Modeling Structural Relationships of Self-efficacy with Tendency to Virtual Networks through the Mediating Role of Social Adjustment in Gifted Students

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Abstract

Introduction: Cyberspace covers many aspects of human's life and this tendency to cyberspace can be influenced by self-efficacy and emotional aspects. Therefore, the purpose of the present study was to model the structural relationship of self-efficacy with the tendency to virtual networks through the mediation of social adjustment in gifted students.

Method: The research method was correlational-descriptive and in particular structural equations modeling. The statistical population of the present study was all 300 gifted students of Sampad High School in 11th course in the academic year of 2019 in Gorgan city. These students were selected as samples through census method and were evaluated using the virtual networks questionnaire (2014), Scherer Self-Efficacy Questionnaire (1982) and California Compatibility Questionnaire (CCP).

Results: The results showed that there is a significant negative relationship between self-efficacy and social adjustment with tendency to virtual networks. The research model was well-fit and confirmed and 0.39 of the variance of tendency to virtual networks was explained by self-efficacy and social adjustment. Also, social adaptability played a mediating role in the relationship between self-efficacy and the tendency to virtual networks.

Conclusion: Changes in tendency to cybersecurity can be directly explained based on self-efficacy and indirect social adjustment states in gifted students and this study has practical implications for school counselors.

Keywords: Social Adjustment, Self-efficacy, Tendency to Virtual Networks, Gifted Students

Introduction

Using new technologies is one of the obvious manifestations of the present world [1] and virtual networks also play an important role in transforming people's lives as one of the new aspects of these new technologies in the contemporary world [2]. The major disadvantage of virtual networks communications is that communication in virtual networks is fundamentally text-based [3] and, therefore, there are no visual and auditory signals as in face-to-face interactions [4]. Some studies have shown that the tendency to virtual networks is influenced by cognitive, behavioral, and personality contexts such as self-efficacy [5]. Previous studies [6,7] have shown that one of the most crucial aspects in the tendency of individuals to virtual networks is the level of cognition and metacognition. Metacognition is among the famous cognitive constructs that influence learning process and academic performance. It actually refers to psychological structures, knowledge, events [8], and processes that contribute to the control, modification, and interpretation of thoughts [9].

Metacognition has influenced the human beings' cognitive processing through processes such as control, monitoring, planning, and correction, and plays a role in interacting with one's emotional processing style on mental health or vulnerability to mental disorders [10]. Therefore, paying attention to meta-cognition is also important as a construct on which the individual's cognitive activities depend and can influence psychological disorders [11]. On the other hand, as a result of the existence of improper cognitive processing, inefficient information processing structures will be created that result in reduced social interactions and ultimately less adaptability and they are a product of one's mood and environment [12]. The term adjustment is used when a person is involved in a considerable and continuous process to express his/her talents and in reacting to the environment and at the same time in effectively changing it [13]. On the other hand, the term refers to a state of complete equilibrium between organism and environment [14]. This is a process that enables individuals to understand and predict the other individuals' behavior [15], to control their behavior, and to regulate their social interactions [16]. In this regard, Dehghanpour et al. have shown that the amount of using virtual networks has a positive and significant relationship with social adjustment and affection control [17]. Kaur concluded in his research that there is a significant relationship between addiction with virtual networks, perceived social self-efficacy, and social adjustment among the students, and that some differences are also observed between the two genders regarding this issue

[18]. Spada and Marino concluded in their research that social adjustment and emotional processing are predictors of the students' use of virtual networks [19]. Chuang et al. revealed that there are significant relationships among cognitive-mental theories, social adjustment in virtual networks, and self-efficacy resources in virtual networks involving positive and negative behaviors and emotions in learners [20]. Concerning the tendency of the gifted students, recent studies have shown that gifted students' tendency to cyberspace, as a safe space, is increasing for such individuals because the environment cannot meet their needs [21, 22]. Gifted students sometimes incur many disadvantages in education such as boredom as the educational content is always lower than their underlying cognitive-behavioral level [23]. These conditions causes them to experience behavioral and emotional problems and even more frustration, which is in turn a factor for such individuals to harbor cyberspace [24]. Extreme tendencies to virtual networks causes them feelings of loneliness, depression and low self-esteem increase [25] [26]. They are also more vulnerable to financial, physical, and cultural aspects [27]. Therefore, in order to bridge the gap between studies in the consensus of past findings in the form of figure 1, the purpose of the present study is to investigate the mediating role of social adjustment in relationship between self-efficacy on the tendency to virtual networks in gifted students.
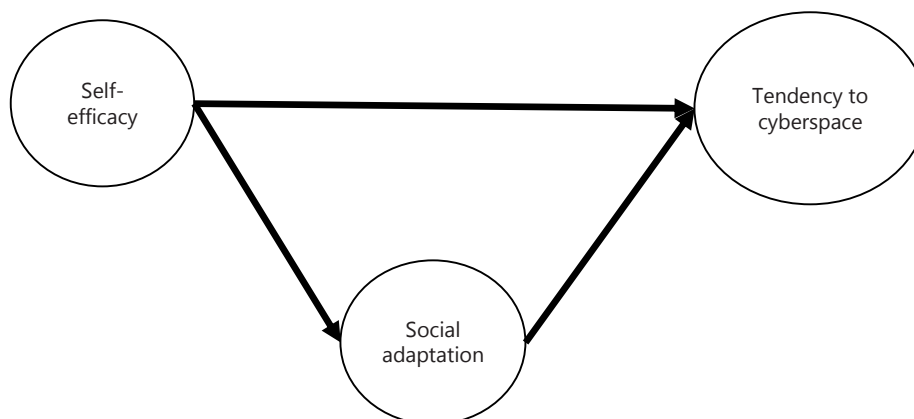
Figure 1. The conceptual model of the research

Method

The research methodology of this study was descriptive-correlational in structural equations modeling type. The statistical population of the present study was all 300 gifted students of Sampad High School in 11th course in the academic year of 2019 in Gorgan city. These students were selected as samples through census method with regard to the number of observed variables and allocation of coefficient of 20 for each observed variable (13 variables observed in the model) by Klein method [28] and considering the probability of the existence of incomplete questionnaires.

The inclusion criteria included: male gender, students of Sampad high schools, 11th year, resident of Gorgan city,

completion of informed consent form, absence of psychological and physical problems for cooperation according to the individual's own words.

The exclusion criteria included: incomplete filling of the questionnaire.

At the executive process, before the beginning of the sampling, the students were explained about the purpose of the study, were assures about the confidentiality of their information, an informed consent letter was received from the students, and then the questionnaires were gathered from the samples.

The collected data were analyzed using structural regression equations using SPSS 18 and Amos 23 software (SPSS18, Amos 23, in the USA, California,

Stanford University).

The tools used in this study were as follows:

The Virtual Networks Questionnaire

This questionnaire has been designed by Mojarradi et al. [29]. The questionnaire consists of 19 questions and includes three aspects of amount of use, type of use, and the amount of trust on the user. The questionnaire is developed based on a 5-option Likert scale from strongly disagree to strongly agree. The validity of the construct and content were confirmed by the developers and Cronbach's alpha coefficient of the amount of use was 0.76, type of use 0.80 and trust on the users 0.71, and in total, it was obtained 0.83. The reliability in the Cronbach's alpha method was obtained 0.81 for the amount of use, 0.79 for type of use, and 0.66 for the amount of trust on users and 0.80 in total in the present research.

Scherer Self-Efficacy Questionnaire (1982)

This scale was developed by Scherer et al. [30] and consists of 17 items. The method of scoring the self-efficacy questionnaire is that each item is awarded from 1 to 5 points. Articles 1, 13, 8, 9, 3 and 15 increase their score from right to left and the rest of the articles increase their score in reverse, ie from left to right. This scale has a maximum score of 87 and a minimum score of 17. It has three subscales: the desire to initiate behavior, different in the face of obstacles, and the desire to expand the effort to complete. Validity and reliability have been confirmed by the manufacturers and the reliability has been obtained by Cronbach's alpha method equal to 0.89. This questionnaire has been translated and validated by Barati [31] in Iran. In the same study, predictive validity and confirmation structure and reliability by Cronbach's alpha method was equal to 0.83.

California Compatibility Questionnaire [CCP]

This questionnaire was developed by Thorpe et al. in 1953 [32] and has 91 questions. It has two poles of personal adjustment and social adjustment. "Social adjustment" has been used in this study and has six subscales including: social frameworks, social skills, antisocial interests, school relationships, family relationships, and social relationships in the form of yes and no in which one point accrues correct answers and 0 point to the false ones based on the test's correction key of all the six subscales. Content and construct validity were confirmed by the developers. The reliability using the Kuder -Richardson method was 0.87 for social frameworks, 0.82 for social skills, 0.80 for antisocial interests, 0.76 for school relationships, 0.89 for family relations, 0.87 for social relations and 0.90 for the total. Content and construct validity were confirmed by Khodayari Fard [2002] and reliability was obtained 0.85 for social frameworks, 0.80 for social skills, 0.78 for antisocial interests, and 0.74 for school relationships, 0.80 for family relationships, 0.83 for social relationships and 0.89 for the total [33]. In the present study, reliability using the Kuder -Richardson method was 0.83 for social frameworks, 0.78 for social skills, 0.76 for antisocial interests, 0.7 for school relationships, 0.83 for family relations, 0.84 for social relations and 0.87 for the total.

Results

Initially, statistical assumptions were evaluated by means of kurtosis, skewness, box, Kolmogorov-Smirnov tests, and the normality of the data was confirmed. The three-variable measurement model was confirmed, too.

The results in Table 1 show a significant correlation between meta-cognitive states and social adjustment with tendency to virtual networks in the subjects. There is a significant negative relationship (0.01) between meta-cognitive states and social adjustment with tendency to virtual networks (i.e. tendency to cyberspace in students decreases when meta-cognitive states and social adjustment increases).

Table 1. Descriptive Statistics and Pearson Correlation Matrix between Self-efficacy and Social Adjustment with Tendency to Virtual Networks

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Initiation of behavior	11.82	2.45	1														
2.Different in confrontation	21.68	2.58	**64.	1													
3.Expand the effort	13.83	3.38	**78.	**59.	1												
4.Efficacy	41.18	5.04	**61.	**75.	**60.	1											
5.Social relationships	5.42	1.864	**20.	**21.	**20.	**24.	1										
6.Family relations	4.75	1.086	**18.	**25.	**24.	**16.	**42.	1									
7.School relationships	4.10	1.705	**23.	**26.	**25.	**18.	**49.	**42.	1								
8.Social interests	4.96	1.246	**19.	**30.	**24.	**29.	**46.	**53.	**44.	1							
9.Social skill	3.75	1.778	**21.	**25.	**19.	**27.	**52.	**39.	**45.	**44.	1						
10.Social framework	4.11	1.771	**26.	**20.	**18.	**20.	**62.	**47.	**49.	**52.	**47.	1					
11.Social adjustment	23.27	5.826	**23.	**21.	**21.	**28.	**82.	**80.	**78.	**61.	**63.	**58.	1				
12.Amount of use	13.73	2.461	**19-.	**15-.	**15-.	*12-.	**18-.	*10-.	**20-.	*14-.	**19-.	**17-.	**24-.	1			
13.Type of use	10.24	1.847	*15-.	**20-.	**18-.	**18-.	**16-.	*09-.	**13-.	**18-.	**10-.	**18-.	**28-.	**50..	1		
14.Trust on users	15.35	1.708	**21-.	**18-.	**17-.	**19-.	*14-.	**14-.	**17-.	**21-.	**16-.	**17-.	**17-.	**43.	**54.	1	
15.Tendency to cyberspace	39.32	5.193	**24-.	**21-.	**31-.	**20-.	**19-.	**18-.	**20-.	**23-.	**20-.	**19-.	**35-.	**61.	**69.	**70.	1

** Significant at the level of 0.01.

According to Table 2, the value of Root Mean Square Error (RMSEA) is equal to 0.034, so it is less than 0.1 that indicates that the mean square of the model errors is appropriate and the model is acceptable. In addition, the

chi-square value in degree of freedom of 2.421 is between 1 and 3 and the amount of Goodness of Fit Index (GFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI) indexes are approximately equal to and greater than 0.9, indicating that the measurement model of the research variables is an appropriate model.

According to Table 3, self-efficacy pathways and social adjustment have a significant direct effect on tendency to

virtual networks. Specifically, self-efficacy affects the tendency to virtual networks and social adjustment affects the tendency to virtual networks.

As presented in table 4, the two indirect pathways considered with regards to the values obtained in bootstrap method were significant and confirmed.

**Table 2.** Fit Indices Derived from Data Analysis and Variables

Test Name	Explanations	Acceptable Amounts	Achieved Amount
x^2/df	Relative Chi‑square	<3	2.421
RMSEA	Root Mean Square Error	<0.1	0.034
GFI	Goodness of Fit Index	>0.9	0.997
NFI	Normed Fit Index	>0.9	0.996
CFI	Comparative Fit Index	>0.9	0.989
DF	119		

Table 3. Direct Model Estimation by Maximum Likelihood (ML[3]) Method

Variable	b	β	R2	t	Sig
Self-Efficacy on tendency to virtual networks	-0.351	-0.209	0.042	3.111	0.001
Social adjustment on tendency to virtual networks	-0.304	-0.198	0.060	4.321	0.001

Table 4. Direct Estimation of Model by Bootstrap Method

Variable	Amounts	Lower limit	Upper limit	Significance
Self-Efficacy on tendency to virtual networks through mediating of social adjustment	-0.391	-0.197	-0.429	0.001
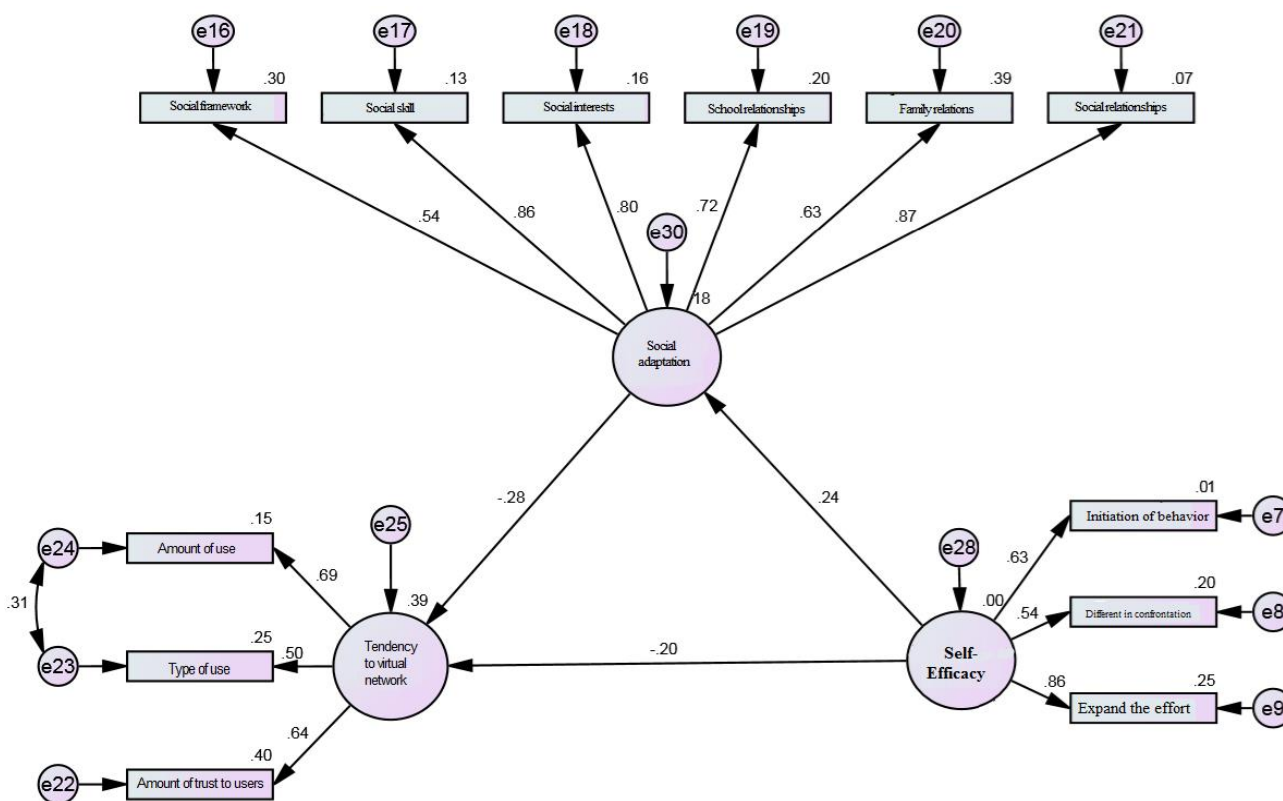
Figure 2. Final tested model along with standardized prediction statistics

Discussion

The main purpose of this study was to investigate the mediating role of social adjustment in the relationship of self-efficacy on tendency to virtual networks in gifted students. According to the results of the conducted analysis, social adjustment in the relationship between self-efficacy on tendency to virtual networks in gifted students. According to the results of the conducted analysis, social adjustment in the relationship between

self-efficacy and the tendency to virtual networks has an indirect effect in gifted students. These results are in line with the findings of Allen et al. who found that inappropriate use of virtual networks is due to the level of emotions' processing and self-efficacy in users [6]. Kaur concluded in his research that there is a significant

relationship between addiction with virtual networks, perceived social self-efficacy, and social adjustment in the students, and that differences are also observed between the two genders regarding this issue [18]. Chuang et al. also concluded that significant relationships are observable among cognitive theories, social adjustment in virtual networks, and self-efficacy resources in virtual networks including positive and negative emotions and behaviors in learners [20]. Dehghanpour et al. showed in their research that the amount of using virtual networks has a positive and significant relationship with social adjustment and affection control [17]. Spada and Marino concluded that social adjustment and emotional processing are predictors of students' use of virtual networks [19].

In explaining these results, it can be stated that proper management of self-recognition during stressful conditions, creates a better self-efficacy [6]. Actually in such conditions, individuals receive less environmental pressures and as a result performance improves in any environment [30]. External features, which can explain adjustment construct as adjusting mediators of behaviors and choices, are the characteristic of cognitive processing and cognitive adjustment [19]. From a cognitive sciences perspective, it can be pointed out that social adjustment is known as a category of schemes based on information processing which include symbolic and non-symbolic embodiments and processes [12], and reduction of affections expression is essentially indicative of a type of lack or misregulation of cognition, and thus any damage to cognitive processing capacities based on failure in cognition may be a potential risk factor for a variety of risky behaviors and problems [8]. On the other hand, adjustment seems to refer to a cognitive-emotional style that results in a specific impairment in positive cognitive processing and expression and its true meaning is a distress in verbal description of emotions [7]. Positive adjustment appears to have components similar to these avoidant and problem-oriented coping strategies, one of which is characterized by a difficulty in distinguishing between physical sensations and feelings [9] in a way that individuals with negative adjustment have deficiencies in internal emotions, verbal expression and as a result their body expresses their emotion on their behalf [20].

Meta-cognitive states such as strategy and positive awareness are capable of cognitively processing information [15]. When a positive adjustment is made, the individual would not be emotionally and cognitively distressed. [11]. Thus, these individuals are usually able to identify, understand, and describe their emotions and are more capable of adapting with stressful situations because of their emotional awareness and ability to cognitively process their emotions [34]. If individuals are not able to express and delete the negative emotions caused by stress, then the psychological part of the emotion and psychological distress expression systems increases, which results in a tendency to express unadaptable behavior in any way and in any place such as cyberspace to deplete emotions and pressures to reduce the tension [35].

It is suggested to conduct this research in a broader area with samples from different and larger communities to make the results more generalizable. By paying attention to training based on emotion regulation and self-efficacy improvement, counselors and psychologists can reduce the negative tendencies to cyberspace in gifted schools.

The limitations of this study included limited gifted students' schools, limited male gender in these schools, limitation of students on 11th at high schools and limitation in using the self-report questionnaire.

Conclusion

This study showed that social adjustment plays a mediating role in the relationship between self-efficacy with the students' tendency to virtual networks. In general, 0.31 of the explained variance of tendency to virtual networks by social adjustment and self-efficacy can be explained in direct and indirect paths. In general, the students with stronger self-efficacy have a better social adjustment and less negative tendency to cyberspace.

Conflict of interest

There are no conflicts of interest.

Ethical Approval

All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages and signed the informed consent. They were also assured about the confidentiality of their information. Moreover, they were allowed to leave the study whenever they wish, and if desired, the results of the research would be available to them.

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