Structural Relationships Modeling of High School Students' Scholastic Adjustment and Performance based on Attachment to the Teacher with Mediation of Problematic Cell phone Use

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Abstract

Aim: This study was conducted to examine the structural relationships modeling of high school students' performance and scholastic adjustment based on attachment to the teacher with the mediation of the problematic cell phone use (PCU). This descriptive-correlational research used structural equations modeling. From among students of the academic year 2021-2022, 748 male and female junior high school students of Rasht city were selected by two-stage cluster sampling method. They responded to the electronic version of Baker and Siryk's Student Adaptation to College Questionnaire (1984), Pham and Taylor's academic performance questionnaire (1990), Jenaro's cell phone overuse scale (2007) and Attachment to the Teacher Scale by Lavasani and Mehdipour (2015). The results indicated that secure attachment to teacher has a constructive role in students' academic performance and adaptability, and neutralizes the impact of PCU. In addition, in students with anxious/avoidant attachment to teacher, PCU creates a compensatory role for the lack of secure attachment. It is essential that students and teachers learn how to create **a** secure attachment to improve students' performance and academic adjustment.

Keywords: Cell phone, Students, Attachment to teacher, Academic adjustment, Academic performance.

Introduction

Academic adjustment becomes more important when a teenager enters junior high school, and it is affected by motivation, family status, personal and social skills, and cultural and psychological factors. One of the important social factors that play a role in the occurrence of adjustment is the child's relationship with caregivers in the first years of life, which leads to the formation of attachment styles and is the basis of interpersonal relationships in adulthood. Fogel (1997) considers attachment as a stable emotional bond between two people such that each of the two parties tries to maintain proximity to the object of attachment and behaves to ensure that the relationship continues. Likewise, during adolescence, communication with the teacher and peers also has a special place (Tian, Han, and Huebner, 2014). In this research, supportive relationships are considered as attachment to teacher.

Furthermore, attachment is considered an influencing factor in the Internet addiction, which is in other words the problematic cell phone use (PCU). (Mikulincer and Shaver, 2007). Liu et al. (2020) investigated the relationship between the long-term use of mobile phones and poor academic performance in adolescents, and reported increasingly poorer academic performance associated with increasing the use of mobile phones.

Now, the main research question is whether PCU has a mediating role in the relationship between attachment to teacher and students' academic performance and adjustment.

Methodology

This descriptive-correlational research used structural equations modeling. Attachment to teacher was an exogenous variable, adjustment and academic performance were endogenous variables, and PCU was a mediator variable. The statistical population includes all male and female students of junior and senior high schools in Rasht in the academic year 2021-2022. The sample size was 784. To implement the study, first, all the schools affiliated with the Education Department of Rasht were listed. Then two-stage cluster sampling method was used to select some schools and then several classes in those schools. After that, with the informed consent and   permission of the school principal, the link of the questionnaires was presented to him and then it was made available to the students through the social media channels for students. The research was conducted by an online survey method. For this purpose, online versions of the tests used in this study were designed in the "Porsline" website platform, and distributed widely through educational social platforms (such as WhatsApp, Telegram, and Shad). To collect data, we used attachment to the teacher scale by Lavasani and Mehdipour (2015), student adaptation to college questionnaire by Baker and Siryk (1984), educational progress test (EPT), adapted from Pham and Taylor's research (1990), and cell phone overuse scale (COS) by Jenaro (2007).

Results

The results of the demographic profile of junior and senior high school students show that, 591 individuals (70.6 percent) of the participants were girls, 463 individuals (55.3 percent) were in the senior high schools, 212 individuals (25.3 percent) were in the 11th grade, and 805 individuals (96.2 percent) were in public schools. The results of the fit indices show that the proposed model has an acceptable fit although RMSEA was less than 0.1, and PCFI and PNFI were greater than 0.5 (Marsh and Roche, 1999; Fabrigar, Wegner, McCallum and Strahan, 1999). Furthermore, to improve the model, first, two non-significant paths of the model (secure attachment to PCU and secure attachment to academic performance) were removed. In the second step, the correlation between the covariance errors was plotted to create the final model (Figure-1). The results show that the modifications improved the goodness of fit of the final model to an acceptable level ($\chi2/df$=3.928, RMSEA=0.051, CFI=0.962, GFI=0.945).
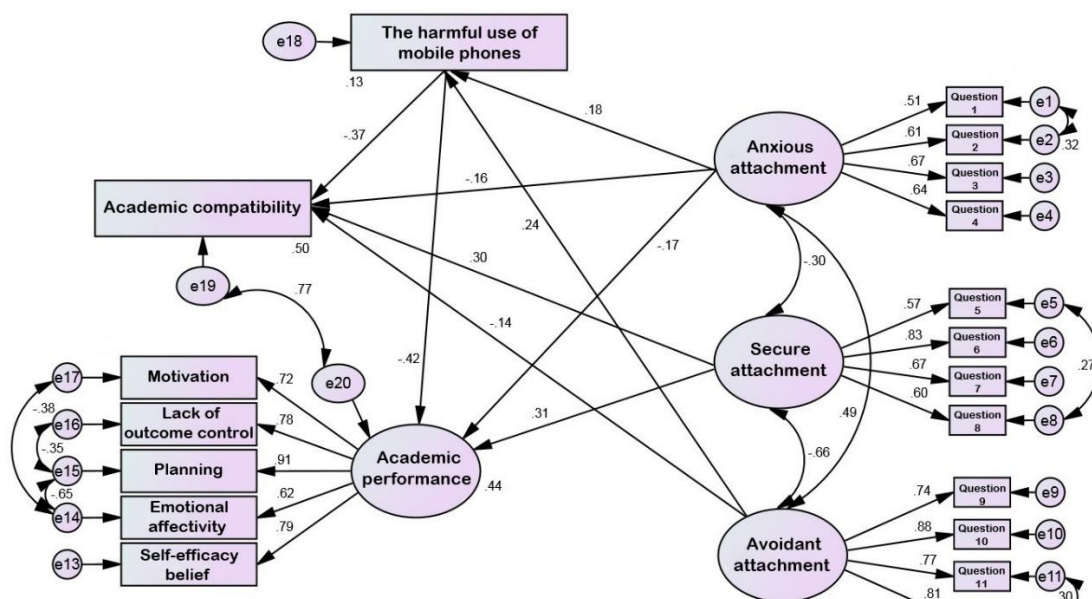

Figure 1. Standard coefficients of the final model (modified) of the structural relationship of adjustment and academic performance of students based on the style of attachment to the teacher with the mediation of PCU

The results of the direct relationships of the research variables in the final model (Figure-1) show that all path coefficients in the whole sample, except secure attachment style to PCU and avoidant attachment style to academic performance, were statistically significant. In the final research model, secure attachment style variables had a positive and significant relationship with adjustment and academic performance, and avoidant and anxious attachment styles had a positive and significant relationship with PCU. A negative and significant relationship was observed between the variables of anxious attachment style and adjustment and academic performance, between avoidant attachment style and academic adjustment, and between PCU and adjustment and academic performance. Table 1 shows the standard coefficients of all paths and critical values in the final model.

Table 1. Standard coefficients of the paths of the final model (modified)

Path	Standard coefficients	Standard error	Critical ratio	Significance level (P)
Secure attachment to the teacher --> Academic adjustment	0.301	1.641	7.064	<0.001
Secure attachment to the teacher --> Academic performance	0.311	0.335	7.604	<0.001
Secure attachment to the teacher --> PCU	0.049	1.653	0.844	0.399
Anxious attachment to the teacher --> Academic adjustment	-0.162	1.874	-4.023	<0.001
Anxious attachment to the teacher --> Academic performance	-0.172	0.414	-4.130	<0.001
Anxious attachment to the teacher --> PCU	0.175	1.838	3.327	<0.001
Avoidant attachment to the teacher --> Academic adjustment	-0.141	0.852	-4.271	<0.001
Avoidant attachment to the teacher --> Academic performance	0.063	0.276	1.268	0.205
Avoidant attachment to the teacher --> PCU	0.244	0.897	5.264	<0.001
PCU --> Academic adjustment	-0.367	0.039	-12.579	<0.001
PCU --> Academic performance	-0.421	0.010	-12.486	<0.001

Table 2 shows the results of bootstrap test in the MACRO program of Preacher and Hayes (2008) to test the mediating paths.

Table 2. Bootstrap results for indirect paths in the final model

Path	Indicator					
	Data	Boot	Bias	Error	lower limit	Upper limit
From secure attachment to the teacher to academic adjustment through the PCU	-0.0170	-0.0108	-0.0062	0.0153	-0.0416	0.0196
From secure attachment to the teacher to academic performance through PCU	-0.0206	-0.0119	0.0087	0.0170	-0.0449	0.0218
From anxious attachment to the teacher to academic adjustment through the PCU	-0.0642	-0.0512	0.013	0.0138	-0.0793	-0.0248
From anxious attachment to the teacher to academic performance through the PCU	-0.0736	-0.0563	0.0173	0.0151	-0.0868	-0.0262

From avoidant attachment to the teacher to academic adjustment through the PCU	-0.0895	-0.1070	-0.0175	0.0178	-0.1426	-0.0730
From avoidant attachment to the teacher to academic performance through the PCU	-0.1027	-0.1176	-0.0149	0.0193	-0.1569	-0.0810

The final model of this research has six indirect or mediating paths. PCU has a mediating role in the relationship between anxious attachment to the teacher and academic adjustment and academic performance. In addition, a similar result was obtained for avoidant attachment. However, the PCU did not play a mediating role in the relationship between secure attachment to the teacher and academic adjustment and academic performance (Table-2).

Discussion and conclusion

The results of the bootstrap analysis reveal that the variable of problematic cell phone use does not play a mediating role in the relationship between secure attachment to the teacher and academic performance. This means that PCU cannot strongly change the effects of secure attachment to the teacher on academic performance and adjustment. This finding indicates that if a secure attachment to the teacher is formed, it will have an improving effect on students' adjustment and performance, and this relationship, at least according to the data of this study, will not be distorted by PCU.

The results show that, in general, all paths to PCU, except safe attachment style paths, and avoidant attachment style paths to academic performance were statistically significant, which indicates the strong effect of secure attachment on academic performance and adjustment. The final model of the research shows a positive and significant relationship between secure attachment style and adjustment and academic performance, and between avoidant and anxious attachment styles and PCU. In addition, in this model, negative and significant relationships were observed between anxious attachment style and adjustment and academic performance, between avoidant attachment style and academic adjustment, and between PCU with adjustment and academic performance. Considering the estimates of the indirect effect in the bootstrap samples, the strongest indirect effects pertained to secure attachment paths with academic performance and adjustment. These results tell education psychologists that academic performance and adjustment can be effectively improved, and the consequences of PCU can be significantly reduced through developing a secure attachment style to the teacher.

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