness may be one of the mechanisms through which problematic internet use undermines positive functioning (Mohammed, 2023; Nurmawati & Risnawati, 2022). In adolescent populations, loneliness has also been

identified as a predictor of internet addiction, indicating that interventions should not focus only on reducing screen time, but also on improving social connection and emotional coping (Nibal, 2023).

The relationship between internet addiction and loneliness is especially relevant because adolescents often use digital spaces to meet social needs. Social network addiction research among adolescents in different cultural contexts has shown that perceived loneliness is closely related to problematic online engagement, although the strength and form of this relationship may vary by gender, culture, and social environment (Bakhtyari & Mathur, 2023). Related research on mobile phone addiction has shown that loneliness may contribute to addictive digital behavior through psychological mechanisms such as anthropomorphism and the perceived emotional value of digital devices, while family support may buffer this association (Zhang et al., 2023). Similarly, perceived social support appears to be an important protective resource; interventions that activate social support and reduce loneliness have been shown to reduce problematic smartphone use among adolescents (Hu et al., 2025). These findings suggest that loneliness is not merely an outcome to be measured, but a key target for intervention among adolescents with internet addiction.

Emotion regulation is a central explanatory and intervention-related construct in this field. Emotion regulation refers to the processes through which individuals monitor, understand, modify, express, and manage their emotional experiences. Adolescents with poor emotion regulation may be more likely to use the internet excessively because digital environments provide immediate emotional relief, distraction, and avoidance. However, such use may prevent adolescents from learning adaptive strategies for tolerating distress, expressing emotions, or solving interpersonal problems. Research has shown that difficulties in emotion regulation are related to internet addiction and broader psychological functioning (Nahar & Kakulte, 2022). A longitudinal study also emphasized the role of psychological flexibility and emotion regulation in the association between smartphone addiction and psychological well-being among adolescents, showing that emotional processes may help explain why addictive digital behavior is associated with lower well-being (Alkal, 2025). Therefore, emotion regulation training may be a theoretically appropriate intervention for adolescents with internet addiction because it directly targets the emotional

vulnerabilities that maintain excessive internet use and its psychological consequences.

Emotion regulation training can improve adolescents' psychological well-being by helping them recognize emotional states, identify triggers, evaluate automatic thoughts, reduce avoidance, and use more adaptive coping strategies. Such training may also reduce loneliness indirectly by enabling adolescents to tolerate negative emotions without withdrawing into online spaces and by improving their ability to express needs in a clear and balanced manner. Current literature on social media addiction emphasizes the importance of emotional reinforcement mechanisms and phase-based intervention strategies, suggesting that problematic digital use is sustained by cycles of emotional relief, reinforcement, and repeated engagement (Wang & Shen, 2025). In addition, mindfulness-based approaches to reducing internet addiction in adolescents highlight the role of awareness, self-regulation, and nonreactivity in interrupting compulsive online behavior (Samanta et al., 2024). These findings support the view that interventions aimed at improving emotional awareness and regulation may strengthen psychological well-being and reduce loneliness in adolescents with internet addiction.

Communication skills training is another relevant intervention for adolescents with internet addiction because loneliness and low psychological well-being are closely tied to the quality of interpersonal relationships. Adolescents who have difficulty initiating conversations, expressing emotions, listening actively, resolving conflicts, or behaving assertively may experience greater social dissatisfaction and may compensate through excessive online engagement. In contrast, communication skills can strengthen real-life relationships, increase perceived support, reduce interpersonal avoidance, and improve the quality of peer interactions. Studies on digital vulnerability within the family context indicate that children and adolescents' experiences with digital technology are shaped by relational environments, family communication, and social conditions (Lafton et al., 2022). Research on adolescents' digital engagement also emphasizes the need to build resilient skills that help adolescents manage online and offline social experiences more effectively (Falcón-Linares et al., 2023). From this perspective, communication skills training may reduce loneliness by helping adolescents establish more satisfying interpersonal connections and may enhance psychological well-being by increasing social competence and relational confidence.

The importance of communication-based intervention is further supported by research showing that social media addiction is associated with loneliness, life satisfaction, problem-solving skills, and social functioning (Aslan & Polat, 2024). Although some studies focus on university students or young adults, the mechanisms are highly relevant to adolescents because communication competence, social confidence, and problem-solving ability develop significantly during this period. Research on attachment styles and loneliness among young adults also suggests that interpersonal patterns are closely related to perceived loneliness and social connectedness (G. & R., 2024). Therefore, adolescents with internet addiction may benefit from structured communication skills training that teaches active listening, empathy, assertiveness, conflict management, and safe communication in virtual contexts. Such training can create behavioral alternatives to excessive internet use by increasing adolescents' ability to meet relational needs in healthier and more direct ways.

Recent studies also point to protective resources that may reduce internet addiction and improve psychological adjustment. Physical activity enjoyment, emotional self-efficacy, and participation in organized activity have been shown to be related to lower internet addiction among adolescents, highlighting the role of competence, self-efficacy, and structured engagement as protective factors (Liang et al., 2025). Sport and active lifestyles may also protect the brain and psychological functioning in the age of smartphones and the internet, suggesting that adolescents need balanced offline activities to counter the reinforcing nature of digital environments (Coco et al., 2025). Other research has emphasized self-compassion and gratitude as psychological resources linked to lower social media addiction, showing that internal strengths may reduce dependence on digital reinforcement (Wei, 2024). These findings collectively indicate that internet addiction is responsive to psychosocial resources and that educational interventions can be meaningful when they strengthen adolescents' emotional, interpersonal, and self-regulatory capacities.

The broader literature also shows that internet addiction is not limited to adolescents, but adolescence remains a particularly important period for prevention and intervention. Systematic evidence on internet addiction in other populations, such as teachers, shows that problematic internet use is a wider social and psychological issue in the digital era (He & Chen, 2024). However, youth and adolescents require special attention because digital

behaviors established during this period may shape later habits, social patterns, and emotional coping styles. The Internet+ era has also created new challenges and opportunities for psychological education, making school-based and educational interventions increasingly important for strengthening students' mental health literacy, self-regulation, and well-being (Zhang et al., 2025). At the same time, international psychological discussions emphasize the need for developmentally sensitive approaches to digital behavior and youth mental health ("Invited Symposium," 2024). Therefore, school-based training programs may be especially appropriate because schools provide structured access to adolescents and can support both preventive and corrective psychological education.

A growing body of evidence also suggests that internet addiction should be studied using integrated models that include emotional, social, and cognitive mechanisms. Multi-mediation research has shown that social media and internet addiction may affect students' mental health through social capital and mindfulness, suggesting that psychological and relational resources are important pathways in the digital addiction process (Zewude et al., 2025). Studies on passive social network site use also show that the effects of digital behavior depend on the way adolescents engage with online content, especially when use is passive, socially comparative, or emotionally avoidant (Xiao, 2023). Network and machine-learning approaches in adolescent risk research further demonstrate that adolescent psychological difficulties often involve interconnected systems rather than isolated symptoms, which supports the need for interventions that target multiple mechanisms simultaneously (Zhang & Yang, 2025). Accordingly, comparing communication skills training and emotion regulation training can clarify whether interpersonal or emotional intervention pathways are more effective for improving psychological well-being and reducing loneliness in adolescents with internet addiction.

Despite the growing literature on adolescent internet addiction, several gaps remain. Many studies have examined associations among internet addiction, loneliness, emotion regulation, and well-being, but fewer have experimentally compared structured educational interventions aimed at improving psychological outcomes among adolescents with internet addiction. Moreover, most evidence emphasizes risk factors, while fewer studies examine how practical school-based programs can strengthen positive functioning and reduce loneliness. The comparison between communication skills training and emotion regulation training is

theoretically meaningful because these two interventions target different but related mechanisms. Communication skills training focuses on interpersonal functioning, peer interaction, assertiveness, empathy, and conflict management, whereas emotion regulation training focuses on emotional awareness, cognitive reappraisal, avoidance reduction, and adaptive expression of feelings. Both approaches may improve psychological well-being and reduce loneliness, but their comparative effectiveness in adolescents with internet addiction requires empirical investigation.

Therefore, the aim of the present study was to compare the effectiveness of communication skills training and emotion regulation training on psychological well-being and loneliness among adolescents with internet addiction.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of purpose, field-based in terms of research setting, and quasi-experimental in terms of method. A pretest–posttest design with two experimental groups and one control group was used to compare the effectiveness of communication skills training and emotion regulation training on psychological well-being and loneliness among adolescents with internet addiction. The statistical population consisted of all female adolescents aged 15 to 18 years who were studying in upper secondary schools during the 2024–2025 academic year and showed symptoms of problematic or addictive internet use. In this study, internet addiction was identified using the Young Internet Addiction Test, and only students whose scores indicated being at risk of internet addiction or having internet addiction were considered eligible for the main phase of the study. The study was conducted in the natural school context, and the main data were collected directly from participants through standardized psychological questionnaires before and after the intervention.

The sample size was estimated using G*Power software based on a significance level of 0.05 and statistical power of 0.80. Initially, 80 students who met the preliminary criteria were screened using the Internet Addiction Test. After reviewing the inclusion and exclusion criteria, 45 eligible students were selected as the final sample. These participants were then randomly assigned to three equal groups: the first experimental group received communication skills training, the second experimental group received emotion regulation training, and the control group received no educational

intervention during the implementation period. Each group included 15 participants. The inclusion criteria were being a female adolescent aged 15 to 18 years, studying at the upper secondary level, obtaining a score above the specified cut-off point on the Internet Addiction Test, having adequate reading and writing ability to complete the questionnaires, not having participated in communication skills, life skills, or emotion regulation training programs during the previous six months, not receiving simultaneous psychological counseling or psychotherapy during the study, having sufficient physical and psychological readiness to attend the sessions, providing informed assent, and obtaining written parental or legal guardian consent. The exclusion criteria included absence from more than three intervention sessions, beginning psychological counseling or psychotherapy during the study, repeated failure to complete session assignments, voluntary withdrawal from the study, parental request for withdrawal, incomplete completion of the pretest or posttest questionnaires, distorted or unreliable responses, and any physical or psychological condition that prevented regular participation in the group sessions.

Before the intervention, all three groups completed the pretest questionnaires measuring psychological well-being and loneliness. After the pretest, the two experimental groups participated in their respective educational programs, while the control group did not receive any intervention and only participated in the assessment phases. The communication skills training and emotion regulation training programs were each implemented in eight group sessions under similar conditions. At the end of the intervention period, all three groups completed the same questionnaires as the posttest. To observe ethical considerations, participants were assured that their information would remain confidential, participation was voluntary, and they could withdraw from the study at any stage. After completion of the research process, the control group was offered the opportunity to receive educational training if they were interested.

2.2. Measures

Young Internet Addiction Test. The Internet Addiction Test was developed by Kimberly Young in 1996 and is one of the most widely used standardized tools for assessing problematic and addictive internet use. The questionnaire consists of 20 items designed to evaluate the extent to which internet use interferes with academic functioning, daily activities, social relationships, emotional regulation, sleep,

and general psychological adjustment. Responses are scored on a five-point Likert scale ranging from rarely to always. Each item is scored from 1 to 5, and the total score is obtained by summing the responses to all items. The total score ranges from 20 to 100, with higher scores indicating greater severity of internet addiction. Scores from 20 to 49 indicate normal internet use, scores from 50 to 79 indicate being at risk of internet addiction or problematic internet use, and scores from 80 to 100 indicate internet addiction. In the present study, this instrument was used as a screening tool to identify adolescents with internet addiction or problematic internet use and determine eligibility for participation. Previous studies have confirmed the validity and reliability of this instrument, and Cronbach's alpha coefficients of approximately 0.90 have been reported for the original version. The Persian version has also shown acceptable reliability in Iranian samples, with Cronbach's alpha coefficients reported between 0.81 and 0.88.

Ryff Psychological Well-Being Scale, Short Form. Psychological well-being was measured using the short form of Ryff's Psychological Well-Being Scale. This scale is based on Ryff's multidimensional model of psychological well-being, which conceptualizes well-being as the realization of human capacities, positive functioning, and personal growth rather than merely the absence of psychological symptoms. The short form includes 18 items and measures six dimensions of psychological well-being: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Responses are rated on a six-point Likert scale ranging from completely disagree to completely agree. Some items are reverse-scored, and after reverse scoring, the total score is calculated by summing the item scores. Higher scores indicate higher psychological well-being, whereas lower scores indicate lower psychological well-being. The short form has been widely used in psychological research and has demonstrated acceptable psychometric properties. Previous studies have confirmed its construct validity through factor analysis, and reliability coefficients for the total scale and its subscales have generally been acceptable. In Iranian studies, the overall Cronbach's alpha coefficient for the short form has been reported at approximately 0.71, and the factorial structure of the scale has been supported.

UCLA Loneliness Scale. Loneliness was measured using the UCLA Loneliness Scale developed by Russell, Peplau, and Ferguson. This scale is designed to assess subjective feelings of loneliness, perceived social isolation, dissatisfaction with social relationships, and disrupted

interpersonal connectedness. The scale consists of 20 items rated on a four-point Likert scale ranging from never to always. Some items are reverse-scored because they reflect social connectedness rather than loneliness. After reverse scoring the relevant items, the total score is calculated by summing the item scores. The total score ranges from 20 to 80, with higher scores indicating a greater level of loneliness and lower scores indicating a lower level of loneliness. A score above the midpoint reflects more severe loneliness. The UCLA Loneliness Scale has been widely used in adolescent and student populations and has shown acceptable validity and reliability in previous studies. Its test-retest reliability has been reported to be high, and the Persian version has also been used in Iranian psychological studies after translation, preliminary implementation, and psychometric evaluation.

2.3. Intervention

Communication Skills Training Protocol. The communication skills training program was implemented for the first experimental group in eight structured group sessions. The main purpose of this intervention was to improve adolescents' ability to establish, maintain, and manage interpersonal relationships in real and virtual contexts and to reduce loneliness through more effective communication patterns. In the first session, the researcher introduced the program, explained the ethical principles of participation, emphasized confidentiality, created a safe group atmosphere, and administered the initial questionnaires. The second session focused on the meaning of communication, characteristics of effective and responsible communication, and common reasons for failure in friendships and peer relationships. Participants were encouraged to reflect on one successful or unsuccessful relationship and identify the factors that contributed to its continuation or breakdown. The third session addressed factors that improve interpersonal relationships, including eye contact, body language, active listening, verbal and nonverbal feedback, reflection of content and feelings, empathy, appreciation, respect for others' rights, and emotional support. Through group discussion and practical exercises, participants learned how these skills can strengthen peer relationships and increase perceived social support. The fourth session reviewed previous content and introduced destructive communication patterns that may weaken relationships and intensify loneliness. Participants explored how criticism, rejection, avoidance, lack of

empathy, poor listening, and inappropriate responses in face-to-face or online interactions may contribute to social isolation. Creative group exercises were used to help students understand the relationship between ineffective communication and loneliness. The fifth session focused on assertiveness and the differences between assertive, passive, and aggressive communication styles. Participants practiced how to respond appropriately and firmly to inappropriate requests in real-life or online interactions without using aggression or withdrawal. The sixth session addressed conflict management and taught students how to define a conflict without judgment, express feelings and needs clearly, search for shared solutions, and use a win-win problem-solving approach. The seventh session focused on starting, maintaining, expanding, and ending conversations in virtual social networks. Participants discussed how to begin an online conversation, develop online friendships safely, evaluate trust in virtual relationships, and end unhealthy online communication respectfully. The eighth session was devoted to reviewing the previous sessions, answering students' questions, resolving ambiguities, summarizing the learned skills, and encouraging participants to apply communication skills in daily interactions.

Emotion Regulation Training Protocol. The emotion regulation training program was implemented for the second experimental group in eight structured group sessions. The main purpose of this intervention was to help adolescents identify, understand, modify, and express their emotions in more adaptive ways and to improve psychological well-being and reduce loneliness among adolescents with internet addiction. In the first session, the researcher introduced the program, explained the goals and ethical principles of the study, emphasized confidentiality, established trust, and administered the initial questionnaires. The second session focused on recognizing different emotions, understanding the message and function of emotions, and identifying emotional triggers in daily life. Participants were asked to record strong emotions they experienced during the week and identify the situations that activated those emotions. The third session addressed the relationship between emotions and physiological states. Students learned to recognize physical signs of emotions and practiced body scanning as a technique for increasing awareness of emotional and bodily reactions. The fourth session focused on the relationship between emotions, thoughts, and behaviors. The ABC model was introduced to show how activating events, beliefs, interpretations, and consequences interact with one another. Participants learned that their interpretation of social and

online situations can influence emotional reactions, behavioral responses, and feelings of loneliness. They were asked to record a distressing situation and identify the automatic thoughts associated with it. The fifth session focused on challenging and replacing negative thoughts. Socratic questioning was taught as a cognitive technique for evaluating evidence, questioning automatic thoughts, and developing alternative interpretations of other people's behavior. Students practiced looking at situations from different perspectives and replacing maladaptive interpretations with more balanced thoughts. The sixth session addressed behavioral strategies for emotion regulation, especially reducing avoidance and using assertive emotional expression. Participants learned that avoidance may maintain emotional difficulties and increase excessive internet use. Gradual exposure to emotionally challenging situations was introduced, and students practiced expressing needs and emotions assertively and non-aggressively through "I" statements. The seventh session focused on the relationship between activity and mood. Participants learned how pleasant activities and mastery-oriented activities can improve mood, reduce emotional dependence on the internet, and decrease loneliness. The eighth session reviewed the previous sessions, answered participants' questions, clarified difficult concepts, summarized the main emotion regulation strategies, and encouraged participants to continue using the learned techniques in everyday life.

2.4. Data Analysis

Data analysis was conducted using SPSS statistical software. Before analysis, the collected questionnaires were reviewed for completeness, and incomplete or distorted responses were excluded according to the study criteria. The data were then coded and entered into the software. Descriptive statistics were used to summarize participants' demographic characteristics and the main research variables. Frequency and percentage were used for categorical information, and mean, standard deviation, minimum, and maximum scores were used to describe psychological well-being and loneliness in the pretest and posttest stages across the three groups.

Inferential statistics were used to examine the effectiveness of communication skills training and emotion regulation training on psychological well-being and loneliness. Because the study used a quasi-experimental pretest-posttest design with two experimental groups and

one control group, multivariate analysis of covariance was used to compare posttest scores among the groups while controlling for pretest scores. This method was appropriate because the study included more than one dependent variable and required simultaneous examination of group differences after adjusting for baseline differences. Before conducting the main analysis, the statistical assumptions were examined. The normality of score distributions was assessed using the Shapiro–Wilk test, homogeneity of variances was examined using Levene’s test, homogeneity of covariance matrices was evaluated using Box’s M test, and multicollinearity and independence of observations were also checked. After the assumptions were confirmed, the main multivariate and univariate analyses were performed. When significant group differences were found, appropriate post hoc comparisons were used to determine the specific differences between the communication skills training group, the emotion regulation training group, and the control group. The significance level for all statistical tests was set at 0.05.

Table 1*Descriptive Statistics of Psychological Well-Being and Loneliness by Group and Test Phase*

Variable	Group	Pretest M	Pretest SD	Posttest M	Posttest SD	N
Psychological well-being	Communication skills training	52.47	8.32	68.80	7.91	15
Psychological well-being	Emotion regulation training	53.20	9.11	71.67	8.43	15
Psychological well-being	Control	51.80	8.65	52.93	8.87	15
Loneliness	Communication skills training	55.80	8.93	39.47	7.65	15
Loneliness	Emotion regulation training	56.40	9.28	41.80	8.11	15
Loneliness	Control	54.93	9.54	55.60	9.78	15

As shown in Table 1, the mean score of psychological well-being increased from pretest to posttest in both experimental groups, whereas only a negligible change was observed in the control group. The increase was slightly greater in the emotion regulation training group than in the communication skills training group. In addition, the mean score of loneliness decreased from pretest to posttest in both experimental groups, while the control group showed no meaningful reduction. Descriptively, the reduction in loneliness was slightly greater in the communication skills training group than in the emotion regulation training group.

Before conducting the analysis of covariance, the required assumptions were examined. The Shapiro–Wilk test showed that the distribution of scores for psychological

3. Findings and Results

The participants were 45 female adolescents with internet addiction who were randomly assigned to three equal groups: communication skills training, emotion regulation training, and control, with 15 participants in each group. The participants were between 15 and 18 years old, with a mean age of 16.29 years and a standard deviation of 1.04. In terms of educational grade, 16 students were in Grade 10, 17 students were in Grade 11, and 12 students were in Grade 12. Regarding fathers’ education, the highest frequency was related to bachelor’s degree and diploma levels, while regarding mothers’ education, the highest frequency was related to diploma and bachelor’s degree levels. Chi-square tests showed no significant differences among the three groups in terms of age, educational grade, father’s education, or mother’s education; therefore, the groups were demographically homogeneous before the intervention.

well-being and loneliness was normal in all groups and test phases, because all significance values were greater than 0.05. Levene’s test confirmed the homogeneity of error variances for psychological well-being and loneliness. Box’s M test also indicated that the covariance matrices were homogeneous across the three groups. The relationship between pretest and posttest scores was linear for both dependent variables, and the interaction between group and pretest scores was not significant; therefore, the assumption of homogeneity of regression slopes was met. No influential univariate or multivariate outliers were detected. Accordingly, the data were suitable for analysis of covariance.

Table 2*Results of Analysis of Covariance for Psychological Well-Being and Loneliness*

Variable	Source	SS	df	MS	F	p	Partial η^2
Psychological well-being	Pretest	591.86	1	591.86	20.84	0.001	0.337
Psychological well-being	Group	1775.56	2	887.78	31.26	0.001	0.604
Psychological well-being	Error	1164.40	41	28.40	—	—	—
Loneliness	Pretest	600.37	1	600.37	22.36	0.001	0.353
Loneliness	Group	1765.66	2	882.83	32.88	0.001	0.616
Loneliness	Error	1100.85	41	26.85	—	—	—

According to Table 2, after controlling for pretest scores, the effect of group on psychological well-being was statistically significant, $F(2, 41) = 31.26$, $p = 0.001$, partial $\eta^2 = 0.604$. This finding indicates that the three groups differed significantly in posttest psychological well-being after adjustment for baseline scores. The effect of group on

loneliness was also statistically significant, $F(2, 41) = 32.88$, $p = 0.001$, partial $\eta^2 = 0.616$, showing that the three groups differed significantly in posttest loneliness after controlling for pretest scores. The effect sizes indicate that both interventions had strong effects on the dependent variables.

Table 3*Bonferroni Post Hoc Comparisons for Psychological Well-Being and Loneliness*

Variable	Group Comparison	Mean Difference	SE	p	95% CI Lower	95% CI Upper
Psychological well-being	Communication skills training – Emotion regulation training	-2.72	2.18	0.648	-8.14	2.70
Psychological well-being	Communication skills training – Control	14.64	2.21	0.001	9.15	20.13
Psychological well-being	Emotion regulation training – Control	17.36	2.20	0.001	11.89	22.83
Loneliness	Communication skills training – Emotion regulation training	-2.27	2.29	0.972	-7.96	3.42
Loneliness	Communication skills training – Control	-15.13	2.32	0.001	-20.90	-9.36
Loneliness	Emotion regulation training – Control	-12.86	2.31	0.001	-18.60	-7.12

As shown in Table 3, the difference between communication skills training and emotion regulation training was not statistically significant for psychological well-being. However, both the communication skills training group and the emotion regulation training group had significantly higher psychological well-being scores than the control group. Therefore, both interventions were effective in improving psychological well-being, although no significant difference was found between the two intervention methods. For loneliness, the difference between communication skills training and emotion regulation training was also not statistically significant. Nevertheless, both experimental groups showed significantly lower loneliness scores than the control group. Thus, both communication skills training and emotion regulation training were effective in reducing loneliness among adolescents with internet addiction, but neither intervention was statistically superior to the other.

4. Discussion

The present study aimed to compare the effectiveness of communication skills training and emotion regulation training on psychological well-being and loneliness among adolescents with internet addiction. The findings showed that both communication skills training and emotion regulation training significantly improved psychological well-being compared with the control group. However, the difference between the two intervention groups was not statistically significant, indicating that both approaches were similarly effective in enhancing positive psychological functioning among adolescents with internet addiction. This finding suggests that improving adolescents' interpersonal abilities and strengthening their emotional self-regulation capacities can both serve as important psychological resources for reducing the negative consequences associated with excessive internet use.

The positive effect of communication skills training on psychological well-being can be explained through the role of interpersonal relationships in adolescent development. Psychological well-being is strongly influenced by the quality of social interactions, feelings of belonging, interpersonal competence, and perceived support. Adolescents with internet addiction may experience difficulties in face-to-face communication because excessive online engagement can reduce opportunities for practicing real-world social behaviors. Communication skills training provides adolescents with practical strategies such as active listening, empathy, assertive expression, conflict resolution, and effective conversation management. These skills may increase confidence in social situations, improve peer relationships, and enhance dimensions of psychological well-being such as positive relations with others, self-acceptance, and environmental mastery. This interpretation is consistent with studies emphasizing that problematic digital behavior is closely associated with social functioning and that strengthening interpersonal resources can protect psychological health (Falcón-Linares et al., 2023; Hu et al., 2025).

The effectiveness of communication skills training is also supported by evidence showing that internet addiction is not only related to technology use patterns but also to broader relational experiences. Adolescents often use online platforms to compensate for unmet social needs, difficulties in communication, or dissatisfaction with offline relationships. When adolescents acquire healthier communication strategies, they may become less dependent on online interactions for emotional validation and social connection. Previous studies have indicated that social media addiction is associated with loneliness, life satisfaction, problem-solving abilities, and social adjustment, suggesting that improving interpersonal competencies may reduce the psychological risks associated with problematic digital behaviors (Aslan & Polat, 2024). Moreover, research has shown that attachment patterns and interpersonal experiences are associated with loneliness and emotional adjustment, highlighting the importance of relational skills for psychological health (G. & R., 2024). Therefore, the improvement in psychological well-being observed after communication skills training may reflect adolescents' increased ability to establish more meaningful and supportive relationships.

The findings also demonstrated that emotion regulation training significantly increased psychological well-being among adolescents with internet addiction. This result

indicates that improving adolescents' ability to understand, evaluate, and manage emotional experiences can contribute to healthier psychological functioning. Adolescents with poor emotion regulation skills may rely on excessive internet use as an avoidance-based coping strategy to escape unpleasant emotions, stress, or interpersonal difficulties. Emotion regulation training helps adolescents identify emotions, recognize automatic thoughts, use cognitive reappraisal, tolerate emotional discomfort, and replace avoidance behaviors with adaptive responses. These processes may increase emotional balance, self-control, and psychological flexibility, which are important foundations of psychological well-being. This explanation is consistent with previous findings showing that emotion regulation and psychological flexibility play important roles in the relationship between smartphone addiction and psychological well-being among adolescents (Alkal, 2025). Similarly, difficulties in emotion regulation have been identified as important psychological factors associated with internet addiction and mental health problems (Nahar & Kakulte, 2022).

The beneficial effects of emotion regulation training can also be interpreted based on emotional reinforcement mechanisms involved in internet addiction. Many adolescents engage excessively with digital platforms because online activities provide immediate emotional relief, distraction, pleasure, or avoidance of negative emotions. Over time, this reinforcement cycle can weaken adolescents' ability to manage emotions independently. By developing adaptive regulation strategies, adolescents may become less dependent on digital environments as emotional coping tools. Previous research has emphasized that emotional reinforcement mechanisms play a central role in the development and maintenance of social media addiction and that interventions targeting emotional processes may reduce problematic use patterns (Wang & Shen, 2025). Furthermore, mindfulness and awareness-based approaches have been proposed as effective pathways for reducing internet addiction by improving self-regulation and decreasing automatic responses to emotional triggers (Samanta et al., 2024). Therefore, the increase in psychological well-being following emotion regulation training may result from greater emotional awareness and improved ability to cope with psychological challenges.

Another finding of the present study was that both communication skills training and emotion regulation training significantly reduced loneliness among adolescents with internet addiction compared with the control group.

However, no significant difference was observed between the two intervention methods. This finding suggests that loneliness among adolescents with internet addiction may be influenced by both interpersonal and emotional mechanisms. Communication skills training directly targets social behaviors and relationship quality, while emotion regulation training improves the emotional processes that influence social participation and feelings of connection. The results align with previous research indicating a close relationship between loneliness and internet addiction among adolescents (Lestari, 2024; Nurmaria & Risnawati, 2022). These studies suggest that adolescents experiencing loneliness may increasingly rely on online environments for temporary connection, but excessive use may eventually intensify social withdrawal and perceived isolation.

The reduction of loneliness following communication skills training can be explained by the improvement of adolescents' ability to initiate and maintain social interactions. Loneliness often results not only from a lack of social contact but also from dissatisfaction with the quality of relationships. Adolescents who lack communication skills may struggle with expressing themselves, understanding others, resolving conflicts, or creating supportive friendships. Through communication skills training, participants learned strategies that could increase interpersonal effectiveness and reduce social avoidance. This interpretation is consistent with studies showing that loneliness is a significant predictor of internet addiction and that improving social resources can reduce vulnerability to problematic digital behaviors (Nibal, 2023; Zhang et al., 2023). Furthermore, research has indicated that adolescents' online behaviors and psychological outcomes are influenced by family and social environments, emphasizing the importance of strengthening real-world relationships (Lafton et al., 2022).

Emotion regulation training also contributed to reducing loneliness by helping adolescents manage emotional reactions that may interfere with social relationships. Adolescents who experience intense negative emotions may avoid social situations, misinterpret interpersonal events, or use the internet as a substitute for direct communication. Through techniques such as cognitive reappraisal, emotional awareness, and reducing avoidance, adolescents may become more capable of engaging in relationships without being overwhelmed by fear, rejection sensitivity, or negative interpretations. This explanation is supported by studies showing that problematic internet use is associated with psychological vulnerabilities and emotional coping

processes (Mohammed, 2023; Mu et al., 2022). Additionally, research on passive social network use indicates that the psychological impact of digital behavior depends on how adolescents emotionally process and respond to online experiences (Xiao, 2023).

The absence of a significant difference between communication skills training and emotion regulation training suggests that both interventions may influence overlapping psychological mechanisms. Although communication skills training primarily targets external interpersonal behaviors and emotion regulation training focuses on internal emotional processes, both approaches improve adolescents' ability to manage social experiences. Effective communication requires emotional awareness and control, while effective emotion regulation can facilitate healthier communication. This overlap may explain why both interventions produced similar outcomes. Previous studies support multidimensional models of internet addiction, showing that problematic digital behaviors are affected by interconnected emotional, cognitive, and social pathways rather than a single factor (Dong et al., 2025; Zewude et al., 2025). Therefore, interventions that enhance either interpersonal or emotional resources may produce meaningful improvements in adolescents' psychological functioning.

The findings are also consistent with broader evidence showing that psychological resources and adaptive lifestyles can reduce vulnerability to internet addiction. For example, emotional self-efficacy and participation in structured activities have been shown to reduce problematic internet use among adolescents by increasing competence and self-regulation (Liang et al., 2025). Similarly, protective lifestyle factors, including physical activity and balanced offline engagement, may support psychological health in the digital age (Coco et al., 2025). Research has also shown that positive psychological characteristics such as gratitude and self-compassion are associated with reduced social media addiction, suggesting that strengthening internal resources can protect individuals from maladaptive digital dependence (Wei, 2024). These findings are consistent with the present results, which highlight the importance of developing psychological capacities rather than focusing only on limiting internet use.

5. Conclusion

Overall, the findings of the present study confirm that adolescent internet addiction should be approached through

comprehensive psychological interventions. Excessive internet use is associated with emotional, interpersonal, and developmental factors, and successful interventions should address these underlying mechanisms. Previous research has demonstrated that adolescents' digital behaviors are related to mental health, sleep quality, emotional functioning, and well-being, emphasizing the need for preventive and educational approaches (Jiang & Yoo, 2024; Lesinskienė et al., 2024). Furthermore, the complex nature of adolescent psychological problems requires interventions that strengthen adaptive skills and resilience rather than simply reducing access to technology (Hall, 2024; Zhang & Yang, 2025). In line with the challenges of psychological education in the digital era, school-based programs focusing on communication skills and emotion regulation can provide practical opportunities to improve adolescents' adjustment and well-being (Zhang et al., 2025).

One limitation of the present study was that the sample consisted only of female adolescents aged 15 to 18 years, which may limit the generalizability of the findings to male adolescents or other age groups. In addition, the study relied on self-report questionnaires, and participants' responses may have been influenced by personal interpretation or social desirability bias. The relatively small sample size and implementation of the interventions within a specific educational context should also be considered when interpreting the findings.

Future studies are suggested to examine the effectiveness of communication skills training and emotion regulation training in larger and more diverse samples, including both male and female adolescents from different cultural and educational backgrounds. Future research could also include longer follow-up periods to determine the stability of intervention effects over time. In addition, combining both interventions into an integrated communication and emotion regulation program may provide further insight into whether a combined approach produces stronger outcomes.

Based on the findings of this study, schools, counselors, and mental health professionals are encouraged to use structured communication skills and emotion regulation programs as supportive interventions for adolescents with internet addiction. Educational centers can incorporate these programs into student development activities to enhance psychological well-being, strengthen interpersonal abilities, improve emotional coping skills, and reduce feelings of loneliness among adolescents.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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