Determining the Effectiveness of an Educational Program Derived from a Validated Model of Academic Engagement on Academic Perfectionism among High School Students in Hamadan

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ABSTRACT

Objective: Students with perfectionist concerns impose significant pressure on themselves, which can lead to negative feelings towards school and decreased participation in academic-related tasks. The aim of this research was to determine the effectiveness of an educational program derived from a validated model of academic engagement on the academic perfectionism of students.

Methods and Materials: In this quasi-experimental study, the population included 2500 female high school students in Hamadan, and the research sample consisted of 40 students selected through multi-stage cluster random sampling. These students were divided into two groups of 20 for the experimental and control groups, respectively. Students' perfectionism was measured using the Positive and Negative Perfectionism Scale by Short et al. (1995). Data analysis was conducted using Analysis of Covariance (ANCOVA) through SPSS version 25.

Findings: The results indicated that the educational program derived from the validated model of academic engagement significantly impacted both positive perfectionism (P < .001) and negative perfectionism (P < .001) among the female high school students in Hamadan.

Conclusion: It can be concluded that the educational program derived from the validated model of academic engagement was effective in addressing academic perfectionism among high school students in Hamadan.

Keywords: Perfectionism, Academic Engagement, Students.

1. Introduction

In today's world, perfectionism among adolescents, especially secondary school students, is on the rise. Studies conducted between 1986 and 2015 clearly demonstrate that today's adolescents are more prone to perfectionism than their predecessors (Curran & Hill, 2019). Nowadays, perfectionism in research literature encompasses two main dimensions: a) "Perfectionistic Strivings (Positive)" and b) "Perfectionistic Concerns (Negative)." Perfectionistic strivings cover aspects related to personal

perfectionistic standards and self-oriented efforts towards perfection. Perfectionistic strivings are associated with positive traits, processes, and outcomes such as conscientiousness, adaptive coping, positive affect, alongside higher levels of mental well-being and psychological adjustment for students. Perfectionistic concerns represent the psychopathological, unhealthy, and maladaptive aspects of student perfectionism, such as worry about mistakes and doubts about actions (Livazović & Kuzmanović, 2022; Stoeber & Childs, 2010; Stoeber & Otto, 2006); perfectionistic strivings lead to the enhancement of self-esteem, conscientiousness, extraversion, social adaptability, and positive feelings in students and consequently academic performance, academic progress, and academic success, while maladaptive perfectionism is associated with lesser progress; perfectionistic concerns are characterized by excessive analysis of personal behavior, excessive worry about criticism and expectations of others, imbalance between expectations and outcomes, setting excessively high performance standards, low self-efficacy, negative affect, low self-esteem, stress and anxiety in students and consequently poor performance and academic success (Endleman et al., 2022; Fang & Sotardi, 2023; Kamushadze et al., 2021).

Students with perfectionistic concerns exert excessive pressure on themselves, which can lead to negative feelings towards school and reduced involvement in academic tasks. Also, students who are overly self-critical are less engaged in academic activities for intrinsic pleasure (Kljajic et al., 2017). In contrast, students with perfectionistic strivings set goals for competing and outperforming others rather than avoiding failure; indeed, students with perfectionistic strivings are more motivated by the "need for achievement" than the "need to avoid failure" (Endleman et al., 2022). Perfectionistic strivings are a vital factor for improving performance and academic success of secondary school students; on the contrary, perfectionistic concerns are a fundamental factor in reducing performance and academic success of secondary school students (Bong et al., 2014; Endleman et al., 2022; Kljajic et al., 2017). Therefore, efforts should be made to promote perfectionistic strivings among students and reduce perfectionistic concerns (Endleman et al., 2022). Given the spread of perfectionism among adolescents, especially secondary school students, and its undeniable effects (both positive and negative) on the success of secondary school students, and considering the various psychological, emotional, and behavioral aspects of perfectionism in students, studying perfectionism is of

utmost importance (Endleman et al., 2022; Ståhlberg et al., 2021). While perfectionism can affect individuals at all stages of life and in many areas, few studies have examined this trait in adolescence and its relationship with academic success. Adolescence represents a critical time in life, both for the emergence and development of perfectionism and the importance of academic success, making this period an ideal time to study perfectionism (Endleman et al., 2022). Therefore, to fill part of the mentioned theoretical and empirical gap, the present study aims to examine the effectiveness of an "educational program derived from a validated model of academic engagement on perfectionism (enhancing positive perfectionism and weakening negative perfectionism) in secondary school students in Hamadan city.

Studies show that academic engagement has the direct and indirect ability to improve perfectionism (enhancing positive perfectionism and weakening negative perfectionism) in students (Jinmin & Qi, 2023; Nguyen, 2022; Ryu et al., 2022). Students with academic engagement have a high tendency to perfect their skills and seek challenges to fully perform their academic activity (Chiang et al., 2011; Mäkikangas et al., 2010), a strong desire for high arousal in performing academic tasks (Mäkikangas et al., 2010), a willingness to spend physical and psychological energy to execute experiences and academic tasks, a high inclination to successfully perform the learning process (Nguyen, 2022), the perfection of enjoying optimal participation for executing academic activities (Huang & Wang, 2022), achieving a state of perfect intrinsic motivation and focus, pleasure, and tirelessness in completing tasks related to academic tasks (Nguyen, 2022); therefore, academic engagement is a state that is well related to perfectionism and can effectively encourage students towards perfection and perfectionism (enhancing positive perfectionism and weakening negative perfectionism) (Jinmin & Qi, 2023; Nguyen, 2022; Ryu et al., 2022). Engagement is a state where the person has high concentration power and strong intrinsic motivation while feeling comfortable participating in an activity (Chalghaf et al., 2019); in fact, engagement indicates a deep focus or complete absorption in an activity (Kaya & Ercag, 2023). Engagement was initially studied and observed in the realm of art and sports; however, it gradually spread to many areas such as the workplace, music, computer games, shopping, academic activities, etc. One of the areas that today's engagement has significantly influenced is the academic field; in the academic field, it is referred to as academic

engagement (Jinmin & Qi, 2023; Nguyen, 2022). Academic engagement is a state in which students actively follow the entire learning process - both learning tasks and performing tasks (Olcar et al., 2021). Students reach a state of engagement when challenges align with their skill set, reinforced by clear goals, rapid and constructive feedback (Kim & Lee, 2021). Academic engagement is considered a potential determinant of academic outcomes that potentially affects knowledge structures, social dynamics, and personal characteristics (Jinmin & Qi, 2023). Studies show that academic engagement has a positive effect on students' deep self-awareness and self-regulation, comprehensive completion of academic tasks, the sensation of rapid time passage due to the sweetness of the activity, educational participation, cognitive development, better learning, continuity of activity, intrinsic motivation, academic self-efficacy, academic performance, academic progress, and high academic success of students (Jinmin & Qi, 2023; Kim & Lee, 2021; Nguyen, 2022; Ryu et al., 2022; Wang & Chen, 2015; Yeh et al., 2019).

Given the high importance of academic engagement (Jinmin & Qi, 2023; Kim & Lee, 2021; Nguyen, 2022; Ryu et al., 2022). and that very limited research has been conducted on academic engagement and there exists a deep gap in this field and considering that more than 85% of people do not experience the state of academic engagement and thus are deprived of its positive educational outcomes (Nguyen, 2022), the present research intends to use an "educational program derived from a validated model of academic engagement" (this model was designed and validated in separate research and based on the validated model, an educational program was developed) to enhance the state of academic engagement in secondary school students in Hamadan city so that both the perfectionism of these students improves and they achieve the aforementioned educational outcomes. It should be noted that although academic engagement played a more significant role as the main variable in designing the educational program, three influential variables on academic engagement, namely "intelligence beliefs," "motivational beliefs," and "academic self-concept" were also used in developing the educational program; because in the validated model, the positive impact of all three variables of intelligence beliefs, motivational beliefs, and academic self-concept on academic engagement was proven; therefore, designing an educational program based on academic engagement that also involves influential variables on academic engagement in the main educational program is a

wise action, which can create synergy and multiply the effect of the academic engagement educational program on perfectionism.

Considering the issues mentioned and given the importance of perfectionism among adolescents, especially secondary school students, efforts should be made towards the promotion and improvement of academic perfectionism; one of the most important variables affecting perfectionism (enhancing positive perfectionism and weakening negative perfectionism) in students is academic engagement; therefore, the current research aimed to determine the effectiveness of an educational program derived from a validated model of academic engagement on academic perfectionism in secondary school students in Hamadan city.

2. Methods and Materials

2.1. Study Design and Participants

The present study was a quasi-experimental research with a pre-test and post-test design. In the current research, the population consisted of all female secondary school students in Hamadan city for the academic year 2022-2023, which according to the statistics of the Hamadan Province Department of Education, amounted to 2500 individuals. The research sample included 40 of these students, selected through multi-stage cluster random sampling and placed into two groups of 20 each for experimental and control (placebo) groups, with random sampling conducted for group placement.

The participation in this study was entirely voluntary. Participants were informed about the study's details and regulations before its commencement, ensuring respect for individual beliefs and attitudes. Members of both experimental and control groups had the option to withdraw at any stage. Additionally, interested control group members could receive the same intervention post-study. Confidential documents, questionnaires, and records were exclusively accessed by the researchers. Informed written consent was obtained from all volunteers.

2.2. Measures

2.2.1. Perfectionism

Positive and Negative Perfectionism Standard Questionnaire by Short et al. (1995) utilizes a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire's validity was confirmed through content validity and consultation with experts and university

professors, and its reliability was calculated through Cronbach's alpha coefficient. The Cronbach's alpha for positive perfectionism was 0.889, for negative perfectionism was 0.901, and for the entire research questionnaire was 0.935, which is significantly higher than the standard number of 0.7, indicating the questionnaire's excellent reliability (Taghavizade Ardakani et al., 2019).

Table 1

Intervention Sessions

Session	Title and Content of Educational Sessions
Session 1 (Introduction and Understanding)	Checking student attendance, explaining the purpose of the educational sessions to them, teaching necessary aspects about perfectionism and its examples.
Session 2 (Understanding Variables)	Discussing definitions and opening discussions on variables such as academic engagement, motivational beliefs, intelligence beliefs, academic self-concept - presenting specific examples of these variables and their importance in students' personal and academic life - presenting a pre-test.
Session 3 (Perfectionism)	Examining characteristics of perfectionism, types of perfectionism, learning and perfectionism, positive and negative aspects of being perfectionistic.
Session 4 (Intelligence Beliefs)	Exploring types of intelligence beliefs, effects of intelligence beliefs on predicting academic engagement, learning and intelligence, importance of intelligence beliefs for future academic success.
Session 5 (Motivational Beliefs 1)	Types of motivational sources in progress and success, motivational beliefs and academic engagement, creating external motivational beliefs.
Session 6 (Motivational Beliefs 2)	Comparing internal and external motivational beliefs, types of characteristics of students with internal motivational beliefs, creating internal motivational beliefs, moving from external to internal motivational beliefs.
Session 7 (Academic Self-Concept)	Self-concept and self-esteem, self-concept and self-confidence, self-concept and its effect on learning and education, ways to nurture personal and academic self-concept, the relationship between academic self-concept and academic engagement.
Session 8 (Conclusion)	Summary, answering questions, and presenting a post-test of all questionnaires.

2.4. Data analysis

Descriptive analysis included statistical indicators for each research variable, while inferential statistics utilized covariance analysis and SPSS-25 software.

3. Findings and Results

Table 2 presents the descriptive statistics (mean and standard deviation) related to the variables of positive and negative perfectionism for both the experimental and control (placebo) groups in the pre-test and post-test stages.

Table 2

Mean and Standard Deviation for Positive and Negative Perfectionism

Variable	Stage	Group	Mean	Standard Deviation
Positive Perfectionism	Pre-test	Experimental	3.2627	1.37057
		Control	3.2484	1.06285
	Post-test	Experimental	4.7429	0.39426
		Control	3.3340	1.05576
Negative Perfectionism	Pre-test	Experimental	3.2977	1.37009
		Control	3.3250	1.07981
	Post-test	Experimental	1.9054	0.65221
		Control	3.1299	1.14638

As seen in Table 2, for the "positive perfectionism" variable, the post-test mean scores in the experimental group show a significant increase compared to the pre-test mean scores in the experimental group; however, the post-test mean scores in the control group do not show much difference compared to the pre-test mean scores in the control group. Similarly, for the "negative perfectionism" variable, the post-test mean scores in the experimental group show a significant decrease compared to the pre-test mean scores in the experimental group; however, the post-test

mean scores in the control group do not show much difference compared to the pre-test mean scores in the control group. The covariance analysis method (ANCOVA) can be used to comment on the effectiveness of the educational intervention (or the independent variable) by comparing the post-test mean scores of the experimental and control (placebo) groups. Table 3 below summarizes the ANCOVA test for the variables of positive and negative perfectionism among female secondary school students in Hamadan city.

Table 3

ANCOVA Test

Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Effect Size (Eta Squared)	Levene's Test for Equality of Variances	F-Value for Homogeneity of Regression Slopes
Positive Perfectionism	Group	19.711	1	19.711	41.672	0.001	0.580	0.410	0.556
	Error	17.505	37	0.473	-	-	-	-	-
Negative Perfectionism	Group	14.677	1	14.677	27.129	0.001	0.561	0.447	0.541
	Error	20.020	37	0.541	-	-	-	-	-

Given Table 3, since the significance level for both variables of positive and negative perfectionism is 0.001, which is less than the error level (α) of 0.05, the difference between the mean scores of the experimental and control (placebo) groups for the variables of positive and negative perfectionism is confirmed. Initially, the two main assumptions of covariance analysis, namely the homogeneity of regression slopes of the two groups and the equality of variances of the two groups for the variables of positive and negative perfectionism, were examined.

A: Positive Perfectionism: According to Table 3, the effect size or eta coefficient is 0.580, meaning that 58% of the variance of the dependent variable, "positive perfectionism" of students, can be explained through the independent variable (the educational program derived from the academic engagement model).

B: Negative Perfectionism: According to Table 3, the effect size or eta coefficient is 0.561, meaning that approximately 56% of the variance of the dependent variable, "negative perfectionism" of female secondary school students in Hamadan city, can be explained through the independent variable (the educational program derived from the academic engagement model).

4.   Discussion and Conclusion

This study examined the effectiveness of an educational program derived from a validated model of academic engagement on the academic perfectionism of secondary school students in Hamadan city. The results demonstrated that the educational program, based on the validated model of academic engagement, had a positive impact on the positive academic perfectionism of secondary school students in Hamadan. This means the program led to an increase in students' positive academic perfectionism. Additionally, the study found that the educational program negatively affected the negative academic perfectionism of these students, leading to a reduction in negative academic perfectionism. Therefore, the educational program derived from the validated model of academic engagement resulted in the enhancement of positive perfectionism and the weakening of negative perfectionism. The outcomes of this research implicitly and implicitly align with the prior findings (Jinmin & Qi, 2023; Nguyen, 2022; Ryu et al., 2022).

Explaining this finding, it can be said that motivational beliefs, through changing motivational orientation from extrinsic to intrinsic and via students' cognitive strategies, create long-term and qualitative engagement in learning and commitment to the learning process (Livazović & Kuzmanović, 2022). Furthermore, in interpreting the obtained findings, one can refer to the viewpoint of Brunn (1996), who believes that self-concept includes the description and evaluation of an individual's perceived academic abilities. It can be said that academic self-concept is general self-evaluation beliefs correlated with individual academic competence (Dwi et al., 2023). Moreover, research has shown that students who hold higher value and credibility for themselves are more successful in confronting others, and if they consider themselves weak, they quickly give up, suggesting that being good in school fosters a positive self-concept in students, and having a positive self-concept leads to better performance in educational activities.

Therefore, it can be expected that teaching concepts of motivational and intelligence beliefs, as well as academic self-concept, which could positively affect students' academic engagement, similarly reduced students' negative perfectionism in the school environment.

5. Limitations & Suggestions

This research was conducted only on female students. This sampling method may complicate the generalization of findings to male student groups. Due to the coronavirus, there were difficulties in conducting the research, including participants' reluctance to complete questionnaires in person. The last limitation of this study relates to its design. This study is based on structural equations; hence, the relationships obtained are not like the results of experimental research. This research was only conducted on female secondary school students, and it is recommended that future researchers also conduct it on male students and other grades and levels to enhance the generalizability of the results. Investigating the model with indicators not examined in this study, such as emotion regulation, metacognitive beliefs, personality styles, in future research is suggested. Future studies are recommended to use the results of this research, which was conducted as a causal model, to design an educational program and examine its effectiveness experimentally on academic performance and other variables related to students. Considering the main hypotheses of the research, it is suggested that educational programs in schools emphasize topics such as how to increase intelligence beliefs and motivational beliefs in students. Given the significant role of motivational beliefs in students' academic performance, it is recommended that school counselors conduct training workshops to familiarize students, teachers, managers, and parents more with motivational beliefs and their role in students' academic engagement. Given the mediating role of academic self-concept in the relationship between motivational beliefs, intelligence beliefs, and students' academic engagement, teachers should aim to increase academic engagement by enhancing students' motivation, especially intrinsic motivation, by providing the necessary conditions. To this end, teachers should be as flexible as possible in their classroom programs, avoid rigid and unchangeable plans, assign tasks that lead to personal success, reduce students' sense of negligence and fatigue by demonstrating successful performance of appropriate and similar models to themselves.

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