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Comparison of the Effectiveness of Cognitive-Behavioral Education Based on Procrastination and Cognitive Motivational Multidimensional Intervention on Self-Efficacy of Students with Addicted Parents

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ABSTRACT

Objective: The current investigation was carried out to compare the efficacy of cognitive-behavioral education centered on procrastination and motivational-cognitive multidimensional intervention on the self-efficacy of students with addicted parents at the high schools of Babolsar.

Methods: The study employed a semi-experimental research design with pre-test, post-test, and follow-up assessments using an unequal control group. The target population consisted of all students with addicted parents at the high schools in Babolsar and their parents in 2022. A total of 45 individuals were purposively chosen and assigned to two experimental groups and a control group, each comprising 15 participants. The research questionnaires were administered, and cognitive-behavioral training focusing on procrastination and motivational-cognitive multidimensional intervention was conducted for the experimental groups, while the control group was placed on the waiting list for the intervention.

Results: The findings indicated that both interventions were effective in enhancing academic self-efficacy. Moreover, the impact of cognitive-behavioral training based on procrastination was found to be superior to motivational-cognitive multidimensional intervention in terms of academic self-efficacy enhancement.

Conclusions: In conclusion, both interventions exhibit potential for enhancing students' self-efficacy levels.

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Introduction

Despite the extensive historical background of substance use disorders, the current scenario presents a grave global challenge that exerts significant impacts on various aspects encompassing socio-psychological, economic, individual, and familial domains, thereby posing a severe threat to the mental well-being of individuals, particularly adolescents (Abate et al., 2021). Consequently, the significance of exploring the influence of parental interventions targeting substance abuse on the family unit and its constituents emerges as a topic deserving meticulous examination (Abate et al., 2021). Offspring of individuals grappling with addiction issues encounter a myriad of social-psychological dilemmas including but not limited to social seclusion, behavioral disturbances, and substandard academic achievements (Farnia et al., 2022).

The dynamics and engagements within the parent-teenager relationships assume a pivotal role in shaping the self-assurance, impetus for advancement, and self-efficacy levels of juveniles (Tindle et al., 2021). Action underscores a set of convictions that delineate an individual's perceived capability to execute actions conducive to favorable outcomes within specific circumstances. These convictions are commonly referred to as self-efficacy (Yokoyama, 2019). As postulated by Bandura (2001), self-efficacy embodies "an individual's beliefs concerning their capacity to exert influence over personal and environmental conditions." Sherer and Adams (1983) posit that self-efficacy transcends the confines of particular scenarios and behaviors, representing a cognitive mechanism fundamental to adaptability. In light of the eclectic framework elucidating the interplay of cognition, conduct, and affect on the procrastination cycle, it is discerned that, rooted in cognitive-behavioral paradigms, deficiencies in impulse control and irrational cognitions can instigate the procrastination loop by eliciting adverse emotions such as despondency, defeat, and apprehension, thereby engendering a self-perpetuating cycle of procrastination (Zysberg & Schwabsky, 2021). The cycle commences with a designated task or objective triggering the activation of detrimental assumptions and regulations, subsequently inducing discomfort and culminating in the activation of justifications for procrastination (Tolson et al., 2023). Consequently, it is

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postulated that interventions aimed at rectifying maladaptive behaviors and cognitions associated with procrastination, coupled with the regulation of negative affect, hold the potential to disrupt the procrastination cycle, consequently fostering an enhancement in self-efficacy levels (Wäschle et al., 2014; Zhang et al., 2018).

In the contemporary era, numerous scholars in the field of educational psychology have attributed particular significance and recognition to motivational and psychological frameworks pertaining to educational behaviors (Howard et al., 2021). Martin et al. (2017) formulated an elaborate psychological motivational intervention scheme referred to as the "Wheel of Motivation and Engagement" aimed at enhancing the academic motivation of students. Within his theoretical framework, Martin delineates the progression of motivation and engagement into four distinct cognitive dimensions, namely compatible-incompatible cognitive aspects and compatible-incompatible behavioral aspects (Martin, 2008). The adaptive cognitive facet encompasses elements such as value orientation and self-efficacy, while maladaptive cognition involves factors like anxiety, fear of failure, and a sense of lack of control. Compatible behavior incorporates traits such as persistence, strategic planning, and effective task management, whereas incompatible behavior manifests as disengagement from educational tasks and self-sabotaging tendencies. Shedding light on this subject, Tolson et al. (2023) demonstrated through a study that a multifaceted motivational-cognitive intervention can effectively enhance self-efficacy in the realm of education. Zarei et al. (2022) in a study investigated the effectiveness of the positive cognitive-behavioral therapy on boredom and academic procrastination of female students. The findings of the study revealed a notable disparity between the participants assigned to the experimental group and those in the control group with regards to levels of boredom as well as tendencies towards academic procrastination. De la Fuente et al. (2021) delved into exploring the impacts of Regulatory Teaching (RT) on the levels of academic behavioral confidence and procrastination among individuals. The findings of the study revealed that RT exhibited a noteworthy combined influence in ascertaining the extent of academic behavioral confidence as well as the level of procrastination.

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Given that this approach was examined in isolation rather than through a comparative lens, the present study endeavors to explore the potential disparities between procrastination-focused cognitive-behavioral instruction and motivational-cognitive multidimensional intervention concerning the self-efficacy levels of students hailing from households with parental substance abuse issues. Specifically, the inquiry aims to discern whether distinctions exist at the high schools within Babolsar city.

Material and Methods

The experimental design employed in this study was characterized as semi-experimental, incorporating pre-test-post-test measurements along with a follow-up period involving a control group. This design was carefully chosen in alignment with the specified research goals and hypotheses, ensuring the robustness of the study methodology. The statistical population under investigation in this particular research encompassed all students who had parents struggling with addiction issues within the context of the high schools located in Babolsar city. Furthermore, this population also included the parents of these students who were actively enrolled during the academic year 2022.

The process of selecting the statistical sample for the study was meticulously executed utilizing the g power software tool, with a stringent statistical power level set at 0.9. Additionally, the expected effect size was predetermined to be 0.45, along with an error rate of 0.05. Ultimately, the final sample size consisted of 45 individuals, with 30 participants distributed across two distinct experimental groups (Group 1 and Group 2), and the remaining 15 individuals forming the control group. Notably, within this cohort of students, there existed the commonality of having at least one parent grappling with addiction-related challenges.

The methodology adopted for sample selection deviated from a random approach, instead opting for a non-random accessible sampling strategy. This method involved liaising with educational and health facilities within the region, facilitating access to the health records of the target population. Subsequent to this process, necessary coordination was established to ensure the smooth participation of the identified students in the research endeavor. Informed consent was diligently obtained from the students prior to their involvement in the study.

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The identification of high school students in Babolsar who had parents struggling with substance abuse concerns was conducted through individual interviews. Subsequently, the participants were allocated into three distinct groups based on the predetermined criteria: 15 individuals were assigned to the first experimental group, another 15 to the second experimental group, and the remaining 15 formed the control group. The inclusion criteria stipulated for the research encompassed several key aspects, including parental addiction, enrollment in the second secondary school in Babolsar, residency within the city limits, and the absence of specific disorders in both the children and their parents.

Moreover, exclusion criteria were established, which mandated the exclusion of participants who demonstrated absence in more than two treatment sessions or engaged in concurrent participation in alternative treatment modalities. Prior to the commencement of the research activities, ethical clearance was diligently sought from the Research Ethics Approval Committee of Sari Islamic Azad University, denoted by the distinct code: IR.IAU.SARI.REC.1401.085.

The research instrument employed in this study was the Academic Self-Efficacy Questionnaire, originally developed by Jinks and Morgan (1999) with the primary aim of assessing academic self-efficacy levels. This questionnaire comprises a total of 30 items, categorized into texture, talent, and effort subscales. Participants are required to self-report their agreement levels with each item on a 4-point Likert scale, ranging from 'completely agree' to 'completely disagree'. The reliability of this questionnaire was initially established by (Jinks & Morgan, 1999), using the Cronbach's alpha method, yielding a coefficient of 0.8. In the context of the present study, the reliability of the questionnaire was further confirmed through the calculation of the Cronbach's alpha coefficient, which was determined to be 0.86.

Procedure

The research background and underlying theories necessary for the current research were meticulously accessed at the library level through consultation of reputable internal and external databases, alongside comprehensive exploration of university libraries and reference to esteemed scientific and research institutions to acquire pertinent articles and books pertaining to the subject matter. Moreover, at the field level, meticulous preparations were initially made in collaboration with educational institutions to secure the requisite permissions for conducting surveys in order to

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facilitate the completion of the questionnaires. Through interactions with school counselors, administrative and academic personnel, regional health facilities, and retrieval of pertinent health records, coupled with careful coordination, students at the Second secondary level along with their parents were meticulously identified. Subsequently, these selected students actively participated in the research with full informed consent and were meticulously divided into three distinct groups, specifically the first experimental group comprising 15 individuals, the second experimental group consisting of 15 participants, and a control group comprising 15 individuals. Within the framework of this research, an initial pre-test was administered to the subjects, followed by the implementation of a therapeutic protocol encompassing cognitive-behavioral training focused on addressing procrastination over a series of 10 sessions lasting 45 minutes each, in addition to a multidimensional motivational-cognitive intervention spanning 8 sessions of 45 minutes, delivered to the groups by a specialized therapist holding a doctoral degree in psychology. Subsequently, a post-test assessment was conducted on the subjects. The analysis of the research data was carried out employing the SPSS 26 software, encompassing the utilization of frequency charts, tables, mean and standard deviation metrics in the descriptive statistics segment, and the application of the analysis of variance test with repeated measurements in the realm of inferential statistics.

The multidimensional cognitive motivational intervention implemented in this study entailed a multifaceted approach structured around four core dimensions (self-efficacy, goal orientation, locus of control, and test anxiety), in addition to a behavioral dimension focusing on task management, disseminated across 8 sessions lasting 45 minutes each, in alignment with the theoretical framework proposed by Martin (2008). It is imperative to underscore that these interventions have been rigorously vetted by experts and possess inherent validity.

Table 1. Summary of Martin's Multidimensional Intervention Sessions

Session	Content
1	Self-efficacy: academic motivation skills and self-regulated learning skills
2	Cognitive skills in studying, planning skills in studying, skills to prevent forgetting, skills to control exam anxiety
3	Progress goals, mastery goals, performance-oriented goals, performance-avoidance goals
4	The value (value components) of sustainability in doing homework
5	Management planning in works
6	Reduce anxiety, avoid failure
7	Control was strengthening the ability to influence the environment and strengthening the expectation of the outcome.
8	disengagement, using the mastery program in a practical way

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Table 2. Summary of therapeutic sessions of cognitive behavioral intervention based on procrastination

Session	Therapeutic components
1	Informed consent
2 و 3	Familiarization of members with each other and the therapist
4	Cognitive restructuring
5	Time Management
6	Set time limits
7	Constructive self-talk training
8	Mindfulness

Results

Table 3 shows the mean and standard deviation of pre-test, post-test and academic self-efficacy follow-up scores in three groups include control, cognitive-behavioral test based on procrastination and motivational-cognitive multidimensional test. It can be seen that in the two experimental groups, the average self-efficacy has increased in the post-test and follow-up compared to the pre-test.

Table 3. mean and standard deviation of pre-test, post-test and academic self-efficacy follow-up scores in three groups

		Control group		Procrastination-based cognitive-behavioral training group		Cognitive motivational multidimensional intervention group	
Self-efficacy variable		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
	Pre-test	68.60	8.781	71.40	10.582	69.47	8.700
	Post-test	67.20	7.093	86.53	10.398	80.00	8.211
		66.13	7.530	89.73	10.430	82.33	7.889

Using analysis of variance as a parametric test requires compliance with some statistical assumptions. These assumptions include: random sampling, normality of variances, linearity, homogeneity of variances and homogeneity of regression slopes. According to the Shapiro-Wilk test, the null hypothesis for the normality of the distribution of scores in all variables is confirmed, so it can be concluded that the scores of the variables in the pre-test position have a normal distribution. To test the assumption of homogeneity of variance/covariance matrices, Levene's test and M-box tests were used, and the results of these tests showed that the significance level of all

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variables was higher than 0.05. Therefore, the assumption of homogeneity of variances is established and parametric test (analysis of variance) can be used.

Table 4. Summary of the results of variance analysis with repeated measurement of the effect of procrastination-based cognitive-behavioral training on self-efficacy

Source	SS	DF	MS	F	P	Effect size
Phase	1112.267	1.467	758.261	80.841	0.0001	0.743
Phase * group	1810.489	1.467	1234.257	131.588	0.0001	0.825
Group	5228.844	1	5228.844	21.541	0.0001	0.435

According to Table 4, the level of significance related to the stage for self-efficacy is less than 0.05, as a result, it can be accepted that there is a significant difference between the average scores of this variable in the pre-test, post-test and follow-up stages, and also considering the significance of the interaction effect of the stage * group and the significance of the group effect, it is concluded that the amount of changes of this variable during the pre-test, post-test and follow-up stages was not the same in the control and cognitive-behavioral groups based on procrastination, so it can be concluded that cognitive-behavioral training based on procrastination has been effective on self-efficacy for students with addicted parents, and according to the difference in averages, it has increased self-efficacy. According to the eta square value, 82.5% of the changes in self-efficacy scores during the pre-test, post-test and follow-up stages were caused by cognitive-behavioral training based on procrastination.

Table 5. Summary of results of analysis of variance with repeated measurement of the effect of multidimensional cognitive motivation intervention training on self-efficacy

Source	SS	DF	MS	F	P	Effect size
Phase	482.956	1.606	300.663	51.413	0.0001	0.647
Phase * group	972.689	1.606	605.546	103.547	0.0001	0.787
Group	2230.044	1	2230.044	12.032	0.002	0.301

According to Table 5, the level of significance related to the stage for self-efficacy is less than 0.05, as a result, it can be accepted that there is a significant difference between the average scores of this variable in the pre-test, post-test and follow-up stages, and also considering the significance of the interaction effect of stage * group and the significance of the group effect is that the amount of changes of this variable during the pre-test, post-test and follow-up phases was not the same in the control and the multidimensional intervention of cognitive motivation groups, so it can be

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concluded that the multidimensional intervention of cognitive motivation has been effective on the self-efficacy of students with drug addict parents and according to the difference in averages, it has increased self-efficacy. According to the eta square value, 78.7% of the changes in self-efficacy scores during the pre-test, post-test and follow-up phases were due to the multidimensional intervention of cognitive motivation.

Table 6. LSD test to compare the effect of procrastination-based cognitive behavioral training and cognitive motivational multidimensional intervention on self-efficacy

Variable	Base group - comparison group	Mean difference	Error	P
Self-efficacy	Cognitive-behavioral control based on procrastination	-19.33	3.16	0.001
	Multidimensional cognitive motivational -control	-12.80	3.16	0.001
	Cognitive behavioral based on procrastination-multidimensional cognitive motivation	6.53	3.16	0.045

In comparing the effect of procrastination-based cognitive behavioral training and cognitive motivational multidimensional intervention on self-efficacy, considering the significance of the mean difference, it can be said that the effect of procrastination-based cognitive behavioral training on self-efficacy was greater than cognitive motivational multidimensional intervention.

Discussion

The aim of the present study was to investigate and determine the comparing efficacy of cognitive-behavioral training based on procrastination and multidimensional motivational-cognitive intervention on the enhancement of self-efficacy among students with addicted parents attending high schools in the city of Babolsar. The results demonstrated that both forms of training yielded a positive impact on the self-efficacy levels of the students. The findings derived from this research indicated that cognitive-behavioral education focusing on procrastination plays a significant role in enhancing self-efficacy levels and boosting the overall self-efficacy of students. This outcome aligns with previous research conducted by Howard et al. (2021) and Tolson et al. (2023). A detailed analysis of this particular finding

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suggests that cognitive-behavioral therapy emphasizes the therapist's ability to uncover individuals' thinking patterns. By gaining insight into how individuals perceive their surroundings and interactions with others, cognitive-behavioral therapy can effectively identify and diminish faulty thinking patterns that contribute to psychological issues. Adopting a new and different cognitive approach from previous detrimental thinking patterns enables individuals to acknowledge their capabilities and shift their focus towards enhancing these abilities. Consequently, it is reasonable to expect a logical increase in self-efficacy levels as individuals become more aware of their competencies. Cognitive-behavioral therapy facilitates a deeper comprehension of various issues, encouraging individuals to not only attribute past failures to internal and unchangeable factors, but also to evaluate the circumstances and events leading to those failures. Failure to address persistent failures may hinder individuals from questioning their own capabilities.

Furthermore, enhancing students' cognitive capacities enables them to effectively manage academic stress and bolster their self-efficacy. Therefore, cognitive-behavioral therapy fosters self-efficacy by challenging automatic negative thoughts that contribute to feelings of helplessness, subsequently empowering individuals to combat these thoughts in a proactive manner. The assignments provided to students, along with their engagement in multisensory activities, resulted in a greater boost in self-efficacy compared to the multidimensional intervention approach.

Another significant finding of the study highlighted the effectiveness of motivational-cognitive multidimensional intervention in enhancing self-efficacy levels among students. These results are consistent with the research outcomes of Howard et al. (2021) and Tolson et al. (2023). In an effort to enhance students' academic motivation, Martin (2008) developed a program centered on multidimensional psychological motivational interventions known as the "motivation and engagement wheel." Through multidimensional motivational interventions, learners are encouraged to tackle assignments and challenges, ultimately promoting problem-solving skills and facilitating learning. The development of self-assurance and efficacy serves

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as a motivating factor for students to navigate developmental tasks, overcome challenges, and prepare for future adversities.

Considering the belief in innate abilities as a reflection of the appreciation of a specific array of cognitive strengths, it also encompasses the aspect of determination and perseverance essential for surmounting obstacles that impede the utilization of these inherent capabilities to accomplish objectives. The impact of self-efficacy extends across various domains of human activity, influencing outcomes significantly. Conversely, interventions centered on motivation prioritize individuals' drive and immediate emotional states, aiming to pinpoint and alleviate dysfunctional and distressing emotions to enable individuals to objectively assess their competencies by emphasizing positive emotions while mitigating negative ones, fostering a mindset of acceptance and acknowledgment. Embracing one's own capabilities empowers individuals to approach challenges with a positive outlook, enabling a rational evaluation of circumstances rather than fixating on setbacks, thereby indicating the potential efficacy of multidimensional motivational-cognitive interventions on enhancing self-efficacy levels.

Due to the unique circumstances of conducting training sessions amidst the COVID-19 pandemic, necessitating virtual meetings beset by certain challenges, the scope of this study was confined to students with parental substance abuse issues within high schools of Babolsar city. Consequently, caution is advised in extrapolating the outcomes of this study to broader student populations. The intervention involved online training sessions conducted via the Sky Room platform for the experimental group participants, spanning 8 sessions, each lasting 90 minutes and scheduled on alternate days (Sundays and Tuesdays), incorporating cognitive exercises and behavioral tasks for presentation in subsequent sessions, with the control group subjects not partaking in these activities. Following the program, all three groups underwent a post-test assessment, with a follow-up evaluation administered after a 45-day interval.

Given the contextual setting of this study focusing on students with parents grappling with substance abuse issues in Babolsar city, it is advisable for future investigations to encompass diverse communities or adopt a more expansive scale, incorporating parental psychological challenges. As the study was conducted with non-clinical populations, there is a

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recommendation for future research endeavors to target clinical samples to enrich the understanding of the subject matter. Furthermore, future studies should account for gender differences as a relevant variable. It is also suggested that professionals in counseling and psychology within treatment facilities prioritize the enhancement of psychological well-being among vulnerable students affected by parental addiction, within the realm of therapeutic interventions.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of the Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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