

## The Role of Teacher's Feedback in Physical Education: Motivational Climate as Mediator

### Beden Eğitiminde Öğretmen Geribildiriminin Rolü: Aracı Değişken Olarak Motivasyonel İklim

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**ABSTRACT:** The aim of this study was to investigate the role of perceived teachers' feedback on the relationship among students' perceptions of motivational climate, intrinsic and extrinsic motivations, enjoyment and concentration in physical education lessons. Total of 835 middle school students ( $M_{Age} = 12.83 \pm 0.67$ ) voluntarily participated to the cross-sectional data collection. Convenience sampling was used to select schools from Denizli. Structural Equation Modelling showed that knowledge of performance feedback positively predicted perceived performance approach climate and perceived mastery climate positively predicted enjoyment, concentration and intrinsic motivation. Furthermore, perceived motivational climate was not found to mediate the relationship among perceived teacher feedback, motivation and lesson engagement. The results were discussed in terms of implications for physical education environment.

**Keywords:** Perceived teachers' feedback, perceived motivational climate, motivation, enjoyment, concentration, physical education

**ÖZ:** Bu araştırmanın amacı, beden eğitimi derslerinde öğretmenin geribildiriminin öğrencilerin algılanan motivasyonel iklim, içsel ve dışsal motivasyon, eğlence ve konsantrasyon düzeyleri üzerine etkisini incelemektir. Kesitsel veri toplamaya toplam 835 ortaokul öğrencisi ( $X_{Yaş} = 12.83 \pm 0.67$ ) gönüllü olarak katılmıştır. Denizli ilinden okulların seçiminde uygun örnekleme yöntemi kullanılmıştır. Yapısal eşitlik modeli sonuçları, performans bilgisi geribildiriminin algılanan performans yaklaşımı ikliminin pozitif tahmin edicisi olduğunu ve algılanan ustalık ikliminin eğlence, konsantrasyon ve içsel motivasyonun pozitif tahmin edicisi olduğunu ortaya koymuştur. Bunun yanında, algılanan motivasyonel iklimin, algılanan öğretmen geribildirimi ile motivasyon, eğlence ve konsantrasyon arasındaki ilişkiye aracılık etmediği belirlenmiştir. Sonuçlar, beden eğitimi ortamı için anlamı bakımından tartışılmıştır.

**Anahtar Sözcükler:** Algılanan öğretmen geribildirimi, algılanan motivasyonel iklim, motivasyon, eğlence, konsantrasyon, beden eğitimi

## 1. INTRODUCTION

Physical education (PE) programs in the schools provide opportunities for physical activity to children and adolescents and also teach them the skills and knowledge for active lifestyle (Anderssen & Wold, 1992; Sallis & McKenzie, 1991). The factors affecting children's and adolescents' motivation to participate in PE has been attracting the researchers' attention in

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the last few decades. They have examined these factors based on various motivation theories (Hagger & Chatzisarantis, 2007, 2008; Reeve & Jang, 2006).

Within PE, one of the motivational theories that have received empirical support is the Self-Determination Theory (SDT; Deci & Ryan, 1985). SDT framework has been used to examine environmental factors that enhance or undermine human motivation, functioning, and well-being.

### **1.1. Cognitive Evaluation Theory**

Cognitive Evaluation Theory (CET; Deci & Ryan, 1985; Ryan, 1982) is a sub-theory within SDT. CET provides a theoretical framework for explaining the effects of environmental factors (e.g. rewards, feedback) on intrinsically motivated behaviours. Intrinsic motivation has been defined as innate and natural propensity to engage in an activity for the enjoyment and satisfaction inherent in the activity, and in so doing, to seek to conquer optimal challenges. Adversely, extrinsic motivation refers to engaging in an activity not for its own sake, as a means to an outcome (Deci, & Ryan, 1985).

According to CET, external factors have two functional aspects, namely controlling and informational or feedback aspects. When the environmental factor that is perceived as controlling, the feeling of pressure to act in a specific manner is salient and this undermines intrinsic motivation. Oppositely the environmental factor that is perceived as informational provides relevant information in terms of the behaviour which enhances intrinsic motivation (Ryan, 1982).

CET explains the role of autonomy and competence as mediators on an individual's choice of actions (Deci & Ryan, 1985). Reward and feedback effect intrinsic motivation by effecting the feelings of competence and self-determination. More specifically, feedback that strengthens the feelings of competence enhances intrinsic motivation (Deci, Cascio & Krusell, 1975).

### **1.2. Perceived Teacher's Feedback**

Since CET provides an explanation related to the positive effects of feedback on intrinsic motivation, several studies have investigated the effect of feedback provided by teachers on students' motivation, perceptions and willingness to continue their efforts to improve (Amorose & Weiss, 1998; Goudas, Minardou, & Kotis, 2000; Moreno-Murcia, Silveira Torregrosa & Conte Marín, 2013; Hagger, Koch & Chatzisarantis, 2015; Lam, Cheng, & Yang, 2017). Especially, positive general, positive non-verbal and negative non-verbal teacher's feedback has been found to be the essential antecedents to self-determined motivation in secondary school PE (Koka & Hagger, 2010).

In this study, feedback provided by teacher has been conceptualized according to the subscales of Perceived Teacher Feedback Scale (Koka & Hein, 2005). The scale consisted of four dimensions (subscales) of the feedback, namely perceived positive general feedback, positive non-verbal feedback, negative non-verbal feedback, and knowledge of performance. Perceived positive general feedback has been used to praise and encourage students' effort. Teachers use positive statements about students' performance, but these sentences do not give information about what was exactly good about the performance, such as 'Well done!' or 'You are doing a really great job' (Koka & Hein, 2006; Koka & Hagger, 2010). Positive non-verbal feedback has reflected the extent to which the teacher responded to good performance and effort using positive gestures, such as smiling, nodding, patting on the shoulder, and clapping hands. Negative non-verbal feedback has reflected the extent to which the teacher reacted to poor performance or errors with negative gestures, such as angry face, rolling the eyes, frowning of brow, shaking the head or displaying an angry expression (Koka & Hein, 2005; Morgan &

King, 2012). Lastly, knowledge of performance has been described as feedback that gives information about the error that must be corrected about movement patterns (Magill, 1994).

Feedback has been positively predicted by competence satisfaction, which in turn predicted higher levels of vitality and greater intentions to participate, through the mediation of autonomous motivation (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008) in PE environment. The performance feedback given by teacher changes students' perceived competence (Senko & Harackiewicz, 2005). Furthermore, feedback after good performances enhances intrinsic motivation via enhanced perceived competence in golf putting task (Badami, Vaezmousavi, Wulf & Namazizadeh, 2011). Besides, teachers' feedback influences students' perception of the motivational climate in a specific lesson and predict students' subsequent task performance (Vigoda-Gadot & Angert, 2007). For example, positive teacher's feedback increased perceptions of mastery climate and decreased performance avoidance climate, while negative feedback increased perceptions of performance approach and performance avoidance climate (Erturan-İlker, 2014). Research also revealed that positive general feedback created a more positive learning environment and enhances students' motivation to participate in PE more intensively (Koka & Hein, 2003). Besides, Drost, Wirth, Keck, Ruckman and Todorovich (2015) found that negative effects of informational feedback and performance climate on perceived competence appear to negatively affect intrinsic motivation. Similarly, Levesque, Zuehlke, Stanek and Ryan (2004) found perceived positive informational feedback has been positively linked with German and American university students' autonomous motivation which is a composite indice of motivational regulations. Hagger, Koch and Chatzisarantis (2015)'s study manifested that individuals' autonomy causality orientation and positive competence feedback increased intrinsic motivation, as assessed by time spent on an interesting puzzle task. More interestingly, positive competence feedback had positive impact on control-oriented individuals' intrinsic motivation on the puzzle task compared to no feedback group.

CET also emphasizes the importance of how individuals perceive the environment related to its competitiveness. The perceived motivational climate of a learning environment influences the individuals' perception of competitiveness in a specific learning task (Nicholls, 1984) and conceptualized in Achievement Goal Theory (AGT).

### **1.3. Perceived Motivational Climate**

AGT is a theory that focuses on how individuals view competence in achievement environments and assumes that achievement behaviours are affected by interacting personal and situational factors. One of the important situational factors is the motivational climate which is created by significant others who set particular criteria for what constitutes success (Nicholls, 1984). The term motivational climate refers to perceptions of situational cues linked with achievement cognitions, feelings, and behaviours (Ames, 1992) and is described in dichotomous model, namely mastery (task) or performance (ego) constructs.

In dichotomous framework, Ames (1992) described mastery (task) climate as a learning environment that teachers focus on self-improvement, effort/persistence, and task mastery. In such a climate, making mistakes is considered a part of the learning and understanding and students are encouraged when they make mistakes by using the process to guide improvement and learning. Mastery climate has been considered to be the most adaptive environments for encouraging achievement outcomes (Braithwaite, Spray & Warburton, 2011). In contrast, performance climate promotes social comparison as a basis for judgments of success. Teachers tend to give intolerant responses to student mistakes and poor performance. In a performance climate, high ability is often demonstrated by winning with minimal effort (Nicholls, 1989).

In recent years dichotomous model was extended as trichotomous model in which performance climate is separated into two constructs, namely performance approach and

performance avoidance. A performance avoidance climate emphasizes the avoidance of showing low ability, losing, or receiving poor social comparisons (Garn, McCaughtry, Shen, Martin & Fahlman, 2013), while a performance approach climate represents an environment that emphasizes demonstrating high ability and importance of doing better than others (Wolters, 2004).

Perceived motivational climate has been considered as an important antecedent of different types of motivation. For instance, a recent study by Jaakkola, Yli-Piiparib, Barkoukis and Liukkonen (2015) showed that 7<sup>th</sup> and 9<sup>th</sup> graders who perceived the motivational climate of PE highly performance, were more extrinsically motivated compared to students who perceived their climate as less performance oriented. However, performance climate and less autonomous motivational regulations had no negative influence on PE enjoyment. Similar results have been provided from sport environment by Jõesaar, Hein and Hagger (2011), which showed that athletes' perceived task-involving motivational climate indirectly influenced their intrinsic motivation via their perceived basic psychological need satisfaction. A systematic review by Harwood, Keegan, Smith and Raine (2015) has shown that mastery climate has been positively correlated with intrinsic motivation whereas performance climate has been positively correlated with external forms of motivational regulations in sport and physical activity settings.

Previous studies on the perception of different motivational climates have revealed that they create differential levels of enjoyment in PE. Johnson (2015)'s study has found a positive relationship between perceived mastery climate and 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade students' enjoyment while negative relationship was found between perceived performance climate and enjoyment in PE. Another study with sixth graders' perceptions of mastery climate demonstrated positive relationships with enjoyment in PE (Liukkonen, Barkoukis, Anthony & Jaakkola, 2010). Ninth grade students' perception of high ego and low task motivational climate had a negative correlation with enjoyment and effort, whereas high ego and high task climate had a positive correlation with these variables in PE (Liukkonen, 2007). Jaakkola, Wang, Soini and Liukkonen (2015) investigated the differences in enjoyment in PE using perceived motivational climate cluster groups. The results showed that students in "high task and moderate ego climate" clusters experienced the highest level of enjoyment whereas students in "low task and moderate ego climate" cluster perceived the lowest.

Besides, students' perceptions of various motivational climates created differential levels of concentration in PE and sport. An experimental study with 10 and 14-year old participants who participated in community-based basketball programs revealed that athletes' concentration disruption in the control group increased significantly in compared to athletes' in the mastery climate experiment group (Smith, Smoll & Cumming, 2007). In high school PE environment, students' perceptions of a task involving climate were strong positive predictors of their concentration (Papaioannou & Kouli, 1999).

#### **1.4. The Present Study**

In this study, perceived teacher's feedback was taken into consideration as predictor of intrinsic and extrinsic motivations and lesson engagement (enjoyment as affective engagement, concentration as cognitive engagement) variables through motivational climate of PE lesson. Perceived feedback and motivational climate have not been reported as predictors of motivation and lesson engagement in the literature yet. Furthermore, these reciprocal relationships have not been entirely studied in PE context. To our knowledge, this is the first study that investigating the role of perceived teachers' feedback in the relationship between students' perceptions of motivational climate, intrinsic and extrinsic motivation and PE engagement. Testing the potential mediating role of motivational climate on the relationship of teachers' feedback and students' motivation, concentration and enjoyment was another focus of our research.

We hypothesized that perceived teacher's feedback would influence students' perceptions of motivational climate of PE lessons. Based on the evidence from literature, positive general feedback, positive nonverbal feedback and knowledge of performance were hypothesized to predict mastery climate and performance approach climate (e.g. Erturan İlker, 2014; Stein, Bloom & Sabiston, 2012), while negative nonverbal feedback would predict performance avoidance climate. Since, CET proposes that when the informational aspect of the feedback is salient, intrinsic motivation varies as a function of perceived competence (Vallerand & Reid, 1984); three types of motivational climate were hypothesized to be the mediators between perceived teacher's feedback and motivation, enjoyment, concentration. Consistent with recent research conducted in PE, we anticipated that mastery climate would positively predict enjoyment (e.g. Jaakkola, Yli-Piipari, Barkoukis & Liukkonen, 2015; Johnson, 2015; Liukkonen, 2007), concentration (e.g. Papaioannou & Kouli, 1999; Moreno Murcia, Gimeno & Coll, 2008) and intrinsic motivation (Brunel, 1999; Cury et al., 1996). On the other hand, performance approach and performance avoidance climate were hypothesized to predict enjoyment, concentration (e.g. Morris & Kavussanu, 2009) and intrinsic motivation negatively (e.g. Cury, Elliot, Sarrazin, Da Fonseca & Rufo, 2002). We expected that extrinsic motivation underpinned by perceptions of both performance approach and avoidance climates (e.g. Brunel, 1999; Moreno Murcia, Camacho & Rodríguez, 2008).

## 2. METHOD

### 2.1. Participants

Total of 835 students (Age range 11-14;  $M_{Age} = 12.83 \pm 0.67$ ) were recruited from seven public urban middle schools. Convenience sampling was used to select schools in Denizli. There were no remarkable differences in PE facilities and equipment between the schools. Table 1 shows the sex and grade distribution of the participants of the study.

**Table 1: Sex and grade distribution of the participants**

Grade	Girl	Boy	Total
7 <sup>th</sup>	165	203	368
8 <sup>th</sup>	222	245	467
Total	387	448	835

### 2.2. Measures

#### 2.2.1. Perceived teacher feedback

Perceived Teacher Feedback Scale (Koka & Hein, 2005) was used to assess students' perception of the type of the teachers' feedback after their performance in PE lessons. The five-point Likert type scale (1 = strongly disagree, 5 = strongly agree) was adapted to Turkish by Kara, Kazak Çetinkalp and Aşçı (2014). The scale consists of 14 items and four subscales. These are positive nonverbal feedback ("In response to a good performance the teacher smiles"), positive general feedback ("If the teacher sees that I try very hard, I'll always get praise"), negative nonverbal feedback ("In response to a poor performance the teacher looks angry") and knowledge of performance ("After the performance the teacher instructs me immediately").

Kaiser-Meyer-Olkin (KMO) and Bartlett tests ( $KMO = .86$ ;  $X^2 = 2926.915$ ;  $p = .00$ ) showed that the data was suitable for exploratory factor analysis (EFA). EFA on these 14 items yielded four factors with an eigenvalue above 1, explaining 58.92% of the variance. The factor loadings were between .54 and .73 for knowledge of performance, .66 and .72 for positive general feedback, .71 and .76 for negative nonverbal feedback and .57 and .81 for positive nonverbal feedback for subscales. The application of the Perceived Teacher Feedback Scale to the Turkish middle school PE context appeared to be tenable on the basis of the results of the

(CFA;  $\chi^2/df = 4.785$ , RMSEA = .067, SRMR = .048, CFI = .90, GFI = .94, AGFI = .91, NFI = .88 and  $p = .00$ ). Internal consistencies were satisfactory with Cronbach's alphas of .60, .62, .67 and .75 for positive nonverbal, negative nonverbal, positive general feedback and knowledge of performance, respectively.

### 2.2.2. *Motivational climate*

Trichotomous Motivational Climate Scale (Agbuga & Xiang, 2008) which is designed to measure three different motivational climates (mastery climate, performance approach climate, and performance avoidance climate) in PE, consists of 28 items. Each item (e.g. "Outperforming classmates is important") was rated on a 7-point Likert scale (1 = not at all in agreement to 7 = completely in agreement).

KMO and Bartlett tests (KMO = .78;  $X^2 = 3335.293$ ;  $p = .00$ ) showed that the present data were suitable for EFA. EFA on the scale items yielded three factors with an eigenvalue above 1, explaining 30.14% of the variance. The factor loadings were between .33 and .64 for mastery climate, .34 and .68 for performance approach climate and .38 and .60 for performance avoidance climate subscales. A CFA for the scale, ( $\chi^2/df = 3.172$ , RMSEA = .051, SRMR = .040, CFI = .81, GFI = .93, AGFI = .91, NFI = .75 and  $p = .00$ ) yielded good fit indices, thus, supporting the presence of three higher order factor structures, namely mastery, performance approach and performance avoidance motivational climate. Internal consistencies were satisfactory with Cronbach's alphas of .65, .71, and .45 for mastery, performance approach, and performance avoidance, respectively.

### 2.2.3. *Intrinsic & extrinsic motivation*

Students' motivation in PE was assessed with Turkish version (Daşdan Ada, Aşçı, Kazak Çetinkalp & Altıparmak, 2012) of Situational Motivation Scale (SIMS; Guay, Vallerand & Blanchard, 2000) for PE lesson. SIMS consists of 16 items assessing four different aspects of motivation (intrinsic motivation, identified regulation, extrinsic regulation, amotivation) rated on a 7-point Likert scale (1 = not at all in agreement to 7 = completely in agreement). Participants were asked to rate how important each of the 16 statements were to their personal motives to engage in PE, by responding to the stem "Why are you currently engaged in PE?" The sample item is "Because I don't have any choice".

KMO and Bartlett test results (KMO = .86;  $X^2 = 3645.209$ ;  $p = .00$ ) showed that data was suitable for EFA. EFA and CFA results of Turkish middle school sample showed a different subscale structure than the original SIMS. EFA on the scale items yielded two factors with an eigenvalue above 1, explaining 43.76% of the variance. The factor loadings were between for .42 and .70 for intrinsic motivation and .47 and .71 for extrinsic motivation subscales. CFA results ( $\chi^2/df = 3.994$ , RMSEA = .060, SRMR = .047, CFI = .91, GFI = .94, AGFI = .92, NFI = .89 and  $p = .00$ ) showed that a two-factor (intrinsic and extrinsic motivation) model fit significantly better than the original four-factor (intrinsic motivation, identified regulation, extrinsic regulation, amotivation) model. Internal consistencies were satisfactory with Cronbach's alphas of .81 and .75 for intrinsic motivation and extrinsic motivation, respectively.

### 2.2.4. *Enjoyment*

Six items, scored on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), were used to assess students' enjoyment in PE Scale. Higher values reflected higher levels of enjoyment in PE (e.g., "Mostly I enjoyed PE"). Six items from Duda and Nicholls's (1992) Satisfaction Interest Scale were translated into Turkish by Erturan-İlker, Qusted, Appleton, & Duda (2018).

KMO and Bartlett tests (KMO = .73;  $X^2 = 727.417$ ;  $p = .00$ ) proved that present data is suitable for EFA. EFA on the scale items yielded one factor with an eigenvalue above 1,

explaining 55.22% of the variance. The factor loadings were between .65 and .79. A CFA for the enjoyment scale, ( $\chi^2/df = 0.678$ , RMSEA = .00, SRMR = .006, CFI = 1.00, GFI = 1.00, AGFI = .99, NFI = .99 and  $p = .04$ ) yielded good fit indices, thus, supporting the presence of one factor structure. Cronbach's alpha for internal consistency is .71 showing consistent responses for items of similar content.

### **2.2.5. Concentration**

Students' concentration (e.g., "I completely concentrate in PE") in PE was captured using six items developed by Standage, Duda & Ntoumanis (2005). Items were translated into Turkish by Erturan-İlker, Qusted, Appleton, & Duda (2018). Responses were indicated on a 5-point Likert scale (1 = never, 5 = always).

KMO and Bartlett tests (KMO = .82;  $X^2 = 1200.666$ ;  $p = .00$ ) proved the suitability of the data. EFA on the scale items yielded one factor with an eigenvalue above 1, explaining 47.17% of the variance. The factor loadings were between .50 and .81. After applying the scale in Turkish middle school PE setting, all the indices ( $\chi^2/df = 2,118$ , RMSEA = .037, SRMR = .036, CFI = .99, GFI = .99, AGFI = .98, NFI = .98 and  $p = .02$ ) represented an acceptable fit between the one-factor model and the data. Cronbach's alpha is .75 indicating consistent responses for the scale.

### **2.3. Procedure**

The study received permission from National Ministry of Education and ethical approval from a university. After informed consent forms were obtained from parents, data collection took place during the PE lessons under the supervision of first researcher. During the data collection all participants were guaranteed about the consent, confidentiality, and anonymity of responses. It was also emphasized to the participants that there were no right or wrong answers to any of the questionnaire items and any participant who had questions pertaining to the wording and/or meaning of any of the items was helped. The questionnaire pack took approximately 20 minutes to complete.

### **2.4. Data Analysis**

Initially, the factor structures of the scales used in the study were examined via EFA prior to the main analyses. EFA was conducted relying on a maximum likelihood extraction method with promax rotation to establish the structural construct for the items. KMO statistic was used to assess sampling adequacy, and Bartlett's test of sphericity was used to assess the necessity to perform EFA. KMO results of .80 or greater indicate that researchers can comfortably proceed with the EFA (Tabachnick & Fidell, 2007). Bartlett's test of sphericity was less than .00, indicating that the correlations in the intercorrelation matrix were significantly different from zero (Hair, Black, Babin, Anderson & Tathan, 2006).

The factorial validity of the subscales of the scales were tested with CFA using Amos 21.0 (Arbuckle, 2012). CFA is generally used following EFA and it provides further test the construct validity of a measurement tool. CFA allows to examine whether the statistical model fits the actual data (Waltz, Strickland, & Lenz, 2005). For CFA, the indexes used to determine the goodness-of-fit were RMSEA, for which values of .06 to .08 are considered an acceptable fit, standardized root-mean-square residual (SRMR), for which values less than .05 suggest a good fit; chi square / degree of freedom ( $X^2/df$ ), for which values less than five corresponded to acceptable fit and all those indexes for which values greater than .90 indicate a good fit, namely CFI; goodness-of-fit index (GFI); adjusted goodness-of-fit index (AGFI); and normed-fit index (NFI; Schumacker & Lomax, 2010; Fornell & Larcker, 1981; Hu & Bentler, 1995; Schermelleh-Engel, Moosbrugger & Müller, 2003). The internal reliability of all subscales was assessed by

Cronbach's alpha. Descriptive statistics and bivariate correlations among the study variables were then computed to test the relationships among study variables.

Structural equation modelling (SEM) procedures were used to test the relationships between dimensions of teacher's feedback, motivational climate, intrinsic motivation, extrinsic motivation, enjoyment and concentration using Amos 21.0 (Arbuckle, 2012).

The hypothesized model was tested SEM with maximum likelihood estimation. Multivariate normality implies that the sampling distributions of means of the dependent variables in each cell and all linear combinations are normally distributed (Tabachnick & Fidell, 2007). One approach to handling a multivariate non-normal data set is the bootstrap technique (Byrne, 2001). Bootstrapping was therefore employed in all further SEM analyses. Calculation of model statistics, parameters, and standard errors are all derived from the bootstrap sample distribution.

### 3. FINDINGS

Descriptive statistics, range, skewness and kurtosis characteristics for all measures are presented in Table 2.

**Table 2: Descriptive statistics of the variables**

	Range	Mean	SD	Skewness	Kurtosis
Mastery Climate	1-7	5.09	.81	-.169	-.467
Performance Approach Climate	1-7	4.25	1.18	-.182	-.459
Performance Avoidance Climate	1-7	4.16	1.03	-.064	-.258
Enjoyment	1-5	4.05	.67	-.636	-.382
Concentration	1-5	3.76	.58	-.626	.017
Positive Nonverbal Feedback	1-5	3.26	1.03	-.174	-.651
Negative Nonverbal Feedback	1-5	2.33	1.00	.421	-.676
Positive General Feedback	1-5	2.88	.87	-.092	-.341
Knowledge of Performance	1-5	3.35	1.04	-.419	-.383
Intrinsic Motivation	1-7	5.40	1.12	-0.52	-0.56
Extrinsic Motivation	1-7	2.91	1.37	0.54	-0.52

n = 835

According to Table 2, the participants' mean scores were slightly above the midpoint for all variables with the exception of negative nonverbal feedback and extrinsic motivation. The skewness and kurtosis values represent the normal distribution since skewness less than three and kurtosis less than 10 indicates univariate normality of the data (Kline, 2005). Table 3 shows the correlations among the study variables.

**Table 3: Pearson correlations between the variables**

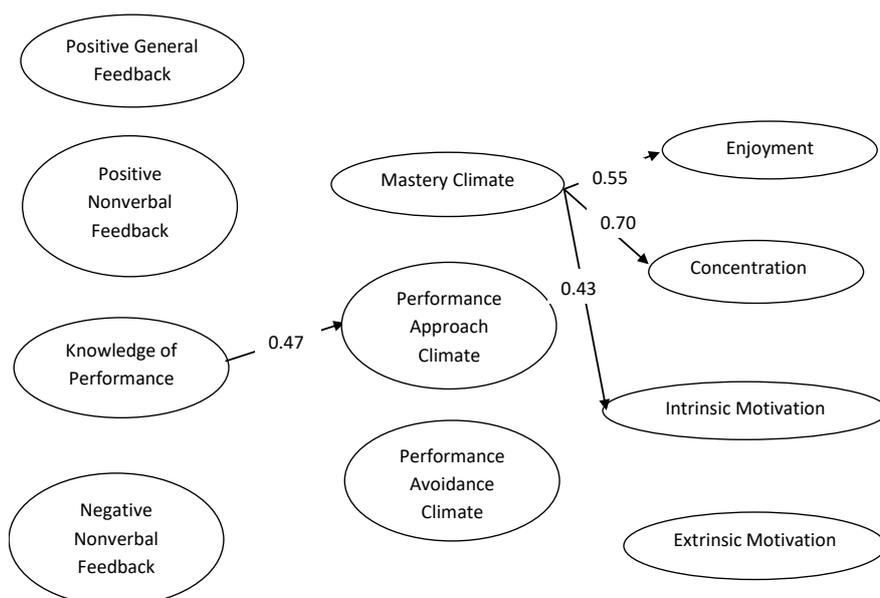
	1	2	3	4	5	6	7	8	9	10
1. Mastery	-									
2. Performance Approach	.08*	-								
3. Performance Avoidance	-.20**	.39**	-							
4. Enjoyment	.16**	-.11**	-.10**	-						
5. Concentration	.20**	.02	-.00	.35**	-					
6. Positive Nonverbal	.25**	.07*	.10**	.12**	.27**	-				
7. Negative Nonverbal	-.06	.23**	.19**	-.20**	-.11**	.16**	-			
8. Positive General	.20**	.16**	.15**	-.01	.15**	.59**	.24**	-		

9. Knowledge of Performance	.27**	.09**	.08*	.10**	.24**	.60**	.15**	.48**	-
10. Extrinsic Motivation	.03	.26**	.24**	-.28**	-.20**	-.00	.35**	.12**	-.04
11. Intrinsic Motivation	.25**	.04	.07*	.36**	.43**	.24**	-.07*	.13**	.20**

\*p<0.05, \*\*p<0.01

As it can be seen in Table 3, negative nonverbal feedback was negatively correlated with mastery climate, enjoyment, concentration, and intrinsic motivation while students' perceptions of performance avoidance climate were negatively correlated with enjoyment and concentration. Finally, extrinsic motivation was negatively correlated with knowledge of performance feedback, positive nonverbal feedback, enjoyment, and concentration.

The hypothesized model was examined via SEM using the maximum likelihood method. The data in the measurement model did not display multivariate normality (Mardia's Multivariate kurtosis = 15.12). An examination of the indices of fit suggested the revised model adequately fitted the data ( $\chi^2/df = 1.923$ ,  $p < 0.01$ , CFI = 0.868, AGFI = 0.870, GFI = 0.882, SRMR = 0.00, RMSEA = 0.033). Error terms of teacher's feedback, motivational climate and motivations were correlated. All standardized regression weights were examined and non-significant paths were removed one by one. Error terms were deleted for the visual simplicity, so only significant paths and standardized estimates are shown in the model (see Figure 1).



**Figure 1. Revised model of teacher's feedback effect on students' perceptions of motivational climate and different outputs**

SEM results indicated that knowledge of performance positively predicted performance approach motivational climate, mastery climate positively predicted enjoyment, concentration and intrinsic motivation.

#### 4. DISCUSSION and RESULTS

In the present study, we were particularly interested in whether the type of teacher's feedback would predict lesson engagement and motivation in PE context. SEM results revealed that performance approach motivational climate has been underpinned by teacher's knowledge of performance feedback. Pearson correlation analysis results also showed that perceived performance approach motivational climate was positively correlated with teacher's knowledge of performance. These findings indicated that PE has been viewed as the lesson, where students

cannot see tangible evidence of their progress on the tasks, unless they receive feedback from their teachers, which may cause a lack of development on those particular learning domains. As knowledge of performance feedback is given information to students related to each part of their movement patterns, learning more about the success of their performance may enhance the students' mechanism of desire for demonstrating high ability.

In line with our expectations, mastery climate positively predicted intrinsic motivation, enjoyment and concentration in PE while these relationships were not proved for perceptions of performance approach or avoidance climates. As reported by Hagger and Chatzisarantis (2008), mastery climate reflects high perceived competence, thus it is likely to be the precursor to intrinsic motivation. This is consistent with previous research that has highlighted firstly by Seifriz, Duda, and Chi (1992). Likewise, Harwood, Keegan, Smith and Raine (2015)'s systematic review has manifested the studies found the link between mastery motivational climate and intrinsic motivation.

The present study provided evidence for testing the CET in Turkish PE context with linking perceived motivational climate. To some extent this is consistent with previous research. The earliest attempt to test CET in PE was by Vallerand and Reid (1984). The findings indicated that positive feedback increased intrinsic motivation while negative feedback decreased it and perceived competence was a mediator between feedback and intrinsic motivation. A recent study by Matosic, Cox and Amorose (2014) tested the moderating role of perceived competence and autonomy on the relationship of controlling use of rewards and intrinsic motivation in swimmers. As reported in the past studies perceived competence was assessed as a mediator variable between feedback and intrinsic motivation. Distinctively, in the present study perceived motivational climate has been tested as mediator while applying CET in Turkish PE environment for the first time.

However, inconsistent with our hypothesis, the proposed model showed no mediational role of motivational climate between perceived teacher's feedback and motivation and PE engagement. One possible explanation for this may be related to the age range of the participants. The hypothesized model may not support the potential mediation because the feeling of rivalry and comparison among peers are more salient during the adolescence and middle school students may not have represented well enough the adolescents. High school PE environment still needs examining to test the effect of the perceived teacher's feedback on motivational climate and indirectly intrinsic motivation.

The present research has some limitations. Firstly, cross-sectional study design did not allow understanding the long-term changes in the students' perceptions. Longitudinal designs would allow following the reciprocal changes with the time. Besides, trichotomous AGT was adopted which takes mastery climate as one solid structure. Instead 2x2 AGT framework differentiate mastery climate as mastery approach and avoidance which provides further insight for students' perceptions of a lesson. Furthermore, Trichotomous Motivational Climate Scale has some psychometric limitations with middle school student sample. EFA results revealed that the scale has low construct validity and low internal consistency. Future studies would be planned with using a different tool to assess middle school students' perceptions of motivational climate in PE. Lastly, type of teacher's feedback variable was assessed by asking the students how they perceive their teachers' feedback. However, the objectivity of the current method is limited with the honesty of the students' answers. This limitation would overcome with designing experimental studies by controlling the number and content of the teacher's both verbal and nonverbal feedbacks (e.g. Badami et al., 2011; Erturan-İlker, 2014).

Despite its limitations, the present study has important practical implications. The results suggest that mastery motivational climate seems to have the vital role in PE engagement. Teachers should focus on the developing strategies (e.g. TARGET principles by Epstein, 1989)

for creating mastery motivational climate in their lessons. As performance approach climate found to have a significant negative correlation with enjoyment and significant positive correlation with extrinsic motivation, teachers are recommended to consider the amount of knowledge of performance feedback that they use due to its link with performance approach climate.

Taken together, these findings have highlighted the need for further investigation into the effect of perceived motivational climate testing CET which enables to explore the strategies to enhance engagement and intrinsic motivation in PE.

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## Uzun Özet

Bilişsel Değerlendirme Kuramı, Öz-Belirleme Kuramının alt kuramlarından biridir ve çevresel faktörlerin (örn: ödül, geribildirim) içsel olarak güdülenmiş davranışlar üzerindeki etkilerini açıklayan teorik bir çerçeve sağlar. Bilişsel Değerlendirme Kuramı, bireyin eylem seçiminde temel psikolojik ihtiyaçlardan özerklik ve yeterlilik ihtiyacının aracılık rolünü açıklar. Ödül ve geribildirim, yeterlilik duygusunu ve öz-belirlemeyi etkileme yolu ile içsel motivasyonu etkiler. Kısacası bireyde yeterlilik duygusunu güçlendiren geri bildirim, içsel motivasyonu artırır. Bilişsel Değerlendirme Kuramı ayrıca, bireylerin çevreyi ve çevrenin rekabetçiliğini nasıl algıladıklarının önemini vurgular.

Öğretmen geribildirimi, çalışmada veri toplama aracı olarak kullanılan Algılanan Öğretmen Geribildirimi Ölçeğinin alt ölçeklerine göre kavramsallaştırılmıştır. Ölçeğin dört alt ölçeği, genel pozitif geribildirim, pozitif sözel olmayan geribildirim, negatif sözel olmayan geribildirim ve performans bilgisidir.

Bir öğrenme ortamının algılanan motivasyonel iklimi, belirli bir öğrenme görevinde bireylerin rekabet edebilirlik algısını etkiler. Ancak, motivasyonel iklimin ve algılanan geribildirim, motivasyonu ve dersin zevk alma, konsantrasyon gibi çıktı davranışları tahmin ediciliği üzerine literatürde henüz çalışma bulunmamaktadır. Dahası, bu karşılıklı ilişkiler beden eğitimi bağlamında tam anlamıyla incelenmemiştir. Bu nedenle bu araştırmanın amacı, beden eğitimi derslerinde öğrencilerin motivasyonel iklim algıları, içsel ve dışsal motivasyon düzeyleri, zevk alma ve konsantrasyon düzeyleri arasındaki ilişkide algılanan öğretmen geri bildirim rolünü araştırmaktır. Bu çalışmanın bir başka odak noktası ise motivasyonel iklimin, öğretmen geribildirimi ve öğrencilerin motivasyonu, konsantrasyonu ve zevk alması arasındaki ilişkideki olası aracı rolünün sınanmasıdır.

Araştırma betimsel ve kesitseldir. Araştırmanın katılımcıları Denizli merkezindeki yedi devlet okulundan toplam 835 öğrenci (Yaş aralığı 11-14;  $X_{Yaş} = 12.83 \pm 0.67$ ) olarak belirlenmiştir. Veri toplama aracı olarak Algılanan Öğretmen Geribildirimi Ölçeği, Üçlü Motivasyonel İklim Ölçeği, Durumsal Güdülenme Ölçeği ve öğrencilerin beden eğitimi dersinden zevk alma ve konsantrasyon düzeylerini ölçmek için maddeler kullanılmıştır. Bu çalışma için İl Milli Eğitim Müdürlüğü'nden izin ve üniversitenin etik kurulundan onay alınmıştır. Velilerden aydınlatılmış onam formunun alınmasının ardından verilerin toplanması beden eğitimi dersi sırasında gerçekleştirilmiştir. Anketlerin tamamlanması yaklaşık 20 dakika sürmüştür. Öğretmenin geribildirimi, motivasyonel iklim, içsel motivasyon, dışsal motivasyon, zevk alma ve konsantrasyon boyutları arasındaki ilişkileri incelemek için Amos 21.0 kullanılarak yapısal eşitlik modeli prosedürleri uygulanmıştır.

Analiz sonuçlarına göre uyum indeksleri, veri setinin revize edilmiş model ile yeterli düzeyde uyum gösterdiğini ortaya koymuştur ( $\chi^2/sd = 1.923$ ,  $p < 0.01$ , CFI = 0.868, AGFI = 0.870, GFI = 0.882, SRMR = 0.00, RMSEA = 0.033). Bununla birlikte motivasyonel iklimin, öğretmen geribildirimi ve öğrencilerin motivasyonu, konsantrasyonu ve zevk alması arasındaki ilişki üzerine aracı etkisi test edilememiştir.

Bu çalışmada, öğretmenin verdiği geribildirim türünün beden eğitimi bağlamında derse katılımı ve motivasyonu öngörüp göremeyeceği üzerinde özellikle durulmuştur. Yapısal eşitlik modeli sonuçları, algılanan performans yaklaşımı motivasyonel ikliminin, öğretmenin performans geribildirimi bilgisiyle desteklendiğini ortaya çıkarmıştır. Pearson korelasyon analizi sonuçları da algılanan performans yaklaşımı motivasyonel ikliminin, öğretmenin performans bilgisi ile pozitif korelasyon gösterdiğini ortaya koymuştur. Bu bulgular, beden eğitimi öğretmenlerinden geri bildirim almadıkları sürece öğrencilerin görevlerdeki ilerlemeye ilişkin somut kanıtları göremedikleri bir ders olarak görüldüğünü ve bunun da belirli öğrenme alanlarında gelişim eksikliğine neden olabileceği şeklinde yorumlanabilir. Performans geribildirimine ilişkin bilgi, öğrencilere hareket kalıplarının her bir bölümüyle ilgili bilgi verilmesi olduğu için performanslarının başarısı hakkında daha fazla şey öğrenmek, öğrencilerin üstün yetenek gösterme arzusunu artırabilir.

Hipotezlerimize paralel olarak, ustalık ikliminin içsel motivasyon, zevk alma ve konsantrasyonun pozitif tahmin edicisi olduğu belirlenmiştir, ancak bu ilişkiler performans yaklaşımı ve performans kaçınımı iklimi için bulunmamıştır. Daha önceki çalışmalarda da ortaya konulduğu gibi ustalık iklimi, algılanan yüksek yeterlilik algısını yansıtır; bu nedenle içsel motivasyonun yordayıcısı olması öngörülmüştür. Bu çalışma, Türkiye'deki beden eğitimi bağlamında Bilişsel Değerlendirme Kuramının algılanan motivasyonel iklim ile bağlantılı olarak test edildiğine dair kanıt sağlamaktadır. Algılanan yeterlilik, geçmişteki çalışmalarda olduğu gibi, geribildirim ve içsel motivasyon arasında bir aracı değişken olarak değerlendirilmiştir. Farklı olarak, bu çalışmada ilk kez Türkiye'deki beden eğitimi ortamında Bilişsel Değerlendirme Kuramını uygulanırken algılanan motivasyonel iklim, hipotez modelde aracı değişken olarak test edilmiştir. Bununla birlikte, motivasyonel iklimin öğretmenin algılanan geribildirimi, motivasyon, beden eğitimi dersinden zevk alma ve konsantrasyon arasında aracı bir rolünün olmadığı sonucu, hipotezle uyuşmamaktadır. Bu durumun olası açıklaması, katılımcıların yaş aralığı ile ilgili olabilir. Rekabet duygusu ve akranlar arası kıyaslama ergenlik döneminde daha belirgindir ve ortaokul öğrencileri ergenlik dönemini kapsayan yaş aralığını yeterince iyi temsil etmemiş olabileceği için hipotez model, olası aracılığı desteklememiş olabilir. Lise beden eğitimi ortamında öğretmenin algılanan geribildiriminin, motivasyonel iklim ve dolaylı olarak içsel motivasyon üzerindeki etkisini sınamak için başka araştırmalara ihtiyaç bulunmaktadır.

Bu çalışmanın uygulamaya yönelik önemli sonuçları vardır. Sonuçlar, ustalık motivasyonel ikliminin, beden eğitimi dersine katılımı son derece önemli bir rolünün olduğunu göstermektedir. Öğretmenler, derslerinde ustalık motivasyonel iklimini yaratabilmek için geliştirilen stratejilere (örn: TARGET ilkeleri) odaklanmalıdırlar. Performans yaklaşımı ikliminin, zevk almayla negatif korelasyona, dışsal motivasyonla ise pozitif korelasyona sahip olduğu için eğitim ortamlarında istedik bir motivasyonel ortam yaratmadığı görülmektedir. Bu nedenle performans yaklaşımı iklimi ile bağlantısından dolayı öğretmenlerin, performans bilgisi geribildiriminin kullanım miktarı konusunda dikkatli olmaları önerilmektedir.