Structural Equation Modeling for Predicting Academic Procrastination Based on Cyberspace Addiction and Executive Functions in First Secondary Female Students in Kerman

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Article Info	ABSTRACT
	Given that academic procrastination originates from various factors, two of the most important factors in this field are cyberspace addiction and executive functions. Therefore, this research aims to model structural equations for predicting academic procrastination based on cyberspace addiction and executive functions. The research method is a descriptive-correlation type of structural equation modeling. The statistical population of this research includes 8150 female first-secondary school students in the city of Kerman in the academic year 2022-2023; according to Morgan's table, 384 people have been selected as a sample using stratified random sampling. Widyanto and McMorran's (2004) cyberspace dependence, Brief's (2000) executive functions, and Solomon and Rothbloom's (1984) academic procrastination questionnaires were used to collect data. Data analysis was done with SPSS25 and AMOS24 software, and descriptive and inferential statistics such as mean, standard deviation, and structural equation modeling were used. The research results showed that the model for predicting academic procrastination based on dependence on cyberspace and executive functions has an acceptable fit. There is a significant relationship between cyberspace addiction, executive functions, and academic procrastination ($p<0.05$), so cyberspace addiction and executive functions simultaneously explain 0.70 of the variance of academic procrastination. Therefore, it can be concluded that the high dependence on cyberspace and spending much time aimlessly in this space cause students to procrastinate in doing their homework and to suffer from a kind of procrastination in academic subjects. Also, defects in executive functions aggravate the academic procrastination of students.

Introduction

One of the most important challenges of schools in recent years is students' Academic procrastination (Kokkinos et al., 2023). Academic procrastination is one of the important academic debates in recent years among educational and educational experts and researchers in this field, and it has been mentioned as a bad habit and an academic behavior problem that many students have in regular daily academic issues. They experience themselves, especially in tasks that must be completed within a certain period of time (Salguero-Pazos & Reyes-de-Cózar, 2023).

Procrastination is a psychological trait that is seen in life and among different strata and age groups. Especially in educational environments, it is very common among learners. Procrastination is assigning something to the future that we avoid the burden of doing for any logical or illogical reason (Elemo & Dule, 2023). For this reason, procrastination is often associated with suffering and psychological discomfort (Rad et al., 2023). In their new theory, Diaz-Morales colleagues (2016) mentioned a four-factor model for procrastination, which considers procrastination to include procrastination, indecisiveness, lack of punctuality, and lack of planning (Suárez-Perdomo et al., 2022).

In his theory and model, Ferrari (2017) presented a threefold classification of procrastination, which includes postponing decision-making, arousal, and avoidance approach in starting work (Rahimi & Vallerand, 2021). Procrastination, due to its complexity and cognitive, emotional, and behavioral components, has various manifestations. Among them Academic procrastination (Hong et al., 2021), decision-making procrastination (Rusdi et al., 2020), neurotic procrastination (Ellis & Naus, 1979), and obsessive procrastination (Li et al., 2020). But its most common form is Academic procrastination (Wang et al., 2021). Rothblum et al. (1986) defined procrastination as the dominant and persistent tendency of learners to postpone academic activities, which is almost always accompanied by anxiety. A very familiar example of this is postponing the study of lessons until the night of the exam and the rush and anxiety caused by it, which plagues students (Pekpazar et al., 2021).

Academic procrastination is a negative and neutralizing emotion that causes the student to be tired, monotonous, and unmotivated in the classroom and in relation to academic subjects, which affects the quality of the individual's performance and causes his lack of success in academic affairs (Wieland et al., 2022). Indeed, Academic procrastination is an emotion that includes affective (disturbing, unpleasant feelings), cognitive (altered perceptions of time), physiological (decreased arousal), cue (facial expression, voice, and body posture), and motivational components. (motivation to change activities or leave the situation) (Melgaard et al., 2022).

Academic procrastination has negative consequences for academic achievement and motivations, cognitions, behaviors, and emotions related to education (Brando-Garrido et al., 2020). Academic procrastination is very common among adolescent high school students, and during learning and situations, Class is repeatedly experienced (Melgaard et al., 2022).

Therefore, it is necessary to investigate the factors related to Academic procrastination by researchers in the field of educational sciences and conducting the present research can be effective in identifying the influencing factors in academic procrastination or its aggravation and determining the strategies and methods of preventing academic procrastination. According to the conducted studies, executive functions are among the most effective structures in Academic procrastination. Executive functions are among the abilities that children need in the future for school learning (Gustavson & Miyake, 2017). Executive functions (regulating behavior outputs) are high cognitive and metacognitive functions that perform a set of high abilities of inhibition, self-initiation, strategic planning, cognitive flexibility, and impulse control. Functions such as organization, decision-making, working memory, maintaining and transforming movement control, feeling and time perception, predicting the future, reconstructing the inner language, and solving problems can be considered among the most important high-level neurological executive functions in life. And doing learning tasks and human intelligence actions helps (Ma et al., 2023).

Defects in executive functions in children can remain stable at older ages and cause them to face severe problems in personal matters (Sinanoglu & Ozdemir, 2023). Therefore, it is necessary to prepare an early intervention program to improve that knowledge. Students learn the necessary skills to succeed in future academic learning (Yurtsever et al., 2023). It can be said that one of the important issues in educational systems is creating the necessary conditions for academic success (Shi et al., 2023).

Another factor influencing Academic procrastination is internet addiction and especially dependence on cyberspace. Cyberspace Addiction is a new phenomenon that many general practitioners are unaware of (Wang et al., 2021). It seems that the root of this practice is to escape from personal problems. The variety of different parts of cyberspace provides an

opportunity to escape from emotional problems such as depression, stress, anxiety, or communication problems with others (Suissa, 2015).

Dependence on cyberspace or behavioral dependence on cyberspace, regardless of whether we consider it a disease, mental injury, or a social problem, is a chronic, comprehensive, and recurring phenomenon that is associated with severe physical, financial, family, social, and psychological injuries (Çankaya & Tan, 2011). The most common term is "Cyberspace Addiction," which creates a kind of behavioral dependence on cyberspace (Israelashvili et al., 2012). The American Psychiatric Association has defined cyberspace addiction as a pattern of using cyberspace that causes functional impairment and is associated with unpleasant internal states for a period of two months (Traore et al., 2023), and seven criteria to diagnose it have been proposed. (at least three criteria during two months) tolerance, withdrawal symptoms, time spent using cyberspace longer than the person initially intended, persistent urge to control behavior, significant time spent on Internet-related activities, reduced activities social, occupational, and recreational as a result of using cyberspace, the continuation of use despite being aware of its negative effects (Guo et al., 2023).

In his definition of cyberspace addiction, Holmes believed a person who uses cyberspace more than 19 hours a week is addicted to cyberspace (Gu et al., 2023). Dependence on cyberspace is a global phenomenon with a different level and scope from 5 to 25 percent of the student population of America, China, Korea, England, Australia, Taiwan, Japan, and Eastern and Western European countries (Li, 2023). Studies show that people addicted to the Internet do not have the necessary skills in social relations and have less psychological and social well-being (Yang et al., 2023). Various researches show that there is a relationship between dependence on cyberspace and academic well-being, especially Academic procrastination (Bahri et al., 2022; Lashgarara et al., 2022; Sahin et al., 2021; Yang et al., 2023).

According to the results of the research, the academic procrastination of students has increased sharply in recent years, especially after the outbreak of Corona, so that in 1400, the prevalence of Academic procrastination among students of the second high school was reported as 0.47 (Kashfi, 2022). As it is known, in today's conditions, especially in the last two years, due to the spread of Coronavirus and the activity of students in cyberspace, the amount of procrastination of students has increased significantly, and if basic measures are not taken this field, the academic problems of students will increase. It will become a

thing of the past and will increase the academic problems of students. Based on this, it is necessary to scientifically identify and control this issue and its causes and factors as much as possible, which seem to be factors such as dependence on cyberspace due to the high activity of students in this field in the last few years and the emergence of this context, addiction is a critical component in aggravating academic procrastination since executive functions can be controlled due to their decisive role in planning, organization, working memory, and regulation of cognitive and metacognitive processes.

However, identifying the role of dependence on cyberspace executive functions in academic procrastination requires conducting field research, which, according to the history of such research, has not been done in Iran and this is considered a research gap. Thus, the current research aimed to solve this research gap by studying the prediction of academic procrastination based on dependence on cyberspace and executive functions in female first-secondary school students to answer the following question:

- Does the prediction model of academic procrastination based on dependence on cyberspace and executive functions have an acceptable fit?

Method

Design

The research method was a descriptive-correlation type via structural equation modeling.

Participants

The statistical population of this research included 8150 female students of the junior high school in Kerman in the academic year 2022–2023. Given the number of the statistical population, according to Morgan's table, 384 students were selected as a sample by the stratified random sampling method (according to the students' educational level) based on the proportion of the statistical population of the first, second, and third grade students in the sample size of female schools.

Instruments

The following questionnaires were used to collect data:
Cyberspace Addiction Test Questionnaire
Widyanto and Mcmurran's (2014) cyberspace addiction questionnaire has 20 questions based on clinical experiences to measure the degree and severity of cyberspace addiction. Each test question is answered with five options "rarely" (1), "occasionally" (2), "frequently" (3), "often" (4), and "always" (5), and the

range of scores is from 20 to 100 swings. This questionnaire defines dependence on cyberspace in five obvious dimensions: using cyberspace (questions 10-12-13-15-19), excessive use of cyberspace (questions 1-2-14-18-20), procrastination when using cyberspace (questions 6-8-9), expecting too much from others when using cyberspace (questions 7-11), lack of control (questions 16-17-5), and neglecting social life (questions 3-4). Widyanto and Mcmurran (2014) have mentioned the content and construct validity of the cyberspace addiction test as appropriate, and its validity and reliability have been reported in previous studies with a Cronbach's alpha of 0.90. In the research of Ghasemzadeh et al. (2018), the Cronbach's alpha of the cyberspace dependence test was reported as 0.88.

Brief Executive Functions Questionnaire

The Brief Executive Functions Questionnaire was devised by Gerrard et al. in 2000. This assessment has two forms for parents and teachers and has 86 questions, which are graded by the parents from 1 to 3, according to the circumstances of the situation for the child as "never", "sometimes" and "always". It examines the child's behaviors at school or home, and is designed for the behavioral interpretation of the executive performance of children aged 5 to 18 years (Guy et al., 2000). Each of the questions is related to one of the subsets of the questionnaire, and these subsets are divided into two main parts: behavior regulation skills and metacognition skills, which are as follows:

a) Behavior regulation skills: inhibition, transmission, emotion control

b) Metacognitive skills: planning, organizing materials, monitoring, working memory, and initiation

The reliability coefficient of this questionnaire for clinical samples in its parent form is 0.82-0.98, and when it is used to evaluate the norm society, this rate reaches 0.80-0.97. The validity and reliability of the Farsi version of the questionnaire for rating the behavior of executive functions (parent form) was conducted by Naimi in the isolated community (Mirzakhani et al., 2014). The original version of the test has good psychometric properties, a simple and straightforward implementation method, and has been introduced as a reliable and practical tool for therapists.

In Shahabi's research, the reliability and validity of the questionnaire were measured that the test-retest reliability coefficient of the subscales of the behavioral rating test of executive functions in inhibition function

was 0.90, orientation was 0.81, emotional control was 0.91, initiation was 0.80, and working memory was 0.80. 0.71, planning 0.81, organization of components 0.79, supervision 0.78, behavior regulation index 0.90, metacognition index 0.87, and the overall score of executive functions 0.89 were obtained. The internal consistency coefficient for this questionnaire ranges from 0.87 to 0.94, which indicates the high internal consistency of all questionnaire subscales (Nodei et al., 2015).

Academic procrastination Questionnaire

This questionnaire was compiled by Solomon and Rothbloom (1984) with 27 items. The questionnaire has three subscales including preparing for the exam (including questions 1–8), preparing academic tasks (including questions 9–19), and preparing essays for the end of the academic semester (including questions 20–27). Questionnaire answers are graded on a Likert scale from never (1) to always (5). The minimum score of this questionnaire is 27, the maximum score is 135, and the cut-off line is 81. Also, in this questionnaire, questions 2, 4, 6, 11, 13, 15, 16, 21, 23, and 25 are scored in reverse. Solomon (1984) reported a coefficient of 0.84 for the internal consistency of this questionnaire. Matiei also estimated the reliability of this questionnaire in a 2011 study using Cronbach's alpha coefficient of 1.86.

Procedure

After selecting the study participants, all the three questionnaires were administered to the participants. Data analysis was done with SPSS25 and Amos24 software, and descriptive and inferential statistics such as mean, standard deviation, and structural equation modeling were used.

Findings

Demographic characteristics

Considering the demographic information of the participants. Among the surveyed respondents, 127 people (33.1 percent) were 13 years old, 156 people (40.6 percent) were 14 years old, and 101 people (26.3 percent) were 15 years old. Regarding their educational grade, from the participants, 127 (33.1%) were in seventh grade, 156 (40.6%) were in eighth grade, and 101 (26.3%) were in ninth grade. The descriptive statistics of the research variables are shown in Table 1.

Table 1.
Descriptive Indices of Research Variables

Variable	Mean	SD	Skewness	Kurtosis
Cyberspace Addiction	58.92	9.37	-0.622	1.96
Executive Functions	170.63	20.92	-0.665	2.23
Academic procrastination	78.67	12.33	-0.766	1.22
To be Obvious	15.26	3.49	-0.02	0.344
Excessive Use	13.97	4.01	-0.029	0.218
Procrastination When Using	9.41	2.83	-0.102	0.368
Expecting Too Much from Others	5.64	2.06	-0.052	0.433
Lack of Control	9.54	2.56	-0.087	0.143
Neglect of Social Life	5.07	2.23	-0.411	0.54
Inhibition	32.68	5.21	-0.304	0.202
Attention Transfer	23.91	3.91	-0.269	0.114
Planning	27.97	3.83	-0.412	1.05
Organizing	14.39	2.71	-0.236	0.237
Supervision	21.92	3.62	-0.321	0.498
Working Memory	22.07	3.63	-0.255	0.107
Initiation	14.06	2.72	-0.244	0.089
Preparing for the exam				
Preparing Daily Academic Tasks	32.08	5.91	-0.671	1.20
Preparing Semester Assignments	22.65	4.56	-0.583	1.49

Examining the assumption of normality of variables

In order to assess the normality of the variables, the Kolmogorov Smirnov test was used.

Table 2.
Kolmogorov-Smirnov Test to Examine the Assumption of Normality of the Variables

Variable	z statistic	Significance	normal assumption
Cyberspace Addiction	1.445	0.054	Is met
Executive Functions	1.029	0.24	Is met
Academic Procrastination	1.283	0.068	Is met

The results of the test show that the significance of most of the research variables is higher than the significance level of $\alpha = 0.05$, so at this level the assumption of the normality of the data is not rejected, so it can be said that most of the research variables have a normal distribution, so parametric tests were used to test the hypotheses.

Also, a correlation matrix was used between the main variables of the research.

Table 3.
Correlation Matrix between Main Variables

Variable	1	2	3
1. Cyberspace Addiction	1		
2. Executive Functions	-0.624**	1	
3. Academic Procrastination	0.728**	-0.712**	1

** Significance less than 0.05

Based on Table 3, the Pearson correlation matrix results show that there is a significant relationship between the research variables.

Evaluation of the proposed pattern using the structural equation model

The fit of the initial model based on the fit indices used in this study is reported in the first row (edited model)

of Table 3. It shows that the values of some of the fitness indices of the initial model indicated that the proposed model needs correction and improvement. For this purpose, in the next step, according to the correction indices (Modification Indices) in the output of Amos 24, paths that were not significant were removed, and the proposed covariance paths (Figure 1) were added to the model. After applying these changes,

the results of their fit indices are given in the second pattern row of Table 3.

As mentioned, the first model does not have a good fit (because the fit indices, i.e., GFI, IFI, CFI, and TLI are less than 0.90) improved, and the fit indices of the final model are acceptable (because the fit indices, i.e., GFI, IFI, CFI, and TLI, are close to 0.90 and above).

Figure 1.

The Modified Model of Predicting Academic Procrastination based on Dependence on Cyberspace and Executive Functions
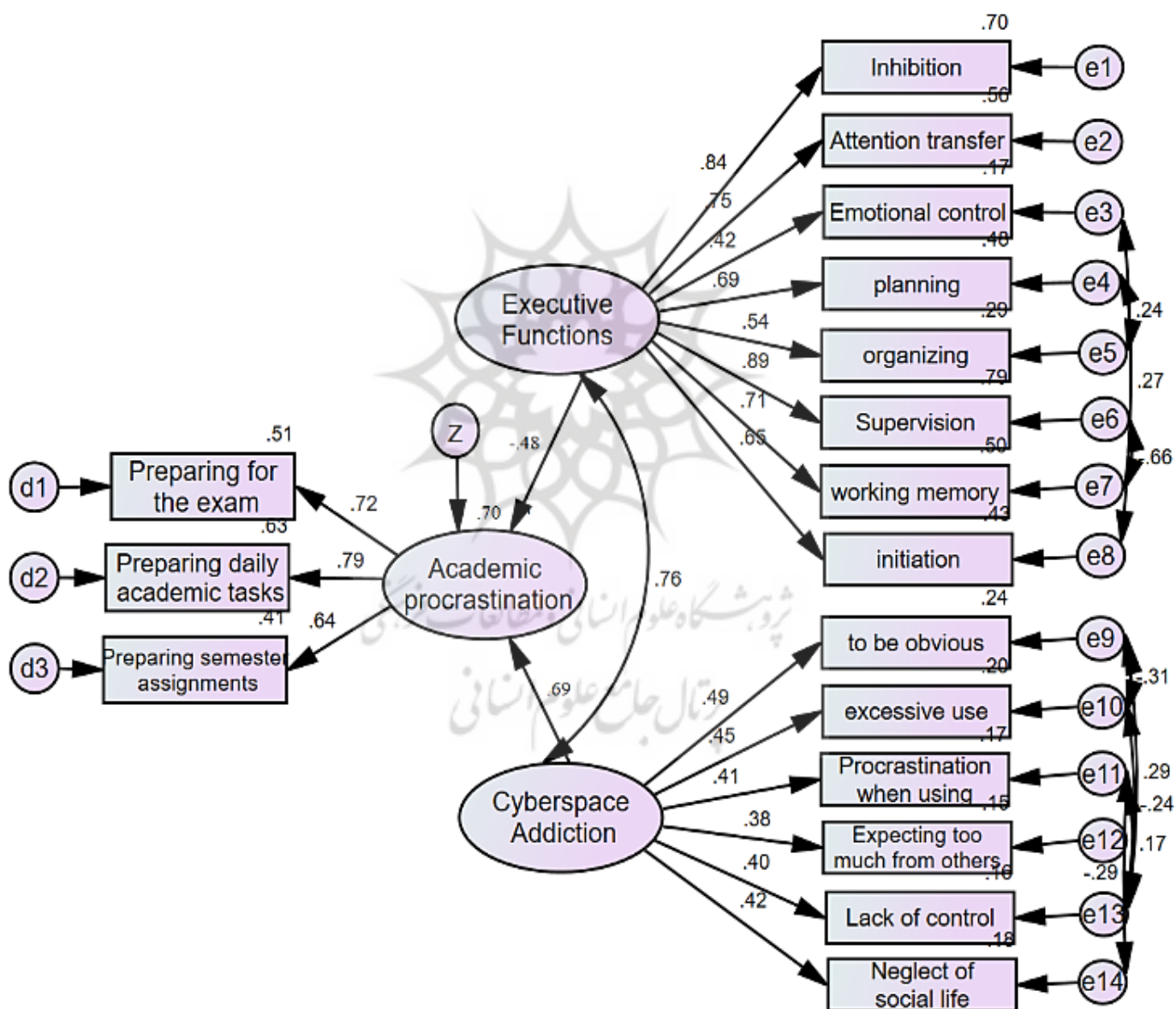
For the fit index X2/Df, values smaller than five are suitable, and closer to zero indicates a good fit of the model. For GFI, IFI, CFI, and TLI, a value close to 0.90 and above is considered an acceptable goodness of fit,

which indicates that the model is good. In relation to the RMSEA index, values close to 0.05 or less indicate a good fit of the model, and a value of 0.08 or less indicates a logical error of approximation. A value

higher than 0.10 indicates the requirement to reject the model (Qassemi, 2018). Therefore, according to the values of the fit indices of the final model (developed model) and the limit of acceptable values mentioned above, it can be said that the model presented in this research is acceptable. The regression coefficients of the model show that the mentioned variables can predict academic procrastination based on dependence on cyberspace and executive functions in junior high school female students of Kerman. By using general fit indices, it is possible to examine if the developed model is generally supported by the collected experimental data, regardless of the specific values reported for the parameters. If the answer is positive, the model is acceptable.

To interpret the values in Table 4, it should be stated that: The non-significant chi-square (CMIN) is equal to 455.97, and the significance level (P = 0.001) shows a favorable result, but the role of the degree of freedom (Df) is also important. In addition, considering that the degree of freedom (Df) of the fitted model (equal to 108) is far from zero and approaches the degree of freedom of the independence model (equal to 136), the model should be viewed favorably.

The number of free parameters for the developed model (NPAR) is 45 showing that the degrees of freedom were not easily spent in developing the model, and this situation is acceptable.

Regarding the relative indices, it should be said that in this table, the relative chi-square value (CMIN/DF) is 4.22, which indicates an acceptable situation for the model. Also, the value of 0.079 of the residual root mean square index (RMSEA) for the developed factor model indicates the acceptability of the model.

In the above table, the Tucker-Lewis fit index (TLI) is equal to 0.904, and the comparative fit index (CFI) is equal to 0.915, and since their values are close to and above 0.90, based on these indices, the developed model is considered acceptable.

In the above table, the value of the Goodness of Fit Index (GFI) is equal to 0.899, and the value of the Incremental Fit Index (IFI) is equal to 0.917, both of which show acceptable values. The values of the general fit indices shown in the above table show that the measurement model of this research is completely acceptable. Considering that the value of R^2 is equal to 0.70, dependence on cyberspace and executive functions simultaneously explain 0.70 of the variance of Academic procrastination.

Table 4.
Fit Indices for the Compiled Patterns and the Final Pattern

Model Fit Summary	X^2	Df	X^2/Df	NPAR	GFI	IFI	TLI	CFI	RMSEA
Default model	1168.18	117	9.984	36	0.722	0.77	0.714	0.768	0.153
Modified model	455.97	108	4.22	45	0.899	0.917	0.904	0.915	0.079
Independence model	3299.57	136	24.26	17	0.315	0.001	0.001	0.001	0.246

Data analysis through regression coefficients in the structural equation model (SEM) shows that there is a significant relationship between dependence on cyberspace and Academic procrastination (p<10.74, C.R=0.69, p<0.05). Therefore, the assumption of the relationship between dependence on cyberspace and the Academic procrastination of students is confirmed with more than 95% certainty.

According to the obtained results, there is a significant relationship between executive functions and Academic procrastination (p<6.7, p<0.05, C.R=β-0.48). Therefore, the assumption of a relationship between executive functions and the Academic procrastination of students is confirmed with more than 95% certainty.

Table 5.
The Structural Pattern of Paths and Their Standard Coefficients in the Final Pattern

Direction	Non-standard B	S.E.	β	CR	P	R^2
Cyberspace Addiction → Academic procrastination	0.363	0.034	0.69	10.74	0.001	0.48
Executive functions → Academic procrastination	1.568	0.234	-0.48	6.7	0.001	0.23

Discussion

This research aimed to model structural equations for predicting academic procrastination based on dependence on cyberspace and executive functions. The results showed that the prediction model of academic procrastination based on dependence on cyberspace and executive functions has an acceptable fit, and dependence on cyberspace and executive functions simultaneously explain 0.70 of the variance of academic procrastination. According to the results, there is a direct and meaningful relationship between dependence on cyberspace and academic procrastination of secondary school students in Kerman province; that is, with increasing dependence on cyberspace, the amount of Academic procrastination of students increases. In confirmation of these research results, Sahin et al. (2021), Lashgarara et al. (2022), and Bahri et al. (2022) reported that there is a relationship between dependence on cyberspace and Academic procrastination. Pariss and Wingrad (2021) stated that one of the factors that has aggravated Academic procrastination in recent years is the emergence of cyberspace and the high dependence of students on it. Cardak's (2023) research, entitled Internet Addiction and academic procrastination among Turkish University Students, showed that academic procrastination is influenced by Internet addiction. The more the Internet is used, the more Academic procrastination occurs. Potter (2023), a research study titled Problems caused by the Internet and cyberspace in schools, shows that the Internet and cyberspace will lead to many problems, and one of them is the increase in Academic procrastination among students.

In his research, Biggs (2020) showed that excessive use of the Internet, especially cyberspace, causes a decrease in academic well-being and an increase in academic procrastination. Therefore, it can be said that when students excessively use cyberspace and give up their entertainment for cyberspace, they prefer searching in cyberspace to talking and interacting with family members because they are too busy with cyberspace. This causes them to stay away from doing schoolwork and consider life without cyberspace as boring and absurd. When students give up doing homework to spend more time in cyberspace, constantly seeking to create new relationships with users of the space, the amount of time they spend in cyberspace causes them not to do their school tasks or assignments, constantly checking their email before doing necessary tasks. Also, working with cyberspace, causes problems in their life: when people around them ask about what they do in the cyberspace, they take a defensive or secretive attitude. When they are in the cyberspace and someone disturbs him, they get upset and shout suddenly; they keep losing their sleep because of spending much time in cyberspace until late at night. They feel that when they are in the cyberspace, the environment is not depressed or nervous as these feelings disappear while going to the cyberspace. A person with this behavior will have problems in terms of academic well-being, and dependence on cyberspace has different effects on academic success as it will increase Academic procrastination.

Other results of the research showed that there is an inverse and significant relationship between executive functions and academic procrastination of high school students in Kerman; that is, with the increase of executive functions, the amount of academic procrastination of students decreases. In confirmation of these results, Amik and Velesh (2014) concluded that strengthening executive function, including working memory, inhibition, planning, and organization, increases academic success and reduces procrastination in academic affairs. Dahlin (2019) showed that strengthening metacognitive and behavior regulation skills improves children's ability in executive functions such as planning, organization, concentration, and attention. Also, strengthening metacognitive skills and behavior regulation skills in order to strengthen executive functions leads to academic success and reduces procrastination among students.

According to Latzman et al.'s (2020) research results, strong executive functions lead to strengthening academic performance, academic well-being, and reducing academic burnout. Miyake et al. (2020) showed that executive functions are considered to be an essential factor in academic success, improving students' academic engagement and reducing student procrastination. Mohammadi Azandriani (2021), in a research entitled "Comparison of executive functions in students with weak and strong academic performance" concluded that there is a difference between the two groups in the variables of organization planning and working memory. Crek et al. (2016) stated that one of the factors affecting procrastination is executive functions. Executive functions are among the abilities that children need in the future for school learning. Based on the results of the present research and some past studies, it can be said that executive functions play a decisive role in students' academic procrastination, so when students gain insight from their knowledge, this insight and knowledge will help them change the way they analyze issues. And if there are any conflicts in this regard, they should resolve these conflicts in a suitable way to have a more appropriate analysis of intellectual and mental issues. They can better understand the meaning of others, communicate with others, and

resolve issues commit to memory and analyze, then their academic procrastination will decrease.

Regarding these results, it can be stated that academic procrastination is one of the most important variables affecting the quality of a student's life. Therefore, in educational fields, academic procrastination is considered as a fundamental issue that affects the quality of education, the way of learning, and teacher-student interactions (Meyer & Turner, 2012). It seems to be one of the possible reasons for ignoring procrastination is that the excitement of procrastination is an invisible and neutralizing emotional state compared to other emotions, and the student does not clearly show this emotional state, which has caused the spread of procrastination in academic fields and executive functions.

Conclusions

In the 21st century, our lives increasingly depend on skills in the processes of executive functions such as purposeful behavior, planning, organization, flexibility, self-regulation, self-control, and other executive functions of the brain. Paying attention to the structures and functions of the frontal lobe of the brain and other executive functions of this part has been more and more noticed by various experts and researchers. Executive functions refer to the ability of individuals to change situations in an adaptive manner in order to successfully engage in purposeful and self-serving behavior. The abnormality of executive functions in the frontal cortex is related to the dense connection between the frontal cortex and other cortical and subcortical parts. Executive functions are guiding instructions that are responsible for people's ability to participate in purposeful, organized, strategic, self-regulation, goal-oriented processing, perceptions, emotions, and activities. In addition, executive functions are integral to the "monitoring" system that works to control behaviors and allow individuals to engage in goal-directed behaviors.

Research limitations

This study had some limitations as follows: The tool used in this research was a questionnaire. Using three long questionnaires simultaneously might have made them tired. The unknown status of research among students made their cooperation weak during the implementation of research. Also, lack of control over all intervening variables such as mental health, socioeconomic status of the family, educational background, etc. was another limitation of this study. Moreover, one of the limitations that most studies face is time limitation which might affect the results.

Practical suggestions

School counselors should give necessary information and awareness to students about the negative effects of excessive use of cyberspace, prepare brochures and provide them to students. In order to encourage students to read them, competitions should be held at the school level. Also, it is suggested to strengthen the executive functions of procrastinating students through special training courses. Through active memory strengthening courses, procrastinating students should be strengthened, and the techniques should be prepared in a brochure and made available to students, parents, and teachers. Argument techniques and planning should be taught to procrastinating students by teachers.

Conflicts of Interest

No conflicts of interest declared.

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