The Profound Difference Concerning Flow in Achievement Orientations for High School Students[*]

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The Profound Difference Concerning Flow in Achievement Orientations for High School Students	Lise Öğrencilerinin Başarı Hedef Yönelimlerindeki Derin Akış Farkı

Abstract

This study aims at determining the relationship between achievement goal orientations and flow experiences in the academic context for high school students. In line with this purpose, Achievement Goal Orientation Scale and Flow Scale in the Academic Context were developed. Afterwards, the relationships between learning and performance-approach goal orientations and flow experience were tested by structural equation modelling. The sample of this study consisted of 1916 students continuing their education in fourteen different state high schools in Turkey. Results demonstrated that learning-goal orientation predicted flow experience positively and at a high level; however, there was no relation between performance-approach goal orientation and flow experience. The results were interpreted in the light of literature, and suggestions for future research were presented.

Keywords: Flow in Academic Context, Learning-Goal Orientation, Performance-Goal Orientation, Achievement Goal Orientations

Özet

Bu çalışma, lise öğrencilerinin akademik bağlamda akış deneyimleri ile başarı hedef yönelimleri arasındaki ilişkiyi belirlemeyi amaçlamaktadır. Bu amaç doğrultusunda Başarı Hedef Yönelimleri Ölçeği ve Akademik Bağlamda Akış Ölçeği geliştirilmiştir. Daha sonra öğrenme ve performans yaklaşma hedef yönelimleri ile akış deneyimi arasındaki ilişkiler yapısal eşitlik modellemesi ile test edilmiştir. Bu araştırmanın örneklemini Türkiye'de 14 farklı devlet lisesinde eğitimine devam eden 1916 öğrenci oluşturmaktadır. Sonuçlar öğrenme hedef yöneliminin akış deneyimini olumlu ve yüksek düzeyde yordadığını göstermiştir; ancak, performans yaklaşma hedef yönelimi ile akış deneyimi arasında bir ilişki bulunamamıştır. Sonuçlar literatür ışığında yorumlanmış ve ileride yapılacak araştırmalar için öneriler sunulmuştur.

Anahtar Kelimeler: Akademik Bağlamda Akış, Öğrenme Hedef Yönelimi, Performans Hedef Yönelimi, Başarı Hedefi Yönelimleri

Paper Type: Research	**Makale Türü**: Araştırma

1. Introduction

It is essential to investigate how much students enjoy the educational process. Because students' enjoying the educational process and being happy will make it possible for them to love the act of learning and benefit from this process in the best way. It is predicted that being delighted in educational life, in which individuals devote a significant part of their lives, will contribute to their personal development. Flow theory developed by Csikszentmihalyi (1990) also focuses on happiness. It emphasizes a flow experience in which people reach happiness as a result of deep concentration on the action at hand without a need for a certain external reinforcement. Flow experience is defined as a situation in which a person intensively concentrates on the action, and other things lose their importance in this process, the action itself gives pleasure to the person, and the person would like to continue doing the same action no matter what happens (Csikszentmihalyi, 1990). Although flow life is seen relatively infrequently in daily life, it can be experienced

in almost every situation such as business life, educational life or daily routine as long as certain conditions are met. According to the theory, nine conditions (*Challenge-skill balance*, *Action-awareness merging*, *Clear goals, Unambiguous feedback, Concentration on the task at hand, Sense of control, Loss of self-consciousness, Transformation of time, Autotelic experience*) should be fulfilled to experience flow. These conditions, proposed by Csikszentmihalyi (1990), also constitute the dimensions of flow.

According to the theory, flow can be experienced in all areas and moments of life. Therefore, the flow experience of students spending a significant part of their lives at school is considered important in terms of their psychological well-being. Studies indicate that flow experience is associated with students' success, attendance and commitment to school (Carli, Delle Fave, & Massimini, 1988; Mayers, 1978; Nakamura, 1988). It was observed that students who were aware of their abilities experienced less anxiety and more flow in school activities. Those students considered their skills and competencies as the source of their flow experience. (Csikszentmihalyi, Rathunde, & Whalen, 1993). It was observed that students experiencing flow enjoyed the educational process, focused more on academic activities, were more determined in choosing a profession, and preferred to take an active role in their plans (Asakawa, 2004; 2010). In the light of research, it is predicted that experiencing flow frequently in the learning process will make a positive contribution to students and help them increase their competencies.

An important factor affecting students' learning process and results is their achievement goal orientation. Achievement goal orientation theory focuses on goals people set to reach success and the reasons behind these goals (Kaplan & Maehr, 2007; Maehr & Zusho, 2009). While getting high grades can mean feeling competent for a student, for another one it may involve the intention to prove to be more diligent than others. Although achievement goal orientations have been named differently by researchers, they are fundamentally divided into two categories (Ames & Archer, 1988; Dweck & Elliot, 1983). Learning goal-oriented students tend to improve themselves by increasing their skills and competencies. Performance goal-oriented students, on the other hand, tend to compare themselves with other students and prove their competencies to others (Dweck, 1986; Nicholls, 1984). In subsequent studies, this model was improved, and while learning-goal orientation remained the same, performance-goal orientation was divided as performance-approach and performance-avoidance (Ames, 1992; Elliot & Church, 1997; Elliot & Harackiewicz, 1996). Students trying to show that they are more successful than others have a performance-approach orientation and those who avoid being unsuccessful among others and negative judgments have a performance-avoidance orientation (Pintrich & Schunk, 2002). It can be thought that expectations caused by the existing evaluation systems and increasing competitive conditions in education lead students to focus more on their academic performances.

Intrinsic motivation is at the heart of flow experience. Therefore, to experience flow in the academic process, students need to be motivated internally for increasing their competence and skills and enjoy the learning itself. Studies conducted on the achievement goal orientations indicated that there was a positive relation between learning-goal orientation and intrinsic motivation; on the other hand, there was either no significant relation between performance-goal orientation and intrinsic motivation or performance-goal orientation negatively predicted intrinsic motivation (Dweck & Leggett, 1988; Heyman & Dweck, 1992; Wang, Liu, & Lochbaum, 2009; Yerdelen, Aydın, Yalmancı, & Göksu, 2014). Within the framework of the information obtained from literature, it is thought that there may be a relationship between achievement goal orientations and flow experience. Understanding whether students' goal orientations affect their flow experiences in an academic context will be essential for better understanding student needs and more qualified planning of the teaching process. It is anticipated that having goal orientations that encourage students to use their potential at the highest level and increase their competencies may enable them to experience flow in their learning process more frequently. It is thought that students may be more willing to improve themselves and learn something new by enjoying the act of learning itself in this way. Based on the literature, it can be stated that between performance goal orientations, performance-approach goal orientation reflects a more positive situation than performance-avoidance goal orientation (Ames, 1992; Elliot & Church, 1997; Elliot & Harackiewicz, 1996). Nevertheless, it is predicted that performance-based

learning effort may interrupt the spirit of flow. Considering that schooling is a long process, this study is substantial in providing clues about how students may enjoy educational activities in the years to come. Since teaching children early on that learning can be a fun activity, and it may raise their awareness that it will contribute to their learning life in the long term. Moreover, the study may raise parental and teacher awareness so that they emphasize the importance of acquiring new knowledge rather than focusing on performance.

Based on all these explanations, within the scope of this research, it was aimed to determine the predictive role of high school students' achievement goal orientations on their flow experiences in the academic process. In line with this main purpose, it was aimed to develop scales measuring these variables validly and reliably. In the light of information obtained from the literature, it was predicted that there would be a positive and high level of relationship between learning-goal orientation and flow experience. On the other hand, it was predicted that there would be no significant relationship between performance-goal orientation and flow.

2. Method

2.1. Research Design and Participants

This study was carried out using the correlational survey model, which is one of the quantitative research methods. The research was conducted on valid data obtained from 1916 students continuing their education at fourteen state high schools (grades 9, 10 and 11) in Turkey. The maximum variation sampling method was used. While determining the sample, importance was given to represent different school types, and attention was paid to choose schools from regions with different socio-economic levels. Out of 1915 students stating their gender, 1058 (55.2%) were females, and 857 (44.7%) were males. The distribution of students according to their class levels is as follows: 665 of them (34.7%) were in the 9th grade, 818 (42.7%) in the 10th grade and 433 (22.6%) in the 11th grade. Their average age was 15.31.

2.2. Instruments

Personal Information Form: Students were asked to state their class level, gender, age and name of their school in this form created by the researchers.

Achievement Goal Orientation Scale (AGOS): It was developed by the researchers within the scope of this study to measure students' goal orientations. The scale demonstrates a two-factor structure. Factors were named as Learning-Goal Orientation (4 items; e.g. "I study for courses or exams because I love to learn and gain knowledge.") and Performance-Approach Goal Orientation (4 items; e.g. "My main goal is to get higher grades than other students while studying for courses or exams."). The scale items are responded to as Completely True (5), Mostly True (4), Moderately True (3), Somewhat True (2), Completely False (1).

Flow Scale in the Academic Context (FSAC): It was developed by the researchers within the scope of this study to measure how often students experience flow while doing academic activities. The scale demonstrates a six-factor structure. Factors were named as Concentration and Perception of Time (10 items; e.g. "I almost forget to feel hunger and thirst while studying."), Unambiguous Feedback (4 items; e.g. "While studying, I can realize which parts of the subject I have difficulty in understanding.), Challenge-Skill Balance (4 items; e.g. "Subjects challenging me a little increase my willingness to work."), Autotelic Experience (5 items; e.g. "Learning new subjects makes me very happy."), Action-Awareness Merging (4 items; e.g. "I feel I can use my knowledge and skills at the highest level while studying or doing homework.") and Sense of Control (4 items; e.g. "I believe I have sufficient capacity to learn while studying"). The scale items are responded to as Always (6), Usually (5), Often (4), Sometimes (3), Rarely (2), and Never (1).

2.3. Data Analysis

First of all, it was examined whether the data obtained for AGOS and FSAC provided normality assumptions. Accordingly, histogram, box and Q-Q plots, and skewness-kurtosis values were examined. By examining Mahalanobis values, it was seen that the data provided a multivariate normal distribution. Additionally, Z

values were calculated, and those which were not between +3 and -3 were excluded from the data. Valid data from 1916 students were used in the analyses. EFA and CFA were applied to examine the construct validity of the scales. Exploratory factor analyses of both scales were conducted on the data obtained from 616 students. Data from 400 students were used for confirmatory factor analysis of the achievement goal orientation scale, 550 for the flow scale in the academic context, and 350 for the model test. Kaiser Meyer Olkin and Bartlett Sphericity analyses were conducted to determine whether the sample size was sufficient and the data collected were suitable for factor analysis. In determining the factor numbers of the scales, that the eigenvalues were over 1 and scree plots were taken into consideration (Büyüköztürk, 2015). After the factors were determined, items with a factor load lower than the acceptable value (.30) or with a high value in more than one factor were excluded (Büyüköztürk, 2015). To determine the consistency of the acquired items with the overall scale, item-total correlation values were examined. To determine the internal consistency of the scales, Cronbach Alpha internal reliability coefficients and, in the second application which was applied to 50 students at 15-day intervals, test-retest correlations were calculated. In line with the main purpose of the study, the relationship between achievement goal orientations of the students and their flow experiences in the academic processes were tested through structural equation modelling by using the scales developed. In the model, achievement goal orientations were determined as the independent variable and flow experience as the dependent variable.

3. Results

3.1. Findings Regarding Validity Studies of Achievement Goal Orientation Scale

In the light of the information obtained from the literature on achievement goal orientation theory, it was thought the factors which would emerge in the scale would be unrelated to each other; therefore, Varimax Rotation Technique was chosen in EFA. KMO value of AGOS (.78) and Bartlett's test result (χ^2=2404,946, p<.001) were significant. According to EFA results, two factors with eigenvalues of 2.77 and 1.46, respectively, were determined. EFA results are presented in Table 1.

Table 1. Exploratory Factor Analysis Results of Achievement Goal Orientation Scale

Factor Name	Items	Factor-1	Factor-2	Common Variance
		Factor Loading after Rotation		
Learning-Goal Orientation	10	**.78**	.06	.61
	19	**.77**	.00	.60
	6	**.76**	.14	.60
	1	**.47**	.28	.30
	5	.10	**.74**	.56
	12	.02	**.74**	.55
Performance-Approach	9	.07	**.71**	.52
Goal Orientation	20	.34	**.62**	.50
Cronbach Alpha		.70	.70	
Explained Variance		% 26.73	% 26.23	
Total Variance Explained			% 53	

Item-total correlations (between .37-.51) determined to test the consistency of the items obtained as a result of EFA with the overall scale indicated that all items are of distinctive character. Sub-dimensions of AGOS demonstrated moderate correlations with each other (r=.32, p<.01) and high levels of correlations with the total scale (r=.80, p<.01 and r=.83, p<.01).

The chi-square value calculated for model data fit in CFA was found as [$\chi^2_{(19)}$ =33.79, p<.01]. It was determined that the standardized coefficient values obtained as a result of CFA were between 0.42-0.73, and t values were between 7.18-13.17. CFA model is presented in Figure 1, and the values for fit indices are presented in Table 2.

Table 2. Confirmatory Factor Analysis Fit Indices of AGOS

Fit Index	Value	Interpretation
χ^2	33.79	(p<.05)
df	19	
χ^2 / df	1.77	Excellent Fit (Tabachnick & Fidell, 2007)
RMSEA	.044	Excellent Fit (Jöreskog & Sorbom, 1993)
SRMR	.047	Excellent Fit (Brown, 2006)
CFI	.98	Excellent Fit (Tabachnick & Fidell, 2011)
NFI	.95	Excellent Fit (Hu & Bentler, 1999)
NNFI	.97	Excellent Fit (Hu & Bentler, 1999)

The fact that factor structure was not formed in the second-order confirmatory factor analysis and that the non-additivity value was significant (p<.01) as a result of Tukey's Additivity Test indicated sub-dimensions were not additive. The test-retest correlation coefficient for the whole scale was .77.

3.2. Findings Regarding Validity Studies of Flow Scale in the Academic Context

In the light of the information obtained from the literature on flow theory, it was thought the factors which would emerge in the scale would be related to each other; therefore, Direct Oblimin Rotation Technique was chosen in EFA. KMO value of FSAC (.95) and Bartlett's test result (χ^2=26032,271, p<.001) were significant. According to EFA results, six factors with eigenvalues of 10.61, 2.62, 1.38, 1.34, 1.20 and 1.03, respectively, were determined. EFA results are presented in Table 3.

Item-total correlations (between .40-.67) determined to test the consistency of the items obtained as a result of EFA with the overall scale indicated that all items are of distinctive character. Sub-dimensions of FSAC demonstrated moderate correlations with each other (between r=.32-.60, p<.01), and one dimension demonstrated moderate correlation with the total scale (r=.63, p<.01) while the others demonstrated high levels of correlations (between r=.74-.86, p<.01).

Table 3. Exploratory Factor Analysis Results of Flow Scale in Academic Context

Factor Name		Factor-1	Factor-2	Factor-3	Factor-4	Factor-5	Factor-6	Common
Concentration	32	**.73**						.55
and Perception of Time	29	**.73**			.11		.12	.51
	30	**.72**						.54

	21	**.70**	.12			.12	.14	.59
	22	**.70**				.22	.15	.60
	36	**.69**			.17			.60
	37	**.61**	.11		.23			.57
	24	**.53**				.13		.45
	33	**.52**	.11	.11			.15	.49
	34	**.49**	.13		.29	.17		.52
Unambiguous Feedback	18		**.83**					.70
	17		**.77**					.65
	19		**.75**				.13	.65
	20		**.52**			.18	.11	.45
Challenge-Skill Balance	5			**.83**				.67
	6			**.80**				.69
	4		.14	**.73**				.60
	7	.17		**.38**	.17	.27		.50
Autotelic Experience	39				**.78**			.72
	38				**.75**			.68
	41	.18			**.63**			.66
	40	.20	.19		**.62**			.51
	42	.25	.19		**.55**	.14		.58
Action-Awareness Merging	11					**.72**		.55
	8					**.70**		.58
	10					**.68**	.11	.61
	9				.15	**.59**		.53
Sense of Control	26		.13	.11			**.75**	.65
	27			.16	.14	.21	**.64**	.62
	28				.11		**.64**	.62
	25	.17		.17			**.60**	.55
Cronbach Alpha		.89	.80	.77	.83	.76	.77	
Cronbach Alpha for Total Scale								.94
Explained Variance		% 34.21	% 8.46	% 4.44	% 4.33	% 3.86	% 3.32	
Total Variance Explained								% 58.63

The chi-square value calculated for model data fit in CFA was found as [$\chi^2_{(419)}$ =1222.65, p<.01]. It was determined that the standardized coefficient values obtained as a result of CFA were between 0.59-0.78, and t values were between 13.39-20.98. CFA model values for fit indices are presented in Table 4.

Table 4. Confirmatory Factor Analysis Fit Indices of FSAC

Fit Index	Value	Interpretation
χ^2	1222.65	(p<.01)
df	419	
χ^2 / df	2.91	Good Fit (Kline, 2011)
RMSEA	.059	Good Fit (Hu & Bentler, 1999)
SRMR	.057	Good Fit (Hu & Bentler, 1999)
CFI	.97	Excellent Fit (Tabachnick & Fidell, 2011)
NFI	.96	Excellent Fit (Hu & Bentler, 1999)
NNFI	.97	Excellent Fit (Hu & Bentler, 1999)

A second-order CFA was conducted to determine whether the factors forming the scale could be included in the analysis based on the total score as a single dimension. The chi-square value calculated for model data fit in CFA was found as [$\chi^2_{(428)}$ =1326.48, p<.01]. It was determined that the standardized coefficient values obtained as a result of CFA were between 0.80-1.23, and t values were between 11.46-18.78. As a result of the analysis, the second-order factor structure was formed. Scale factors together measure students' flow experiences in their educational process. Therefore, the creation of the second-order factor structure indicates that the scale can be included in the analysis based on the total score. The values obtained as a result of the first and second-order CFA indicated that the model related to the factor structure of the scale was confirmed. The test-retest correlation coefficient for the whole scale was .82. The values for fit indices obtained as a result of the second-order CFA are presented in Table 5.

Table 5. Second-Order Confirmatory Factor Analysis Fit Indices of FSAC

| Fit Index	Value	Interpretation
χ^2	1326.48	(p<.05)
df	428	
χ^2 / df	3.09	Good Fit (Kline, 2011)
RMSEA	.062	Good Fit (Jöreskog & Sorbom, 1993)
SRMR	.067	Good Fit (Hu & Bentler, 1999)
CFI	.97	Excellent Fit (Tabachnick &Fidell, 2011)
NFI	.96	Excellent Fit (Hu & Bentler, 1999)
NNFI	.97	Excellent Fit (Hu & Bentler, 1999)

3.3. Findings Regarding the Structural Equation Model Created on the Relationship between Achievement Goal Orientations and Flow Experience in the Academic Context

The structural equation model developed for the relationship between the achievement goal orientation of high school students and their flow experience in their academic activities was tested through

path analysis. To test the model, the total score obtained from the sub-dimensions of FSAC was calculated and considered as the observed variable related to the flow scale. Learning Goal Orientation and Performance-Approach Goal Orientation scale items were included in the analysis as observed variables of these dimensions. The chi-square value calculated for model data fit in CFA was found as [$\chi2_{(74)}$ =185.85, p<.01]. It was determined that the standardized coefficient values obtained as a result of CFA were between 0.40-0.85, and t values were between 7.00-13.35. The values for fit indices obtained as a result of the analysis are presented in Table 6, and the model is presented in Figure 1.
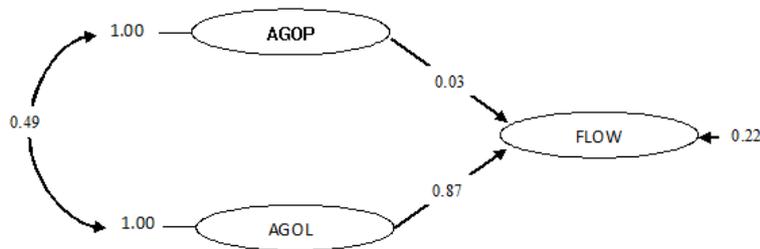
Table 6. Structural Equation Modelling Fit Indices

| Fit Index	Value	Interpretation
χ^2	185.85	(p<.05)
df	74	
χ^2 / df	2.51	Good Fit (Kline, 2011)
RMSEA	.066	Good Fit (Jöreskog &Sorbom, 1993)
SRMR	.052	Good Fit (Hu & Bentler, 1999)
CFI	.97	Excellent Fit (Tabachnick & Fidell, 2011)
NFI	.95	Excellent Fit (Hu & Bentler, 1999)
NNFI	.96	Excellent Fit (Hu & Bentler, 1999)
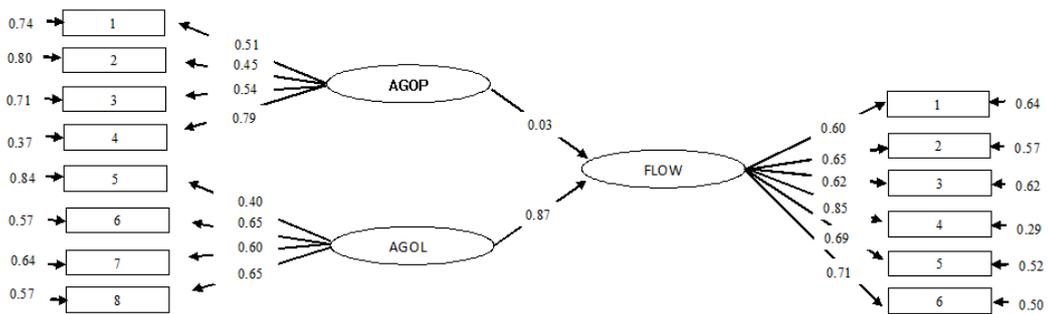
Chi-Square=185.85, df=74, P-value=0.00000, RMSEA=0.066

Figure 1. Structural equation modelling scale model

Chi-Square=185.85, df=74, P-value=0.00000, RMSEA=0.066

Figure 2. Structural equation modelling structural model (standardized solution)
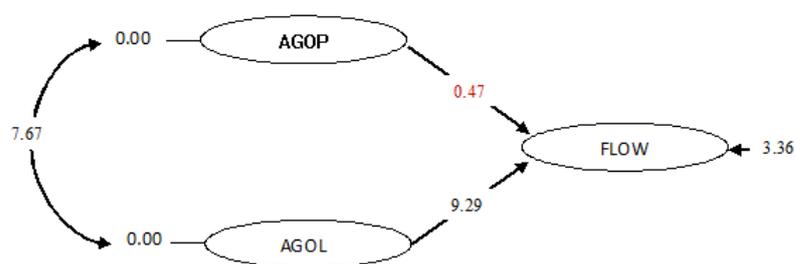
Chi-Square=185.85, df=74, P-value=0.00000, RMSEA=0.066

Figure 3. Structural equation modelling structural model (t-values)

When the structural equation model is examined, it is seen that there is a positive and high level of relationship between students' learning-goal orientations and their flow experiences in the academic context. On the other hand, it is seen that there is no relation between their performance-approach goal orientations and flow experiences in the academic context. In addition, if a regression equation was to be established between these variables, it would be as in the following: FLOW = 0.032xAGOP + 0.87xAGOL (R^2 = 0.78).

4. Discussion, Conclusion and Suggestions

In this study, it was aimed to determine the relationships between high school students' flow experiences in the academic context and their learning and performance-approach achievement goal orientations. For this purpose, the structural equation modelling established to test two predictions (Learning-goal orientation is positively and highly correlated with flow experience. Performance-approach goal orientation is not correlated with flow experience.) were tested through path analysis. The results of the analysis indicated that the predictions forming the basis of the research were confirmed. Accordingly, as the students' tendency of being learning goal-oriented increases, their level of experiencing flow in the academic context also increases. On the other hand, their tendency of performance-approach goal orientation is not correlated with their flow experiences in academic activities. According to the results of path analysis, there is a positive and high level of relation (r = 0.87) between learning-goal orientation scores and level of experiencing flow in academic activities. In other words, students' learning-goal orientation tendencies fulfil a function enabling them to be happy with academic activities.

When studies on achievement goal orientations and flow experience in literature were examined, studies examining the relationship between these variables directly were not encountered. However, some studies in the literature suggest that there may be a relationship between these two variables. In the study of Lavigne, Forest and Crevier-Braud (2012), where they examined the mediating role of flow experience between harmonious and obsessive passion and burnout in business life, it was found that the passion for harmonious work had a protective function against burnout by increasing the intensity of flow life; whereas, obsessive passion was completely unrelated to the experience of flow. The same study indicated that although both types of passion led to high job value and commitment, only obsessive passion for work led to burnout. These findings emphasize that obsessive passion, which does not enable experiencing flow, leads to psychological difficulties in individuals in the long term, despite providing high participation and persistence. According to the regression equation, learning-goal orientation explains 78% of the variance in the flow experience of the students in the academic context. These results are parallel to the study of Lavigne et al. (2012) on the relation between harmonious and obsessive passion and intensity of flow experience in business life. Even though it does not create one-to-one reciprocity, harmonious passion coincides with learning-goal orientation, and obsessive passion coincides with performance-goal orientation. Regarding this similarity, it is predicted that students' being

performance-goal-oriented and deprived of flow experience, may lead them to psychological difficulties such as school burnout in the long term.

In the same vein, some other studies support the relationship reached as a result of this study. In studies examining the relationship between students' achievement goal orientations and academic motivation, there found a positive relationship between learning-goal orientation and intrinsic motivation. On the other hand, there was either no significant relationship between performance-goal orientation and intrinsic motivation or it was concluded that performance-goal orientation negatively predicted intrinsic motivation (Dweck & Leggett, 1988; Heyman & Dweck, 1992; Wang et al., 2009; Yerdelen et al., 2014). Rawsthorne and Elliot (1999) investigated the studies examining the relationship between achievement goal orientations and intrinsic motivation in the literature and concluded that there was a statistically significant and positive relationship between learning-goal orientation and intrinsic motivation. Few studies found a low-level relationship between performance-approach goal orientation and intrinsic motivation (Elliot & Church, 1997; Elliot & Moller, 2003; Huang, 2011; Murayama & Elliot, 2009; Spinath & Steinmayr, 2012). There are also studies finding a positive relationship between performance goal orientations and extrinsic motivation (Dysvik & Kuvaas, 2012; Yerdelen et al., 2014). The concept of intrinsic motivation has an important place in flow experience. According to Csikszentmihalyi (1990), one of the important components providing flow is an individual's becoming motivated intrinsically without expecting an external reward or benefit. In this regard, the positive and high-level relationship between learning-goal orientation and flow experience confirms the theoretical expectation.

In studies examining the relationship between achievement goal orientation and challenging task choice of students, it was concluded that learning goal-oriented students preferred challenging activities. It was stated that learning goal-oriented students completely focused on challenging tasks and were determined and insistent on completing the action (Elliot & Dweck, 1988; Grant & Dweck, 2003; Meece & Holt, 1993; Wolters, 2004). It was observed that performance goal-oriented students lost intrinsic motivation when faced with challenging tasks (Grant, 2000). People experiencing flow tend to prefer activities that challenge them. Each challenging activity enables individuals to improve their current competence and skills, and as their skills improve, they continue to seek more challenging activities (Csikszentmihalyi, 1990). In the light of this information in the literature, it can be predicted that learning-goal oriented students will be able to experience flow more frequently by choosing challenging tasks, yet performance-goal oriented students will not be able to experience flow since they will tend to avoid challenging activities. It is seen that the results of this study are consistent with this prediction.

In literature, some studies divide performance-goal orientation into approach and avoidance sub-dimensions, and state that approach is more positive than avoidance (Ames, 1992; Elliot & Church, 1997; Elliot & Harackiewicz, 1996). Although the performance-goal orientation dimension in this study is a performance-approach goal orientation, it is striking that it does not demonstrate a relationship with flow experiences in the academic context. Based on this finding, it can be expressed that even if the performance goal orientation of the students is in the direction of the performance-approach, it does not contribute to the students' flow experiences.

Academic activities are a crucial part of students' daily lives. Therefore, students' being learning goal-oriented will enable them to experience a high level of flow while performing academic tasks. Thus, it will be possible for them to reach their academic goals in a more qualified and easy way, and academic activities with flow experience can become a source of motivation and happiness for them. On the contrary, it is considered that performance-goal oriented students may lose their chance of being happy in academic activities by being deprived of flow experience.

While developing the scale, nine components (*challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, autotelic experience*) determined by Csikszentmihalyi (1990) and accepted as conditions providing flow, were taken as the theoretical basis. EFA results revealed a six-

factor structure (concentration and time perception, unambiguous feedback, challenge-skill balance, autotelic experience, action-awareness merging, sense of control), and this structure was confirmed in CFA. According to the theory, it is thought that the flow experience consists of nine simultaneous experiences. When the factor structure of the developed scale is examined, it is seen that the dimensions obtained contain eight of the nine components predicted by the theory. It is observed that unambiguous feedback, challenge-skill balance, autotelic experience, action-awareness emerging and sense of control dimensions of the scale coincide with the definitions stated in the literature regarding the flow theory and the conditions providing the flow experience (Csikszentmihalyi, 1990; Jackson & Ecklund, 2004; Nakamura & Csikszentmihalyi, 2002). However, the items prepared for three conditions (*concentration on the task at hand, loss of self-consciousness, transformation of time)*, which are considered as separate components in the theory, were collected under one dimension in this study. The common point of these three conditions is that the person is completely immersed in the action. The 'Concentration on the task at hand' component is defined as an individual's concentrating oneself completely on the action. The 'Loss of self-consciousness' component is defined as an individual's getting rid of negative thoughts and concerns about oneself while acting due to intense focus. The 'Transformation of time' component is defined as an individual's not being aware of how time passes as a result of deep focus (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2009). In the developed scale, the dimensions of concentration and perception of the time consisted of items expressing students' deep focus on the academic action and differing time perceptions by including these three conditions. It is considered that the three conditions mentioned are not perceived as different experiences by the students since they involve a deep concentration process. It can be stated that students' experiencing all these conditions in an intense focus, which are theoretically considered as three different dimensions, may have caused all these expressions to be perceived as parts of the same experience. It can also be expressed that this situation may reflect a cultural difference in perception.

According to flow theory, a person should have clear goals to concentrate on the action (Csikszentmihalyi, 1990). However, the dimension of "clear goals" did not appear in this scale. As a result of factor analysis, the items related to the dimension of clear goals could not be gathered under one factor. Besides, they were excluded from the scale due to low factor loading values. This situation suggests that students may not see the condition of clear goals as part of their flow experience in an academic context. It is also considered that culture-specific behavioural habits may be effective in this finding.

This research sample was composed using the maximum variation sampling method. The fact that the research sample was not formed by random sampling creates a limitation in the generalizability of the findings. However, it is thought that the research findings will make a unique contribution to the literature in terms of providing information about the relationships between variables of high school students' achievement goal orientations and flow experiences in the academic context. The results of this study provide functional information for students, families, teachers, school mental health professionals and all educators. It is considered that the scale developed for the achievement goal orientations of high school students and the scale developed for the first time in the literature regarding the flow experiences of high school students in the academic context will also contribute to the literature.

In future studies, new models to be established with some variables, considered to have a mediating effect between learning-goal orientation and flow experience in the academic context, can be tested. For instance, the mediating effect of variables such as attention deficit and hyperactivity disorder, personality traits, parental monitoring, parent-school relationship, self-efficacy perception on the relationship between learning-goal orientation and flow can be tested. For practices, it can be suggested to develop educational programs which emphasize the value of learning, do not bring performance goals to the forefront, and enable students to experience flow in a way that will make them enjoy the education process. Besides, training may be provided for parents to raise awareness that they should prefer expressions emphasizing the value of learning rather than high expectation of success while dealing with

the school life of their children. Incentive practices can be carried out to encourage teachers about creating a classroom environment in which students are not worried about making mistakes, their success or failure is not compared to each other, learning and effort are valuable, and the real success is seen as improvement and progress, and also informative training can be provided for teachers about how they can create such an environment. Counsellors' and teachers' awareness levels may be increased so that they put more emphasis on how they could increase students' learning levels and make them enjoy learning, instead of emphasizing students' high or low grades in meetings with students and their parents. Seminars may be organized for students that learning is the ultimate goal in academic studies, and qualified and permanent learning will bring success and ensure happiness. Additionally, seminars raising consciousness about flow experience and how it relates to achievement goals can also be provided.

Conflicts of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval

The data collection process of the research was carried out before 2020. Ethics committee permit is not included for this reason.

Author Contribution Rates

The authors contributed equally to the article.

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