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An Examination of the Relationship between Intellectual Risk-Taking in a Social Studies Course and Classroom Climate

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Abstract

This research examined the relationship between intellectual risk-taking in social studies and classroom climate. The study group consisted of 294 middle school pupils, 148 of whom were female and 145 were male. Intellectual Risk-Taking in Social Studies Course Scale (IRTSCS) and Classroom Climate Perceived by Students Scale (CCPSS) were utilizated as data collection instruments. In the research, the canonical correlation analysis was implemented to scrutinize the relationship between the IRTSCS data set composed of the Approach to Taking Intellectual Risk (APTIR) and the Avoidance from Taking Intellectual Risk (ATIR) variables and the CCPSS data set consisted of the Peer Backing (PB), Teacher Backing (TB), Gratification (G), and Intellectual Proficiency (IP) variables. Two canonical functions were obtained from the analysis, and one of them was statistically significant. The shared variance between intellectual risk-taking in social studies course and students' views about classroom climate was 23% in the canonical model composed of the cumulative values of the canonical functions.

Keywords: Intellectual risk-taking, social studies course, classroom climate, canonical correlation, secondary school students

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Sosyal Bilgiler Dersinde Akademik Risk Alma ve Sınıf İklimi Arasındaki İlişkinin Analizi

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Öz

Bu çalışmada sosyal bilgiler dersinde akademik risk alma ile sınıf iklimi arasındaki ilişkinin incelenmesi amaçlanmıştır. Çalışma grubunda, 148'i kadın ve 145'i erkek olmak üzere toplam 294 ortaokul öğrencisi bulunmaktadır. Veriler Sosyal Bilgiler Dersinde Akademik Risk Alma Ölçeği (SOARTS) ve Öğrenciler Tarafından Algılanan Sınıf İklimi Ölçeği (ÇKPSS) ile toplanmıştır. Çalışmada, Akademik Risk Almaya Yaklaşma (ARAY) ve Akademik Risk Almaktan Kaçınma (ARAK) değişkenlerinden oluşan SODARAÖ veri seti ile Akran Desteği (AD), Öğretmen Desteği (ÖD), Memnuniyet (M) ve Akademik Yeterlilik (AY) değişkenlerinden meydana gelen Sınıf Ortamı Ölçeği (SOÖ) veri seti arasındaki ilişki kanonik korelasyon analizi yoluyla test edilmiştir. Sosyal bilgiler dersinde akademik risk alma ile öğrenciler tarafından algılanan sınıf iklimi ölçeği arasındaki ilişki için iki kanonik fonksiyon elde edilmiş ve bu iki kanonik fonksiyondan biri istatistiksel olarak anlamlı çıkmıştır. Kanonik fonksiyonların kümülatif değerlerinden oluşan kanonik modelde, sosyal bilgiler dersinde akademik risk alma ve öğrenciler tarafından algılanan sınıf iklimi değişkenlerinin paylaştığı ortak varyans %23 bulunmuştur.

Anahtar Sözcükler: Akademik risk-alma, sosyal bilgiler, sınıf iklimi, kanonik korelasyon, ortaokul öğrencileri

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Introduction

We have to make various decisions in almost every area of our lives (medicine, economy, management, politics, human relations, education, etc.), and these decisions sometimes bring along certain risks. Our attitude towards events determines whether we can take these risks or not. Sometimes we prefer to take possible risks, and sometimes we prefer to do nothing, that is, we remain passive. We can give many examples of risk-taking behavior from daily life. An athlete's aim to specialize in a dangerous sport essentially requires taking a risk; Similarly, the behavior of an individual who invests a significant portion of her/his saving in virtual money currency on the advice of a financial expert carries several risks. The possibility of losing vision as a result of laser treatment is one of the risks that a patient with an eye problem may encounter when he/she wants to have this problem treated.

We might encounter risk-taking behavior in daily life as well as in educational processes. For instance, a student who wants to stand at the blackboard in the social studies lesson and show the location of a mountain on the physical geography map is faced with a risk, even if it is not very big. The student may not want it at the blackboard, worrying that if he/she gives a wrong answer, he/she may be ridiculed in the class. That's such risks in the field of education are discussed differently from other risk types and are called intellectual risk-taking in the literature. Intellectual risk-taking is described as the willingness to share ideas that are not to be sure of their trueness, ask questions, and try out new and alternative solutions (Beghetto, 2009). According to Clifford and Chou (1991), intellectual risk-taking behavior refers to students' willingness to sharing their ideas about the issues that students are unsure of, ask questions, and try new, different solutions despite the possibility of failure. Korkmaz (2002) characterizes intellectual risk-taking as pupils' grittiness and willingness/unwillingness to challenge the problems or situations they encounter in the learning environment. Robinson (2012), as for that, conceptualizes intellectual risk-taking as the student's evaluation of known/unknown results related to the learning activity and making a decision about participating in the learning activity by considering the possible consequences.

As it is understood from these definitions, when students encounter an educational situation that requires them to take risks, they first evaluate various forms of action and the possible consequences of these actions. They do not develop a motivation for behaviour that they predict will not benefit or may be harmful according to their evaluation, so they do not take risks for these goals. In other words, for risk-taking behavior, the expectation about the goal must be positive. However, this is not enough. In addition, the goal to be reached should have a meaning for the student, and the student should believe that he can reach the goal and have the necessary motivation. In this respect, intellectual risk-taking is related to self-efficacy belief and motivation. In many studies in the literature, the relationship between intellectual risk-taking behavior and various variables regarding the learning-teaching process has been revealed. Anxiety (Akça, 2017), motivation (Akdağ, 2020), metacognitive awareness (Çakır & Yaman, 2015), self-efficacy (Clifford, 1988; Clifford, et al., 1989; House, 2002; Uysal & Bingöl, 2014), problem solving (Korkmaz, 2002; Tay, Özkan & Akyürek Tay, 2009), epistemological belief (Özbay & Köksal, 2021), learning environment (Lee, 2005; Sharma, 2015), learning approaches (Ames, 1992), and academic success (Gezer, 2016) are among the variables in significant relationship with intellectual risk-taking.

Intellectual Risk-Taking in Social Studies Course

The concept of intellectual risk-taking entered the literature as a general structure related to the learning-teaching process, and then it started to be discussed as a field-specific, that is, discipline-oriented. According to İlhan and Çetin (2013), just as a field-based approach is adopted when examining attitudes, motivation, and self-efficacy, intellectual risk-taking should be examined with a field-oriented approach. Because of the unique nature of different fields, a student who is willing to take intellectual risks in one course may avoid taking intellectual risks in another course. This idea laid the groundwork for discipline-based studies on intellectual risk-taking. For example, Beghetto (2009) examined intellectual risk-taking as a science-focused, and İlhan and Çetin (2013) focused on mathematics. On the other hand, Gezer et al. (2014) examined intellectual risk-taking behavior with a focus on social studies and revealed that intellectual risk-taking behavior generated a conflict between approach (hope of success) and avoidance (fear of failure) tendency. They explained the tendency to stay away from the target due to fear of failure as avoiding taking intellectual risk, and the tendency to

accept the possible risks related to the target and take action despite these risks as approaching intellectual risk-taking (Gezer et al., 2014). Pupils with an advanced disposition to avoiding academic risk have low achievement motivation and these students choose learning tasks according to the difficulty level of the task; namely, since they think that they can perform easy learning tasks with a little effort, they tend to take risks in the face of such tasks. On the contrary, they believe that they cannot be successful in difficult tasks even if they try hard, and they abstain from taking intellectual risks. Pupils who have tendency to approaching intellectual risk-taking have upper achievement motivation and these students are relatively less affected by the difficulty level of the task when choosing learning tasks (Gezer, 2016). Furthermore, they do not hesitate to take intellectual risks even when faced with a challenging task.

Promoting intellectual risk-taking behaviors is very considerable in the sense that such a behaviour contributes to academic success of students. Therefore, it is noteworthy to investigate the traits that influence pupils' risk-taking behaviors. Classroom climate is one of the determinants of students' intellectual risk-taking behavior (Carfley, 2021; Clifford, 1988; Clifford & Chou, 1991; Sharma, 2015). Classroom climate can play a supportive or obstructive role on learning (Lee, 2005). There is no single definition for classroom climate as it is also referred to with different terms such as learning atmosphere, learning environment culture, classroom atmosphere, social and psycho-social atmosphere, environment, ambiance, and atmosphere (Adelman & Taylor, 2005; Dorman, 2002; Dorman, et al., 2006). In this present study, classroom climate term is preferred. According to Dorman (2002), classroom climate is the general opinions of students regarding the quality of the learning environment. Similarly, Lee (2005) defined classroom climate as the perceived quality of classroom environments. Besides the general atmosphere of the classroom, multiple communication/interaction between student-teacher and student-student in the learning environment is also considered within the scope of classroom climate (Gazelle, 2006; Pianta, et al., 2005). As a matter of fact, Açıkgöz (1998) stated that the classroom climate consists of the psychological, social, and physical effects created by the relations between pupil-pupil and teacher-pupil within the classroom rules that must be adhered to and the physical conditions of the classroom. In this respect, although there is no consensus on how it should be named, it can be said that researchers agree that the classroom climate has a multidimensional structure (İlhan, 2017).

In parallel with its multidimensional structure, classroom climate significantly affects many cognitive and emotional learning outcomes (Afari, et al., 2013; Dadabo, 2014; Davis, 2003; Dorman, 2009; Fraser, 1998; Lee, 2005). A favorable classroom environment is positively related by the variables of teacher-student relationship (Howes, 2000; Meyer et al., 1993), quality of classroom learning activities (Brown et al., 2003), student achievement (Howes, 2000; Peisner-Feinberg et al., 2001), and achievement orientations (Church et al., 2001; Mucherah, 2008; Midgley, et al., 1998). Moreover, research has shown that while students' shyness (Gazelle, 2006; Gazelle & Rudolph, 2004; Pianta, et al., 2002) and aggression (Anderson, et al., 2012) levels are lower, their risk-taking tendencies are higher in a positive classroom climate (Budge & Clarke, 2012; Sharma, 2015). In this sense, environments where the learning atmosphere is flexible, student participation is supported, positive teacher-student relationships are established, students can receive necessary feedback, expectations are met, and they experience the sense of achievement can contribute to students' intellectual risk-taking behavior.

Purpose and importance of the research

In the present paper, the purpose is to analyze the relationship between middle school pupils' intellectual risk-taking in social studies course (IRTSCS) behaviors and their perceptions of classroom climate. There is a restricted number of research studies in the literature reviewing the IRTSCS of secondary school pupils. The first of such resarch is the study of Karademir and Akgül (2019) in which they scrutinized the relationship between IRTSCS of secondary school pupils and their autonomous learning abilities. The second one is Gezer's (2016) study in which she examined the relationships between secondary school students' attitude, learning approach, intellectual risk-taking behavior, goal orientation, classroom assessment atmosphere, perceptions of classroom atmosphere, and their academic success within the scope of social studies course. In the last study, Üztemur et al., (2020) explored the relationship between secondary school students' social studies-oriented epistemological beliefs, learning approach, intellectual risk-taking, and academic success. No research has been found in the literature on the relationship between intellectual risk-taking and classroom

climate. In this context, this study, in which the relationship between intellectual risk-taking behaviours and perceptions of classroom climate of secondary school pupils will be scrutinized with canonical correlation, is anticipated to contribute to the literature.

Method

Research Model

Correlational research model was utlilized in the research. In correlative research, it is aimed to detect the relationship between two or more quantitative variables (İlhan & Gezer, 2021). Since the relationship between IRTSCS and classroom climate variables is examined in this study, the study is in the type of correlative research.

Participant Group

The study was performed with a total of 294 pupils, whose 148 were female and 145 were male students, studying at a secondary school in the centered district of Diyarbakır, Türkiye in the spring term of 2021-2022 academic year. 149 of the students were in the 7th class and 145 were in the 8th class. With a purpose to obtain accurate estimates in canonical correlation analysis (CCA), it is proposed that the number of participants in the study group should be at least 20 times the total number of factors in the variable–sets (Stevens, 2009). In this research, there are two dimensions in the intellectual risk-taking data set: approach to taking intellectual risk (APTIR) and avoidance from taking intellectual risk (ATIR). The classroom climate dataset, on the other hand, is composed of four variables: Peer Backing (PB), Teacher Backing (TB), Gratification (G), and Intellectual Proficiency (IP). That's to say, there are six variables in total. Accordingly, 120 participants are necessary to achieve reliability of the results acquired from CCA. So, it can be expressed that the sample was sufficient in this study.

Data Collecting Tools

Data of this research was collected by means of Intellectual Risk-Taking in Social Studies Course Scale (IRTSCS) and Classroom Climate Perceived by Students Scale (CCPSS). IRTSCS was developed by Gezer et al. (2014) and has a five-point Likert-type rating. There are 21 items in the scale form. It has a two-dimensional structure, namely APTIR and ATIR. Table 1 shows the example items for each factor, along with the reliability coefficients estimated in the research in which the scale was developed, and calculated in this research.

Table 1.

Internal Consistency Coefficients for the IRTSCS and Sample Items from the Scale

Dimension	Sample Items	Cronbach's alpha	
		Gezer's et al. study (2014)	Present Study
Factor 1: APTIR (16 items)	I think the mistakes I make in the social studies class are an opportunity to learn.	.81	.77
Factor 2: ATIR (5 items)	I worry about making mistakes in social studies homework.	.68	.70

As seen in Table 1, the internal consistency coefficients calculated in this study were found to be .77 and .70 for the APTIR and ATIR subscales, respectively. Instruments with a reliability coefficient of .70 and above are considered reliable (Tezbaşaran, 1999). The subscales of the IRTSCS meet this requirement.

On the other hand, CCPSS was developed by Çengel and Türkoğlu (2015) and has a five-point Likert-type rating. CCPSS involves 29 items and the items are grouped under four factors: Peer backing, teacher backing, gratification, and intellectual proficiency. Table 2 displays the number of items in each dimension of the scale as well as sample items from each dimension, and the internal consistency coefficients calculated for these dimensions.

Table 2.

Internal Consistency Coefficients for the CCPSS and Sample Items from the Scale

Dimension	Sample Items	Cronbach's alpha	
		Çengel & Türkoğlu study (2015)	Present Study
PB (10 items)	My classmates help me solve my problems.	.90	.87
TB (9 items)	My teachers listen to me.	.88	.89
G (5 items)	I am proud of my class.	.86	.74
IP (5 items)	I like to learn new things in the classroom.	.78	.64

As can be seen in Table 2, the internal consistency coefficients calculated in this study for the CCPSS are over .70 in subscales other than SC. Instruments with a reliability value of .70 and above are considered reliable (Tezbaşaran, 1997). Subscales other than SC in the CCPSS meet this requirement. However, it can be said that the SC subscale is also reliable, considering that values of .60 and above are considered adequate for the reliability of scales with fewer items (İlhan & Çetin, 2021).

Data Analysis

Data attained from the study were scrutinized through the SPSS software. The relationship between intellectual risk-taking and classroom climate was examined by CCA. Before the analysis, the data set was scanned for missing values, outliers, and distribution properties. First, the data set was tested for missing values, and no missing values were encountered. Afterwards, Z-values were checked over total scores to detect univariate outliers. The data of four students whose Z–score was outside the range of ±3 was deleted from the data file. Following the testing univariate normality, the Mahalanobis distances was inspected to detect multivariate outliers and it was found that there were no multivariate outliers in the intellectual risk-taking data. On the other hand, a case whose Mahalanobis distance coefficient was above the critical value of 18.47 was excluded from the classroom climate dataset. Thereby, 289 participants remained in the data file. Table 3 displays the skewness and kurtosis coefficients for the dataset with 289 participants.

Table 3.

The Skewness and Kurtosis Coefficients for the CCPSS and IRTSCS

Dimension	**Skewness**	**Kurtosis**
Approach to taking intellectual risk	-.39	.00
Avoidance from taking intellectual risk	-.12	-.65
Peer backing	-.47	-.31
Teacher backing	-.71	.03
Gratification	-.46	-.56
Intellectual proficiency	-.46	-.52

Büyüköztürk (2010) states that the skewness and kurtosis coefficients which are within ±1 is acceptable for normal distribution. So, the skewness and kurtosis statistics in Table 3 indicate the presence of normality in the data.

Ethical Procedures

Ethical committee consent for current research was obtained from the Ethics Committee of Dicle University (Num: 216876; Date: 21/01/2022).

Results

This section presents the outputs of the CCA. Prior to analysis, the first thing is to look into the results of the multivariate tests of significance that indicate whether the canonical model is statistically significant or not. Although there are four different significance tests, comments were made based on the Wilks ƛ, since it is more common (Sherry & Henson, 2005). Table 4 displays the outputs of the multivariate significance test concerning the canonical model.

Table 4.

Multivariate Significance Test

Test Name	Value	Approx. *F*	Hypothesis df	Error df	Significance of *F*
Pillai's	.23676	9.29850	8	554	.000
Hotelling's	.30288	10.41155	8	550	.000
Wilk's	.76567	9.85495	8	552	.000
Roy's	.26603				

S = 2, M = 1/2, N = 137

Table 4 illustrates that the canonical model is statistically significant [Wilks's λ=.75567, F(8,552) =9.85495, p<.001]. Wilks λ value demonstrates the unexplained variance among the canonical variables in the model attained. Therefore, the value of "1-λ" indicates the amount of common variance shared by the canonical variables and can be interpreted as the R2 coefficent in the regression analysis (Sherry & Henson, 2005). Wilks λ value for the relationship between intellectual risk-taking and classroom climate was estimated as .2343. From the point of this value, it can be said that the amount of variance shared between intellectual risk-taking and classroom climate datasets is 23%.

Besides the statistical significance of the canonical model, the significance of each canonical function in the model should be tested respectively. While deciding on which of the canonical functions was significant, the eigenvalues and canonical correlation values of the canonical functions were examined (Sherry & Henson, 2005). In the research, two canonical functions were attained. Table 5 shows the eigenvalues and canonical correlation values of these functions.

Table 5.

Eigenvalues and Canonical Correlations

Root No.	Eigenvalue	Percentage	Cumulative Percentage	Canonical Corelation	Canonical Corelation Squared
1	.29203	96.41808	96.41808	.47542	.22603
2	.01085	3.58192	100.00000	.10360	.01073

Table 5 exhibits that the canonical correlation value for the first canonical function is .47542. Therefore, intellectual risk-taking and classroom climate data sets share a variance of 22.603% in the first canonical function. In the second canonical correlation, the correlation value which is not taken into account in the first canonical function is calculated. The value of the second canonical function is .01073. This value means that intellectual risk-taking and classroom climate data sets share a variance of 1.07% in the second canonical function. Dimension reduction analysis results of the relationship between intellectual risk-taking and classroom climate datasets are shown in Table 6.

Table 6.

Dimension Reduction Analysis

Roots	Wilk's L.	*F*	Hypothesis sd	Error sd	Significance Value of *F*
1 to 2	.76567	9.85495	8.00	552	.000

2 to 2	.98927	1.00172	3.00	277	.392

Table 6 demonstrates that the first canonical model is statistically significant [Wilk's λ=.762567, F(8,552) =9.85495, p<.001]. However, there is no statistically significant relationship between intellectual risk-taking and classroom climate data sets for the remaining second canonical function [Wilks's λ=.98927, F(3,277)= 1.00172, *p*>.05].

Other issue to be answered in CCA is about how the variables in the data sets contribute to the relationship between canonical variables. In order to answer this question, standardized and structural coefficients are utilized. In this study, standardized and structural coefficients of the first canonical function among canonical variables were examined in order to designate how much the APTIR and ATIR variables in the intellectual risk-taking data set and the PB, TB, G and IP variables in the classroom climate data set subscribe to the relationship between the canonical variables. Table 7 illustrates the results obtained.

Table 7.

Canonical Analysis for the First Canonical Functions regarding the Correlation between Intellectual Risk-Taking and Classroom Climate

Variable	1st Canonical Function	
	Sc	r_s
Approach to Taking Intellectual Risk	.989	.67
Avoidance from Taking Intellectual Risk	-.033	.54
R_c^2	**.23**	
Peer Backing	.055	.53
Teacher Backing	.283	.72
Gratification	-.304	.45
Intellectual Proficiency	.945	.95

r_s values higher than |.45| are underlined.

Intellectual risk-taking and classroom climate data sets make a significant contribution to the canonical model and to all the dimensions above the criterion value of .45 (Table 7). In accordance with Table 7, the Rc2 coefficient for the initial canonical function is .23. This value reveals that the shared variance between intellectual risk-taking and classroom climate datasets in the first canonical function is 23%. Furthermore, the intellectual risk-taking and classroom climate datasets for this function are shown in Figure 2.

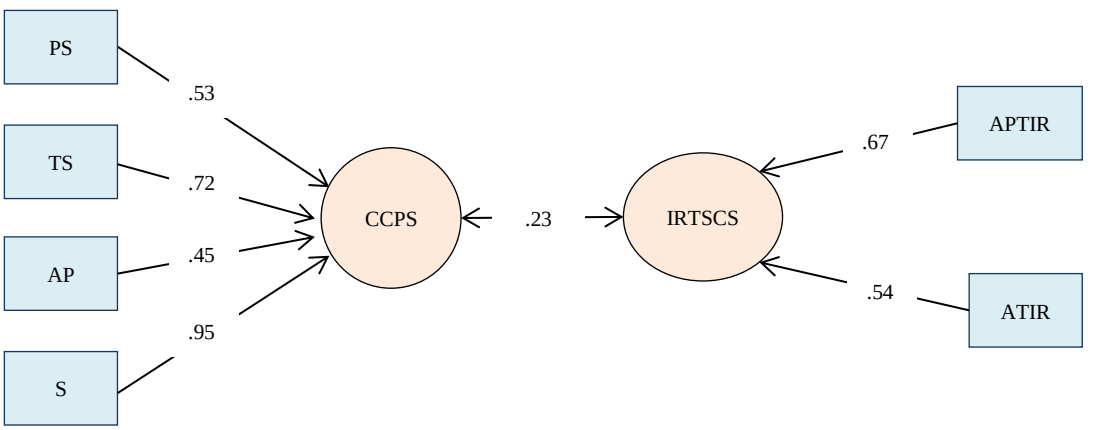

Figure 2. *The Correlation between Classroom Climate and Intellectual Risk Taking*

Discussion, Conclusion and Recommendations

In the present research, the relationship between secondary school pupils' academic risk-taking in social studies course tendencies and classroom climate perceptions was examined by CCA. As a result of the analysis, only one canonical function was obtained as significant for the relationship between academic risk-taking and classroom climate. In the canonical function, which was calculated to maximize the relationship between academic risk-taking and classroom climate data sets, the correlation between data sets was calculated as .47542. Accordingly, in the initial canonical function, intellectual risk-taking, and classroom climate data sets shared a variance of 22.60%.

Intellectual risk-taking and classroom climate variables are correlated structures in the literature. However, this overlap can be characterized as a partial similarity because there is no study in the field that completely deals with the relationship between intellectual risk-taking and classroom climate. In other words, studies that can be stated to be in parallel with the results of the research examine either the relationship between the learning environment and intellectual risk-taking, or the effects of intellectual risk-taking on other affective characteristics such as self-efficacy and motivation. For example, intellectual risk-taking relationship with learning environment (Akdağ, 2020), achievement orientations (Church, et al., 2001; Lau & Lee, 2008; Phan, 2008; Popilskis, 2013), self-efficacy (Anderman & Midgley, 1997; Haydel, et al., 1999), and motivation (Köse & Küçükoğlu, 2009) studies show parallelism with the research results in terms of providing evidence that there is a significant relationship between classroom climate and affective learning outputs.

Our research results are in line with the theoretical background in that the characteristics of the classroom climate affect the pupils' characteristics. Sharma (2015) and Clifford's (1988) studies can be cited as examples of this theoretical background that is compatible with our research results. Clifford (1988) stated that the classroom environment affects students' risk-taking behaviors while Sharma (2015) reported that a carefree, supportive, and democratic classroom environment will help students take intellectual risk. In addition, Carfley (2021) stated that the creation of a safe and interesting learning environment will serve to eliminate the stress in the learning environment and make students feel safe, valuable, and comfortable, thus eliminating the obstacles to risk-taking behavior. Drawing caution to the physical characteristics of the learning ambience, Cervantes (2013) emphasized that designing the classroom environment by using furniture, decorations, and visual clues suitable for the physical arrangement of the classroom would allow students to share their opinions comfortably in the classroom and make the learning environment suitable for taking risks. Also, Clifford and Chou (1991) emphasized that creating alternative classroom environments will encourage students to take intellectual risks by encouraging them. Based on the theoretical information listed, it can be said that pupils' intellectual risk-taking behavior cannot be handled independently of the classroom environment. In this context, teachers should organize the learning environment as environments where students share their knowledge willingly and without hesitation. For this, teachers should eliminate all possible risk factors in the classroom and students should be willing to join in learning activities by eliminating the anxiety of negative evaluation. In addition, methods such as creative thinking, reflective thinking, and problem-solving skills that will increase students' willingness to take intellectual risks should also be employed.

This research is of a correlative design. Correlative studies limit the interpretations that can be made about the cause-effect relationship between the variables (McMillan & Schumacher, 2010). In order to eliminate this limitation, it can be recommended to conduct experimental studies to determine how different learning environments affect students' intellectual risk-taking behaviors. The fact that the data were gathered only from a sample of 7th and 8th level pupils is the second limitation of the study. In future studies, data can be collected from other grade levels and various education grades. Thus, the generalizability of the results obtained from the study to different age groups may increase. The last limitation of the study is that the data were obtained with self-report measurement tools. In order to overcome this limitation, various data collection methods such as making in-class observations on teacher-student and student-student relations and conducting interviews with students for perceived teacher support can be used in future studies.

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