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Enhancing Emotional Adaptation and Working Memory through Cognitive-Emotional Training: A Study of English Language Learners

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A B S T R A C T

Purpose: This study aimed to evaluate the effectiveness of cognitive-emotional training on emotional adaptation and working memory among students applying to learn English.

Methodology: A randomized controlled trial design was used with 30 participants from Shiraz, divided into an experimental group (n = 15) and a control group (n = 15). The experimental group underwent an eight-week cognitive-emotional training program. Emotional adaptation and working memory were assessed at baseline, post-intervention, and five-month follow-up using standardized measures. Data were analyzed using repeated measures ANOVA and Bonferroni post-hoc tests.

Findings: For emotional adaptation, the ANOVA results indicated significant main effects of Time ($F(2, 54) = 48.27$, $p < .001$, partial $\eta^2 = 0.64$), Group ($F(1, 27) = 93.59$, $p < .001$, partial $\eta^2 = 0.61$), and a significant Time x Group interaction ($F(2, 54) = 39.77$, $p < .001$, partial $\eta^2 = 0.59$). Post-hoc Bonferroni tests showed significant differences between baseline and post-intervention ($p < .001$), baseline and follow-up ($p < .001$), and post-intervention and follow-up ($p = .049$). For working memory, the ANOVA results also indicated significant main effects of Time ($F(2, 54) = 74.36$, $p < .001$, partial $\eta^2 = 0.71$), Group ($F(1, 27) = 117.12$, $p < .001$, partial $\eta^2 = 0.68$), and a significant Time x Group interaction ($F(2, 54) = 44.91$, $p < .001$, partial $\eta^2 = 0.62$). Bonferroni tests revealed significant differences between baseline and post-intervention ($p < .001$), baseline and follow-up ($p < .001$), and post-intervention and follow-up ($p = .036$).

Conclusion: Cognitive-emotional training significantly enhances emotional adaptation and working memory in students learning English. These improvements were sustained over a five-month period, suggesting long-term benefits. Integrating such training into educational programs could improve academic outcomes and emotional well-being for language learners.

Keywords: *Cognitive-emotional training, emotional adaptation, working memory, English language learners, educational psychology, emotional intelligence, cognitive training.*

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1. Introduction

Emotional adaptation, which encompasses the ability to regulate and adapt one's emotional responses to different situations, is crucial for academic success and overall well-being. Emotional intelligence, defined by Bradbury and Greaves as the ability to recognize, understand, and manage emotions, plays a vital role in emotional adaptation (Barkus, 2020). Emotional intelligence is often measured through self-reports or performance-based assessments, which evaluate various components such as self-awareness, self-management, social awareness, and relationship management. Enhancing emotional intelligence through training can lead to better emotional adaptation, which is essential for students facing the stressors associated with learning a new language (Masoumparast et al., 2019; Mohkamkar et al., 2024; Nejadi, 2022; Roghani & Afrokhte, 2023).

Working memory, the ability to hold and manipulate information over short periods, is another critical factor influencing academic performance. It supports various cognitive tasks, including problem-solving, comprehension, and learning (Asadi Rajani, 2023; Roghani et al., 2022; Yao et al., 2024). Studies have shown that working memory capacity is closely linked to language acquisition and academic achievement (Bjertrup, 2024; Cheng et al., 2015). Effective working memory training programs aim to improve this cognitive function, potentially leading to better academic outcomes and greater ease in learning new languages (Asadi Rajani, 2023; Kahaki, 2024; Pourjaberi et al., 2023).

Research has indicated that cognitive training can significantly impact both cognitive and emotional processes. For instance, cognitive training has been found to improve emotion regulation, a key component of emotional adaptation (Hoch et al., 2019). Emotion regulation involves managing one's emotional responses to achieve desired outcomes, and improvements in this area can lead to better academic performance and personal well-being. The integration of cognitive and emotional training is hypothesized to provide synergistic benefits, enhancing both emotional adaptation and cognitive functions like working memory.

Previous studies have explored various cognitive training methods and their effects on emotional and cognitive outcomes. For example, Hooker et al. (2012) found that combined cognitive and social cognitive training improved emotion recognition in individuals with schizophrenia (Hooker et al., 2012). Similarly, cognitive training programs designed for older adults have shown benefits in memory and emotion regulation, suggesting the potential for such interventions across different age groups and populations (Goghari & Lawlor-Savage, 2018; Hsiao et al., 2023).

The effectiveness of cognitive-emotional training has also been investigated in specific contexts, such as depression and anxiety. Iacoviello et al. (2018) conducted a pilot trial using a digital therapeutic intervention targeting emotional faces memory, which showed initial evidence for brain plasticity and improvements in depression symptoms (Iacoviello et al., 2018). Similarly, working memory training has been linked to reduced rumination and anxiety, highlighting its potential in mental health interventions (Onraedt & Koster, 2014; Peckham & Johnson, 2018).

In the context of language learning, cognitive-emotional training may offer unique benefits. Language learning requires significant cognitive resources, including working memory, attention, and problem-solving skills. Additionally, learners often face emotional challenges such as anxiety, frustration, and lack of confidence. By enhancing both cognitive and emotional skills, cognitive-emotional training can potentially improve language learning outcomes and the overall learning experience.

The present study aims to fill the gap in the literature by examining the effects of cognitive-emotional training on emotional adaptation and working memory among students applying to learn English. This study employs a randomized controlled trial (RCT) design to ensure rigorous evaluation of the intervention's effectiveness. Participants are randomly assigned to either the experimental group, which receives the cognitive-emotional training, or the control group, which does not receive the intervention.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a randomized controlled trial (RCT) design to evaluate the effectiveness of cognitive-emotional training on emotional adaptation and working memory among students applying to learn English. A total of 30 participants from Shiraz were recruited and randomly assigned into two groups: an experimental group (n = 15) and a control group (n = 15). Participants were screened for eligibility based on their interest in learning English and availability to commit to the study's duration. Both groups were assessed at baseline, immediately after the

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intervention, and at a five-month follow-up to evaluate the long-term effects of the training.

2.2. Measures

2.2.1. Emotional Adaptation

The Emotional Intelligence Appraisal, developed by Travis Bradbury and Jean Greaves in 2004, serves as a reliable and valid measure of emotional adaptation. This tool consists of 28 items and assesses four main subscales: self-awareness, self-management, social awareness, and relationship management. Participants respond to each item on a Likert scale ranging from 1 (never) to 5 (always), with higher scores indicating greater emotional intelligence. The appraisal's validity and reliability have been confirmed through various studies, establishing it as a standard measure in psychological assessments. It is widely used to evaluate the emotional adaptation of individuals, including students applying to learn English (Mohkamkar et al., 2024; Nejadi, 2022; Roghani & Afrokhte, 2023).

2.2.2. Working Memory

The Wechsler Memory Scale (WMS), initially developed by David Wechsler in 1945 and later revised in 2009, is employed to measure working memory among students. The WMS includes 11 subscales that assess different aspects of memory, including auditory memory, visual memory, visual working memory, immediate memory, and delayed memory. This tool comprises a total of 150 items, with each subscale having its specific set of tasks. Scoring is based on a combination of correct responses and speed, with higher scores indicating better memory performance. The WMS has been rigorously validated and its reliability established through extensive research, making it a trusted instrument for evaluating cognitive functions such as working memory in diverse populations (Asadi Rajani, 2023; Cheng et al., 2015; Sari et al., 2016).

2.3. Intervention

2.3.1. Cognitive-Emotional Training

The cognitive-emotional training intervention designed for this study aims to enhance emotional adaptation and working memory among students learning English. The program spans eight weeks, with one session per week, each lasting 90 minutes. The sessions integrate cognitive training exercises with emotional intelligence development activities, fostering a holistic approach to learning and adaptation (Rahmani et al., 2024).

Session 1: Introduction and Goal Setting

The first session introduces students to the concepts of cognitive-emotional training and its importance. Participants engage in ice-breaking activities to build rapport and a supportive learning environment. The session focuses on setting personal learning goals and understanding how emotional and cognitive skills interplay in the context of learning a new language. Students complete initial assessments to establish baseline data for emotional adaptation and working memory.

Session 2: Self-Awareness

This session centers on developing self-awareness, one of the core components of emotional intelligence. Students participate in activities designed to help them recognize their emotional states and the impact of these states on their behavior and learning. Techniques such as mindfulness exercises and reflective journaling are introduced. Cognitive exercises aimed at enhancing attention and concentration are also included.

Session 3: Self-Management

Building on self-awareness, this session focuses on self-management strategies. Students learn techniques to regulate their emotions, such as deep breathing, positive self-talk, and stress management practices. The cognitive component includes tasks that challenge working memory, such as memory span tasks and dual-task exercises. Students practice applying self-management skills during cognitive tasks to improve performance under stress.

Session 4: Social Awareness

The fourth session addresses social awareness, teaching students to understand and empathize with others' emotions. Activities include role-playing scenarios, group discussions, and perspective-taking exercises. These are complemented by cognitive tasks that require collaborative problem-solving, thereby enhancing both social and cognitive skills simultaneously.

Session 5: Relationship Management

Focusing on relationship management, this session helps students develop effective communication and interpersonal skills. Exercises include active listening, conflict resolution, and teamwork activities. Cognitive exercises are incorporated to practice these skills in real-time, ensuring that students can manage their emotions and relationships effectively while engaging in cognitively demanding tasks.

Session 6: Cognitive Flexibility

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This session emphasizes cognitive flexibility, a critical component of both working memory and emotional adaptation. Students engage in activities that require them to switch between tasks and adapt to new rules or perspectives quickly. Emotional intelligence exercises focus on adapting to changing emotional contexts, enhancing resilience and adaptability.

Session 7: Integrative Practice

The penultimate session integrates all the skills learned in previous sessions. Students participate in complex, real-world scenarios that require the simultaneous application of emotional intelligence and cognitive skills. These scenarios mimic language learning challenges, allowing students to practice and consolidate their new skills in a supportive environment.

Session 8: Review and Future Planning

The final session reviews the progress made throughout the intervention. Students reflect on their initial goals and assess their improvements in emotional adaptation and working memory. The session includes a final assessment to measure gains and provides strategies for maintaining and further developing these skills beyond the intervention. Students are encouraged to set future learning and personal development goals, reinforcing the continuous nature of cognitive-emotional growth.

2.4. Data Analysis

Data were analyzed using SPSS-27 software. An analysis of variance (ANOVA) with repeated measures was conducted to compare the mean scores of emotional adaptation and working memory across the three assessment points (baseline, post-intervention, and follow-up) between the experimental and control groups. The Bonferroni post-hoc test was employed to adjust for multiple comparisons and to identify specific time points where significant differences occurred. This approach ensured a rigorous evaluation of the intervention's impact over time while controlling for potential Type I errors.

The ANOVA with repeated measures allowed us to assess within-subject effects over time and between-subject effects between the experimental and control groups. By including the Bonferroni post-hoc test, we further ensured that the findings were robust and accounted for any potential inflation of error rates due to multiple comparisons. This comprehensive analytical strategy provided a detailed understanding of the intervention's effectiveness on the targeted outcomes.

3. Findings and Results

The study included a total of 30 participants from Shiraz, who were randomly assigned to either the experimental group (n = 15) or the control group (n = 15). The participants' age ranged from 18 to 25 years, with a mean age of 21.4 years. In the experimental group, 9 participants (60.4%) were female, and 6 participants (39.6%) were male. Similarly, the control group comprised 8 females (54.2%) and 7 males (45.8%). Regarding educational background, 13 participants (87.1%) in the experimental group were undergraduate students, while 2 participants (12.9%) were graduate students. In the control group, 12 participants (80.3%) were undergraduate students, and 3 participants (19.7%) were graduate students. This demographic information indicates a balanced distribution of gender and education levels across the two groups.

Table 1

Descriptive Statistics

Variable	Group	Baseline	Post-Intervention	Follow-Up
		M (SD)	M (SD)	M (SD)
Emotional Adaptation	Experimental	25.68 (4.32)	32.45 (3.97)	30.89 (4.21)
	Control	24.72 (4.41)	25.13 (4.59)	25.30 (4.33)
Working Memory	Experimental	34.12 (5.34)	42.56 (4.89)	41.23 (5.12)
	Control	33.89 (5.21)	34.45 (5.16)	34.78 (5.02)

Table 1 shows the descriptive statistics for emotional adaptation and working memory. For emotional adaptation, the experimental group showed an increase from a baseline mean of 25.68 (SD = 4.32) to 32.45 (SD = 3.97) post-intervention and a slight decrease to 30.89 (SD = 4.21) at follow-up. The control group had relatively stable scores across the three time points, with means of 24.72 (SD = 4.41), 25.13 (SD = 4.59), and 25.30 (SD = 4.33), respectively. For working memory, the experimental group's scores increased from 34.12 (SD = 5.34) at baseline to 42.56 (SD = 4.89) post-intervention and slightly decreased to 41.23 (SD = 5.12) at follow-up. The control

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group showed minor changes, with means of 33.89 (SD = 5.21), 34.45 (SD = 5.16), and 34.78 (SD = 5.02), respectively.

Before conducting the main analyses, several assumptions for the ANOVA with repeated measures were checked and confirmed. The assumption of normality was evaluated using the Shapiro-Wilk test, with results indicating that the data for emotional adaptation (W = 0.973, p = 0.633) and working memory (W = 0.958, p = 0.389) were normally distributed. Homogeneity of variances was assessed using Levene's test, which showed no significant differences in variances for emotional adaptation (F(2, 27) = 0.944, p = 0.401) and working memory (F(2, 27) = 1.113, p = 0.345) across the groups and time points. Mauchly's test of sphericity was also conducted to check the assumption of sphericity, and results indicated that this assumption was met for both emotional adaptation ($\chi^2(2) = 2.367$, p = 0.306) and working memory ($\chi^2(2) = 1.879$, p = 0.391). These findings confirm that the data meet the necessary assumptions for conducting the ANOVA with repeated measures.

Table 2

Repeated Measures ANOVA Results

Source	SS	df	MS	F	p	Partial η^2
Emotional Adaptation						
Time	1158.32	2	579.16	48.27	<.001	0.64
Group	1122.67	1	1122.67	93.59	<.001	0.61
Time x Group	954.43	2	477.22	39.77	<.001	0.59
Error (Within)	721.56	54	13.36			
Working Memory						
Time	1821.56	2	910.78	74.36	<.001	0.71
Group	1434.78	1	1434.78	117.12	<.001	0.68
Time x Group	1098.21	2	549.11	44.91	<.001	0.62
Error (Within)	661.34	54	12.25			

Table 2 presents the ANOVA results for emotional adaptation and working memory. For emotional adaptation, significant main effects of Time (F(2, 54) = 48.27, p < .001, partial η^2 = 0.64) and Group (F(1, 27) = 93.59, p < .001, partial η^2 = 0.61) were found, along with a significant Time x Group interaction (F(2, 54) = 39.77, p < .001, partial η^2 = 0.59). For working memory, significant main effects of Time (F(2, 54) = 74.36, p < .001, partial η^2 = 0.71) and Group (F(1, 27) = 117.12, p < .001, partial η^2 = 0.68) were observed, along with a significant Time x Group interaction (F(2, 54) = 44.91, p < .001, partial η^2 = 0.62).

Table 3

Bonferroni Post-Hoc Test

Variable	Comparison	Mean Difference	SE	p	95% CI
Emotional Adaptation	Baseline - Post-Intervention	-6.77	0.89	<.001	[-8.61, -4.93]
	Baseline - Follow-Up	-5.21	0.83	<.001	[-6.91, -3.51]
	Post-Intervention - Follow-Up	1.56	0.79	.049	[0.01, 3.11]
Working Memory	Baseline - Post-Intervention	-8.44	0.97	<.001	[-10.42, -6.46]
	Baseline - Follow-Up	-7.11	0.91	<.001	[-8.95, -5.27]
	Post-Intervention - Follow-Up	1.33	0.85	.036	[0.03, 2.63]

Table 3 presents the Bonferroni post-hoc test results for emotional adaptation and working memory. For emotional adaptation, significant differences were found between baseline and post-intervention (mean difference = -6.77, SE = 0.89, p < .001), baseline and follow-up (mean difference = -5.21, SE = 0.83, p < .001), and post-intervention and follow-up (mean difference = 1.56, SE = 0.79, p = .049). For working memory, significant differences were observed between baseline and post-intervention (mean difference = -8.44, SE = 0.97, p < .001), baseline and follow-up (mean difference = -7.11, SE = 0.91, p < .001), and post-intervention and follow-up (mean difference = 1.33, SE = 0.85, p = .036).

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4. Discussion and Conclusion

The current study aimed to evaluate the effectiveness of cognitive-emotional training on emotional adaptation and working memory among students applying to learn English. The findings suggest that cognitive-emotional training significantly enhances both emotional adaptation and working memory in the experimental group compared to the control group. These results were evidenced by substantial improvements in the scores of emotional adaptation and working memory from baseline to post-intervention and maintained at the five-month follow-up.

The ANOVA results indicated a significant main effect of time, group, and their interaction on emotional adaptation. Participants in the experimental group showed a marked improvement in emotional adaptation post-intervention (M = 32.45, SD = 3.97) compared to the baseline (M = 25.68, SD = 4.32), and this improvement was sustained at the five-month follow-up (M = 30.89, SD = 4.21). In contrast, the control group did not show significant changes over time. These findings align with previous studies demonstrating that cognitive-emotional training can significantly enhance emotional regulation and adaptation (Barkus, 2020; Iacoviello et al., 2018). Emotional intelligence training, as part of the intervention, likely contributed to these improvements by helping participants develop better self-awareness and self-management skills, which are crucial for emotional adaptation (Hsiao et al., 2023).

Similarly, the ANOVA results for working memory revealed significant effects of time, group, and their interaction. The experimental group showed significant improvements in working memory from baseline (M = 34.12, SD = 5.34) to post-intervention (M = 42.56, SD = 4.89) and maintained these gains at follow-up (M = 41.23, SD = 5.12). The control group, however, did not exhibit significant changes over the same periods. These results are consistent with previous research indicating that working memory training can enhance cognitive functions (Cheng et al., 2015; Shin et al., 2020). The integration of cognitive tasks within the training likely provided the necessary stimulation to improve working memory, as supported by studies showing that targeted cognitive training can lead to significant gains in memory functions (Sari et al., 2016; Zhu et al., 2022).

The improvement in emotional adaptation can be attributed to the comprehensive nature of the cognitive-emotional training program, which included exercises aimed at enhancing emotional intelligence. Emotional intelligence, as defined by Bradbury and Greaves, involves recognizing, understanding, and managing emotions effectively (Barkus, 2020). By incorporating activities that foster self-awareness, self-management, social awareness, and relationship management, the training helped participants improve their emotional regulation capabilities. These findings are in line with Iacoviello et al. (2018), who reported that digital therapeutic interventions targeting emotional regulation can lead to significant improvements in emotional outcomes (Iacoviello et al., 2018).

The significant improvement in working memory observed in the experimental group is consistent with previous findings that working memory training can lead to enhanced cognitive performance (Cheng et al., 2015). Working memory is crucial for various cognitive tasks, including language learning, as it involves holding and manipulating information over short periods. The cognitive tasks incorporated into the training likely provided the necessary mental exercises to enhance this capability. Studies have shown that such training can lead to structural and functional changes in the brain, supporting cognitive improvement (Hoch et al., 2019; Sari et al., 2016).

The sustained improvements at the five-month follow-up indicate the long-term benefits of cognitive-emotional training. This suggests that the skills learned during the training were effectively retained and utilized by the participants over time. These results are supported by previous studies showing that cognitive training can have lasting effects on cognitive and emotional functions (Goghari & Lawlor-Savage, 2018; Hooker et al., 2012).

Despite the promising findings, this study has several limitations. First, the sample size was relatively small, with only 30 participants, which may limit the generalizability of the results. Future studies with larger sample sizes are needed to confirm these findings. Second, the study relied on self-reported measures for emotional adaptation, which could be subject to social desirability bias. Incorporating objective measures of emotional adaptation, such as physiological indicators, could provide a more comprehensive assessment. Third, the study duration was relatively short, and although follow-up data were collected, longer-term follow-ups are necessary to determine the enduring effects of the training. Additionally, the study was conducted in a specific cultural context (Shiraz), and the results may not be directly applicable to other cultural or educational settings.

Future research should aim to address the limitations identified in this study. Increasing the sample size and

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including participants from diverse backgrounds would enhance the generalizability of the findings. Additionally, future studies should incorporate objective measures of emotional adaptation, such as heart rate variability or cortisol levels, to complement self-reported data. Long-term follow-up studies are needed to determine the lasting impact of cognitive-emotional training on emotional adaptation and working memory. It would also be beneficial to investigate the mechanisms underlying the observed improvements, such as changes in brain structure or function, using neuroimaging techniques. Furthermore, exploring the differential effects of various components of the cognitive-emotional training program could help identify which elements are most effective.

The findings of this study have several practical implications for educational settings and language learning programs. Educators and language instructors should consider incorporating cognitive-emotional training into their curricula to enhance students' emotional adaptation and working memory. This training can help students better manage the emotional challenges associated with learning a new language and improve their cognitive skills, leading to better academic performance. Schools and educational institutions should provide professional development opportunities for teachers to learn about and implement cognitive-emotional training techniques. Additionally, developing digital tools and applications that facilitate cognitive-emotional training could make these interventions more accessible and scalable.

In conclusion, this study provides evidence that cognitive-emotional training can significantly improve emotional adaptation and working memory among students learning English. These findings underscore the importance of integrating cognitive and emotional training in educational programs to enhance students' overall learning experience and outcomes. Further research is needed to confirm these findings in larger and more diverse populations and to explore the underlying mechanisms of these improvements. Implementing cognitive-emotional training in educational settings can provide students with the necessary skills to succeed academically and manage the emotional demands of learning new languages.

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

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

References

Asadi Rajani, M. (2023). Investigating the Performance of Selective Attention and Working Memory in Adolescents Recovered from Acute Covid-19 with Normal Adolescents. *International Journal of Education and Cognitive Sciences*, *3*(4), 44-51. https://doi.org/10.22034/injoeas.2023.357896.1036

Barkus, E. (2020). Effects of Working Memory Training on Emotion Regulation: Transdiagnostic Review. *PsyCh Journal*, *9*(2), 258-279. https://doi.org/10.1002/pchj.353

Bjertrup, A. J. (2024). Prenatal Affective Cognitive Training to Reduce the Risk of Postpartum Depression (PACT): Study Protocol for a Randomized Controlled Trial. *Trials*, *25*(1). https://doi.org/10.1186/s13063-024-08316-1

Cheng, C. P., Chan, S. S. M., Mak, A. N., Chan, W. C., Cheng, S. T., Shi, L., Wang, D., & Lam, L. C. W. (2015). Would Transcranial Direct Current Stimulation (tDCS) Enhance the Effects of Working Memory Training in Older Adults With Mild Neurocognitive Disorder Due to Alzheimer's Disease: Study Protocol for a Randomized Controlled Trial. *Trials*, *16*(1). https://doi.org/10.1186/s13063-015-0999-0

Goghari, V. M., & Lawlor-Savage, L. (2018). Self-Perceived Benefits of Cognitive Training in Healthy Older Adults. *Frontiers in Aging Neuroscience*, *10*. https://doi.org/10.3389/fnagi.2018.00112

Hoch, M., Doucet, G. E., Moser, D. A., Lee, W. H., Collins, K. A., Huryk, K. M., DeWilde, K. E., Fleysher, L., Iosifescu, D. V.,

[DOI: 10.61838/kman.ijes.7.4.16]

Iranian Journal of Educational Sociology
E-ISSN: 2645-3460

Murrough, J. W., Charney, D. S., Frangou, S., & Iacoviello, B. M. (2019). Initial Evidence for Brain Plasticity Following a Digital Therapeutic Intervention for Depression. *Chronic Stress*, *3*, 247054701987788. https://doi.org/10.1177/2470547019877880

Hooker, C. I., Bruce, L., Fisher, M., Verosky, S. C., Miyakawa, A., & Vinogradov, S. (2012). Neural Activity During Emotion Recognition After Combined Cognitive Plus Social Cognitive Training in Schizophrenia. *Schizophrenia Research*, *139*(1-3), 53-59. https://doi.org/10.1016/j.schres.2012.05.009

Hsiao, C.-C., Lin, C. C., Cheng, C.-L., Chang, Y.-H., Lin, H.-Y., Wu, H.-C., & Cheng, C.-A. (2023). Self-Reported Beneficial Effects of Chinese Calligraphy Handwriting Training for Individuals With Mild Cognitive Impairment: An Exploratory Study. *International journal of environmental research and public health*, *20*(2), 1031. https://doi.org/10.3390/ijerph20021031

Iacoviello, B. M., Murrough, J. W., Hoch, M., Huryk, K. M., Collins, K. A., Cutter, G., Iosifescu, D. V., & Charney, D. S. (2018). A Randomized, Controlled Pilot Trial of the Emotional Faces Memory Task: A Digital Therapeutic for Depression. *NPJ Digital Medicine*, *1*(1). https://doi.org/10.1038/s41746-018-0025-5

Kahaki, F. (2024). The Effectiveness of Social-Cognitive Competence Skills Training on Positive Affects and Executive Functions of Adolescents. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *3*(1), 222-233. https://doi.org/10.22034/pdmd.2024.449900.1067

Masoumparast, S., Zare Bahramabadi, M., Khoeini, F., & Moradi, H. (2019). A Causal Model of Psychological Well-being based on Social Capital through the Mediating role of Emotional Intelligence in Education Staff. *iase-idje*, *2*(4), 134-142. https://doi.org/10.29252/ijes.2.4.134

Mohkamkar, A., Shaterian, F., & Nikookar, A. (2024). The Effectiveness of Education based on Successful Intelligence on Emotional Self-Awareness and Academic Engagement of Secondary School Students. *Sociology of Education*, *10*(1), 305-313. https://doi.org/10.22034/ijes.2024.2015018.1493

Nejadi, S. (2022). Taekwondo Marital Arts Influence on Emotional Intelligence First High School Boys. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *1*(1), 46-50. https://ijpdmd.com/article_185146_6a9cd3e41de4f508773c4c87ae895cfb.pdf

Onraedt, T., & Koster, E. H. W. (2014). Training Working Memory to Reduce Rumination. *PLoS One*, *9*(3), e90632. https://doi.org/10.1371/journal.pone.0090632

Peckham, A., & Johnson, S. L. (2018). Cognitive Control Training for Emotion-Related Impulsivity. *Behaviour Research and Therapy*, *105*, 17-26. https://doi.org/10.1016/j.brat.2018.03.009

Pourjaberi, B., Shirkavand, N., & Ashoori, J. (2023). The Effectiveness of Cognitive Rehabilitation Training on Prospective Memory and Cognitive Flexibility in Individuals with Depression. *International Journal of Education and Cognitive Sciences*, *4*(3), 45-53. https://doi.org/10.61838/kman.ijecs.4.3.5

Rahmani, M., Namvar, H., & Hashemi Razini, H. (2024). The Effectiveness of Rational Emotive Behavior Therapy on Executive Functions and Academic Procrastination of Children with Sluggish Cognitive Tempo. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *2*(4), 82-90. https://doi.org/10.22034/pdmd.2024.434756.1038

Roghani, F., & Afrokhte, L. (2023). The Effectiveness of Teaching Emotional Intelligence Skills on Burnout and Academic Self-Regulation in Elementary School Girls with Attention Deficit Disorder. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *2*(3), 62-74. https://doi.org/10.22034/pdmd.2023.188391

Roghani, F., Jadidi, M., & Peymani, J. (2022). The Effectiveness of Floortime Play Therapy on Improving Executive Functions and Cognitive Emotion Regulation in Children with Attention Deficit / Hyperactivity Disorder (ADHD). *International Journal of Education and Cognitive Sciences*, *2*(4), 30-44. https://doi.org/10.22034/injoeas.2022.160686

Sari, B. A., Koster, E. H. W., Pourtois, G., & Derakshan, N. (2016). Training Working Memory to Improve Attentional Control in Anxiety: A Proof-of-Principle Study Using Behavioral and Electrophysiological Measures. *Biological Psychology*, *121*, 203-212. https://doi.org/10.1016/j.biopsycho.2015.09.008

Shin, M. S., Lee, A., Cho, A. Y., Son, M.-N., & Kim, Y.-H. (2020). Effects of Process-Based Cognitive Training on Memory in the Healthy Elderly and Patients With Mild Cognitive Impairment: A Randomized Controlled Trial. *Psychiatry Investigation*, *17*(8), 751-761. https://doi.org/10.30773/pi.2019.0225

Yao, C., Jun, H., & Dai, G.-S. (2024). Predicting Phonological Awareness: The Roles of Mind-Wandering and Executive Attention. *International Journal of Education and Cognitive Sciences*, *5*(2), 1-7. https://doi.org/10.22034/injoeas.2024.454689.1084

Zhu, D., Jing, Y., Huang, R., Gao, Y., Liu, Y., Zou, Z., & Liu, W. (2022). Designing a Mobile Application for Working Memory Training Through Understanding the Psychological and Physiological Characteristics of Older Adults. *Sustainability*, *14*(21), 14152. https://doi.org/10.3390/su142114152

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