



Roles of Smartphone Addiction and Academic Self-Concept in Predicting Achievement Motivation of Gifted Students

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Abstract

Introduction: Psychologists and education experts are now interested in analyzing the psychological, cognitive, personal, and communicative characteristics of gifted students. The present study aimed to investigate the effect of smartphone addiction and academic self-concept in predicting the gifted students' achievement motivation.

Methods: The statistical population of this cross-sectional study included all gifted high school students of Tehran within the 2022–23 academic year. The stratified cluster sampling technique was employed to select 412 students as the research sample. The participants were asked to fill out the research measurement tools (i.e., Smartphone Addiction Scale, Academic Self-Concept Questionnaire, and Achievement Motivation Questionnaire). The Pearson correlation coefficient and the stepwise regression were used to analyze the data.

Results: According to the results, there was a negative significant relationship between smartphone addiction and achievement motivation, whereas there was a positive significant association between academic self-concept and achievement motivation ($P < 0.001$). In fact, smartphone addiction and academic self-concept predicted a 23% variance in the achievement motivation of students. Moreover, smartphone addiction contributed further to the achievement motivation of gifted students.

Conclusion: Based on the results, paying further attention to the effects of smartphone addiction and academic self-concept on the achievement motivation of gifted students is emphasized. The findings can be used as an appropriate model for designing and developing certain programs to reduce smartphone addiction, improve academic self-concept, and enhance the academic motivation of students.

Keywords: Self-concept, Achievement motivation, Smartphone addiction, Gifted students

Article History:

Received: 06 September 2022
Accepted: 18 December 2022

Please cite this paper as:

Hamed Z, Jayervand H, Hooman F. Roles of Smartphone Addiction and Academic Self-Concept in Predicting Achievement Motivation of Gifted Students. *Health Man & Info Sci.* 2023; 10(1): 14-19. doi: 10.30476/jhmi.2023.98527.1176.

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Introduction

Motivation has always been undeniably important in education. Studies on education have also emphasized in recent decades that motivation is a key permanent factor in improving academic achievements made by students (1). Ensuing from personal needs, motivation is generally an inner phenomenon that forces an individual to intrinsically become active (2). Motivation plays a central role in justifying behaviors, predicting the effects of actions, and directing behaviors to achieve the goals (3, 4). It energizes learners, directs their activities, and nurtures their behaviors (5). According to Peng (6), motivation is defined as a process whereby a person's activities are stimulated and maintained until a goal is achieved. In other words, motivation means the impetus for a person's activities or an organism's

intrinsic states that direct behaviors toward a specific goal (7). Moreover, the construct of achievement motivation in educational environments would refer to the behaviors that result in learning and progress (8). In fact, this motivation is a learner's willingness to perform a task properly in a specific realm and evaluate his/her performance spontaneously. Therefore, it leads to more learning and further achievements in students (9, 10). Research studies have indicated that the majority of innovations, productions, discoveries, and creativities result from high levels of diligence and motivation. Hence, there is a significant relationship between learning and motivation. In addition, a learner's prior knowledge affects his/her motivation (11).

Achievement motivation is also an important factor from the perspective of gifted students who consider themselves smarter than their books and

may not be encouraged enough within the teaching process. Different studies have reported that gifted children are superior in intellectual areas, physical status, social popularity, academic achievement, emotional stability, and ethical affairs (12, 13). According to a review of recent conceptual studies on the psychology of giftedness, turning initial potential opportunities into amazing achievement experiences in different areas depends on concentration on the undeniable role of people's non-cognitive abilities or social and emotional capabilities (14).

In this regard, various factors affect achievement motivation in gifted students. Apparently, smartphone addiction is among those factors. With the worldwide pervasiveness and rapid popularity of the Internet and artificial intelligence that are now used in telecommunication equipment, many people have increasingly been using smartphones as important electronic devices in their daily lives (15). As a result of advances in science and technology, smartphones have now become an indispensable aspect of daily life. As the number of smartphone users is now growing, many people consider their lives difficult without using smartphones. Therefore, smartphone addiction has emerged (16, 17). In fact, smartphone addiction is defined as the compulsory use of smartphones characterized by enthusiasm, dependence, tolerance, loss of control, and growing use for satisfaction (18). The prevalence of cell phone dependence is unknown, but it is prevalent in all cultures and societies and is rapidly rising (19). According to the report of the researchers, the number of Iranian mobile phone users is over 53 million, and 69% of them have a smartphone (20). Mokhtarinia et al. (21) reported that the prevalence of smartphone addiction among high school students in Iran was 51.4%. Smartphones are among the greatest inventions of modern society, improving our lives in different ways. Nevertheless, they can have unpleasant side effects. The dependence of a growing number of adolescents on smartphones has become a matter of great concern (22, 23). According to research evidence, adolescents cannot live without smartphones. In other words, they have manifested similar symptoms of abnormal addiction to the use of smartphones (24).

Academic self-concept is another factor affecting achievement motivation. Self-concept means identifying and accepting self-characteristics. In other words, a person's behaviors in different situations indicate to what extent he/she knows and accepts himself/herself (25). In fact, self-concept is a psychological attribute that refers to a person's belief in his/her abilities and talents in doing different

activities successfully to achieve the desired goals. Thus, academic self-concept denotes a realistic attitude toward academic efficiency or institutional efficiency. It is mainly based on a student's academic identity (26).

Generally, students with higher levels of academic motivation accept more activities, perform more tasks, and make more achievements (27). If a person realizes that his/her academic or occupational activities do not lead to his/her goals and needs, the foregoing psychological force will reduce, and motivational harm will emerge. In this case, the person becomes cognitively dubious about continuing his/her activities. Disruption in motivation can cause emotional and behavioral problems and result in pessimism, anxiety, depression, mental problems, and a substantial decline in personal, social, and occupational functions. It can also have adverse effects on academic achievement in students (28). The rationale behind this study is highlighted with respect to the positive effects of achievement motivation on gifted students as well as the lack of similar studies addressing a combination of the research variables. It is also essential to provide gifted students with different but special academic conditions. Based on the presented materials and research background, the aim of this study was to investigate the effect of smartphone addiction and academic self-concept in predicting the achievement motivation of gifted students.

Methods

The statistical population of this cross-sectional study included all male and female students of junior and senior high schools for gifted students in Tehran within the 2022–23 academic year. The stratified cluster sampling method was employed to randomly select one district in Tehran, the education department of which was asked for a permit to conduct this study and inquire about the number of schools for male and female gifted students. After arrangements were made with the administrative boards of those schools, the research objectives were explained. Three classes were then selected from all classes of each school, and research questionnaires were distributed among the students of those classes. The inclusion criteria were giving consent for participation in the study, studying at a high school for gifted students, and completing all research questionnaires. The exclusion criteria were unwillingness to continue participation in the study and failure to complete all questionnaires. Finally, 412 students met the inclusion criteria and participated in the study. After the arrangements

were made, the research objectives were explained to the gifted students, who were then given the research questionnaires. As to ethical considerations, they were assured that the research data would be kept confidential and used anonymously.

Measurement Tools

Achievement Motivation Questionnaire: Designed by Harmans (29), the Achievement Motivation Questionnaire includes 29 items scored on a four-point scale defined as A (1), B (2), C (3), and D (4). Scores above the average indicate higher levels of achievement motivation, whereas those below average refer to lower levels of achievement motivation. Derakhshanrad and Piven (30) reported a Cronbach’s alpha of 0.95 for the questionnaire.

Smartphone Addiction Scale: Designed by Sevari (31), the Smartphone Addiction Scale is a 13-item self-reporting tool scored on a five-point Likert scale (i.e., always, often, sometimes, seldom, and never) ranging from 1 (for “never”) to 5 (for “most of the time”). Sevari (31) reported a Cronbach’s alpha of 0.85 for the scale.

Academic Self-Concept Questionnaire: This 15-item questionnaire was designed to evaluate different dimensions of academic self-concept: general, institutional, and non-institutional. It is scored on a four-point Likert scale (ranging from 1 for “strongly disagree” to 4 for “strongly agree”). Each respondent’s minimum and maximum scores are 15 and 60, respectively. Higher scores indicate higher levels of academic self-concept. Afsharizadeh et al. (32) reported a Cronbach’s alpha of 0.87 for the questionnaire.

Statistical Analyses

Descriptive statistics (i.e., mean and standard

deviation) and inferential statistics (i.e., Pearson correlation coefficient and stepwise regression) were used for data analysis in SPSS 27 to predict achievement motivation based on smartphone addiction and academic self-concept.

Results

According to the demographic findings, the mean ages of female and male gifted students were 16.86±3.34 and 17.12±3.80 years old, respectively. The demographic characteristics of gifted students are reported in Table 1.

Table 2 reports the mean, standard deviation, skewness, and kurtosis of research variables, whereas Table 3 presents their correlation coefficients.

According to the results, there was a negative significant relationship between smartphone addiction and achievement motivation (r=-0.34, P<0.001), whereas there was a positive significant relationship between academic self-concept and achievement motivation (r=0.42, P<0.001) (Table 3). The stepwise regression analysis was conducted to determine which variable had a more effective role in predicting achievement motivation. In fact, smartphone addiction and academic self-concept were considered as the predicting variables, and achievement motivation was used as a criterion variable in the equation.

According to Table 4, academic self-concept played a key role in predicting achievement motivation in the first model. The correlation coefficient of this variable with achievement motivation was 0.42, and it showed to predict 18% of changes in achievement motivation. In the second model, smartphone addiction was entered into the equation after academic self-concept.

Table 1: Demographic characteristics of gifted students

Gender (N (Percent))		Age (years)		Grade (N (Percent))	
Male	Female	Male	Female	Junior high schools	Senior high schools
215 (52.18%)	197 (47.82%)	17.12±3.80	16.86±3.34	237 (57.52%)	175 (42.48%)

Table 2: Mean, standard deviation (SD), skewness, and kurtosis of the research variables

Variables	Mean	SD	Skewness	Kurtosis
Achievement motivation	72.00	9.90	0.21	-0.33
Smartphone addiction	51.33	8.63	-0.06	-0.35
Academic self-concept	37.22	5.62	-0.08	-0.40

Table 3: Pearson correlation coefficients among the research variables

Variables	Achievement motivation	
	r	P
Smartphone addiction	-0.34	0.001
Academic self-concept	0.42	0.001

Table 4: Results of simultaneous regression analysis

Model	Predictor variable	F	R	R ²	B	SE	β	t	P
1	Academic self-concept	88.72	0.42	0.18	0.75	0.08	0.42	9.41	0.001
2	Academic self-concept and smartphone addiction	62.81	0.49	0.24	0.28	0.05	0.25	5.51	0.001

The correlation coefficients of these two variables with achievement motivation were equal to 0.49, and they managed to predict 24% of changes in achievement motivation. The use of academic self-concept increased the prediction power by 6%. With a standard beta of 0.42, academic self-concept contributed the most to the prediction of changes in achievement motivation. With a standard beta of 0.25, both academic self-concept and smartphone addiction had effective roles in predicting achievement motivation.

Discussion

This study aimed to investigate the effect of smartphone addiction and academic self-concept in predicting the achievement motivation of gifted students. The research finding indicated that there was a negative significant relationship between smartphone addiction and achievement motivation in gifted students. This finding is consistent with the research results of previous studies (33). Sadri et al. (33) reported that social network addiction had a reverse and significant relationship with self-concept in female high school students. Another research finding indicated that there was a positive significant relationship between academic self-concept and achievement motivation in gifted students. In other words, academic self-concept improved both motivation and academic achievement. This finding is consistent with the research results of previous studies (34). In this regard, Arfaa Baloochi and Gaffari (34) reported that achievement motivation and academic self-concept in students were correlated significantly.

The youth and students have been drawn to smartphones due to the lack of appropriate recreational and sports facilities suiting their enthusiasm as well as the attractions, features, and easy accessibility of smartphones used as pastimes. In the students with extreme addiction to smartphones, achievement motivation showed a downward trend because their addiction had adverse effects on their education and GPAs (33). Hence, smartphone addiction had inverse relationships with academic achievements and students' GPA. Motivation can make students interested in studying and learning in educational environments. However, researchers have reported that the extremely addictive use of new

technologies such as smartphones can have adverse effects on mental health, quality of sleep, attention, concentration, and responsibility in students. Hence, the students who are addicted to smartphones involve their minds and bodies with this technology for long periods of time, thereby forgetting their main goals including attention, learning, and research. As a result, their academic achievements are affected negatively. Their poor achievement and even failure will affect their enthusiasm and achievement motivation. Eventually, a negative cycle will emerge.

The students who perceived their inner values experienced higher levels of cognitive involvement, thereby benefiting from further academic motivation and achievement. Regardless of their personal differences, students should benefit from some positive traits such as self-reliance, initiation, learning enjoyment, belief in active or passive learning, and intellectual development. Hence, academic self-concept and academic identity have substantial effects on achievement motivation in students (34). In addition to personal traits and academic identity that affect academic self-concept, the specifications and features of schools have considerable effects on the academic self-concepts of students. Therefore, schools should provide all the necessary equipment in order to nurture various talents. Students with self-concepts set specific goals to be achieved through relevant behaviors, cognitions, and motivations.

This study faced certain limitations. Since it was a descriptive-correlational study, causal relationships cannot be inferred from the results. The statistical population included the students from high schools for gifted students in Tehran. Hence, caution should be taken into account while generalizing the research results to gifted students from other cities. It is recommended that further studies should be conducted on other samples to generalize the results.

Conclusion

The research results indicated that the achievement motivation of gifted students had a significant relationship with smartphone addiction and academic self-concept. The education experts and officials of Iran should plan the educational environments and school curricula in a way that gifted students can benefit further from the positive aspects of their personalities

and behaviors. Moreover, necessary measures should be taken to motivate students further by improving their academic motivations and reducing their academic discouragement. Given the role of smartphone addiction in decreasing achievement motivation, it is recommended that training courses should be held for teachers and parents. In fact, parents should spend more quality time with their children and provide them with conditions for active healthy recreation. By doing so, parents enhance their communication skills in the family and free their children from isolation, smartphone addiction, and inclination toward social media.

Ethical Considerations

The study was approved by the Ethics Committee of Islamic Azad University- Ahvaz Branch (code: IR.IAU.AHVAZ.REC.1402.004).

Funding

Self-funding

Conflict of Interest: None declared.

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