Journal of Pedagogical Research
Volume 8, Issue 2, 2024
https://doi.org/10.33902/JPR.202425804

Research Article

Error management culture in schools and its relationship with teachers' psychological withdrawal behaviors

Gül Kurum Tiryakioğlu

Faculty of Education, Department of Educational Administration, Trakya University, Türkiye (ORCID: 0000-0002-8686-7339)

Error management culture and withdrawal behaviors can be related within the framework of job satisfaction. While job satisfaction is affected by error management culture, it affects withdrawal behaviors. On the other hand, each school has its own culture and teachers' perceptions can be differentiated in terms of school level. This study examined teachers' perception of error management culture and psychological withdrawal behaviors in terms of school level and determined the relationship between them. It was conducted with a correlational research model. The data was collected from a total of 440 teachers working in public schools in Türkiye, selected by convenient sampling. To determine teachers' views on error management culture and psychological withdrawal behaviors, the *Error Management Culture Scale in Schools* and the *Psychological Withdrawal Behaviors Scale* were used. The findings reveal that according to the school level variable, teachers' perceptions of error management culture and psychological withdrawal behaviors in schools differ significantly. The results of error management culture and psychological withdrawal were against the teachers working in upper secondary schools. There is a low-level, negative significant relationship between error management culture and psychological withdrawal behaviors. The results suggest that school culture under which school principals practise constructive error management relates to teachers' withdrawal behaviors. Thus, this study may advance theory and practice on the relation between error management culture and withdrawal behaviors, which are crucial determinant of teachers' satisfaction.

Keywords: Error management culture; Psychological withdrawal; Job satisfaction; Teacher; School

Article History: Submitted 1 December 2023; Revised 7 February 2024; Published online 9 March 2024

1. Introduction

Organizational structure and culture have closely affected employees' behaviors. As role models and handlers of errors, administrators play a major role in fostering a culture of learning from errors among their employees. Administrators, who see errors as a part of daily life and a learning opportunity, create a psychologically safe environment in the organization where errors and concerns about errors can be openly expressed and discussed. Thus, an error management culture is built in organizations. While building an error management culture, in conjunction with positive psychology sharing the best examples and positive results may facilitate this process by encouraging work engagement (Van Steenbergen et al., 2020). On the other hand, withdrawal

Address of Corresponding Author

Gül Kurum Tiryakioğlu, PhD, Trakya University, Faculty of Education, Department of Educational Administration, Kosova Campus, 22030 Edirne, Türkiye.

✉ gulkurum@trakya.edu.tr

How to cite: Tiryakioğlu, G. K. (2024). Error management culture in schools and its relationship with teachers' psychological withdrawal behaviors. *Journal of Pedagogical Research, 8*(2), 113-128. https://doi.org/10.33902/JPR.202425804

behaviors are considered to be an indicator of work disengagement. Behaviors of withdrawal from work are interpreted as any behavior that distracts employees from taking responsibility in their jobs (Corporate Research Associates, 2011). In other saying, withdrawal from work includes all kinds of behaviors in which employees move away from their duties and responsibilities as a result of disengagement between the employee and the organization (Erdemli, 2015a). As seen, by providing psychologically safe environment and new learning opportunities error management culture can promote employees' productive and innovative behaviors. Thus, withdrawal from work may disappear by itself.

Errors are present in each system, structure or organization including school. However, schools are open and social systems that depend on people as their raw materials, in contrast to other organizations. The school has its unique environment where various values and differences exist. Additionally, it can direct or influence all formal and informal organizations around the school (Bursalioglu, 2012). Interpersonal relations or the social structure of the organization are also affected by errors in environments such as schools, where diversity and interaction are intense (Van Dyck et al., 2005). Because making errors can result in negative feelings such as anxiety, anger, shame, guilt, and exclusion of the parties (Frese & Keith, 2015). These negative emotions can lower employee engagement and job satisfaction. As a result, teachers may consciously or unintentionally engage in psychological withdrawal behaviors such as dealing with personal affairs at school, cyberloafing, silence, and slacking. What's more fearing of missing out has also teachers withdraw from work by cyberloafing (Gullu & Serin, 2020). In short, this situation may have a detrimental impact on the effectiveness of the school and teacher performance. In this respect, teachers' perception of error management culture and psychological withdrawal behaviors were examined and the relationship between them was determined in this study. However, every school has its unique culture. In this context, teachers' perceptions were evaluated in terms of school level.

1.1. Error Management Culture

Error, in the most general sense, is when people act incorrectly due to a lack of knowledge or deviate from principles, rules, plans, goals, and feedback (Frese & Keith, 2015). Employees may find it challenging to accept errors and learn from them, even though it is part of human nature to make errors. In general, people tend to hide their errors. Because facing errors, accepting errors, sharing, and asking for help can be perceived as a threat to people. People do not disclose their errors too frequently because they are afraid of feeling incompetent or embarrassed, losing their reputation, being perceived as inadequate. They also hesitate to receive a negative performance evaluation, or reduce their chances of promotion (Edmondson, 1999; Van Steenbergen et al., 2020). For this reason, error management is a critical issue for organizations.

In the organizational context, error management is considered as a culture. Schein (1996), who defines culture as the natural, shared, and implicit ways of perceiving, thinking, and reacting, emphasizes that culture is one of the most powerful and reliable pressure elements operating in organizations. Balci (2013) also describes organizational culture as a way of life that determines how its members behave. In this regard, Van Steenbergen et al. (2020) state that changes in organizations occur through culture. Organizational culture also closely affects members' error management (Van Dyck et al., 2005). To establish a culture of error management in organizations, it is necessary to examine the perception, reaction, and handling method of the members about the error (Cusin & Goujon-Belghit, 2019). Error management culture in organizations is a method of handling errors that points to the organization and organizational procedures, practices, and attitudes about errors (Li, 2016). In organizations with a constructive error management culture, the focus is on what can be learned from the error at the organizational or personal level, rather than correcting the error immediately (Van Steenbergen et al., 2020).

The error management culture is the application of the culture to a more specific area. In this context, the level of acceptance of errors by managers and employees at the organizational level,

their responses to errors, and the way they handle errors are evaluated (Van Steenbergen et al., 2020). When employees in an organization dare to admit their errors and talk about their errors, a culture of error management begins to emerge. As a result, errors are quickly detected, analyzed, and fixed (Van Dyck et al., 2005). Moreover, error management culture has significant effects on organizations. Firstly, a culture of error management encourages organizational learning. A psychological safety environment for discussing errors provides both team and organizational learning by encouraging employees to talk about errors and voice their opinions (Edmondson, 1999). With the detection, speed, and quality of error correction, a common understanding is created that fosters the tendency of employees to explore, experiment and innovate (Edmondson, 2003). Secondly, creating a culture of error management prevents abuse in the organization by encouraging ethical behavior (Van Steenbergen et al., 2020). Barkhordari-Sharifabad and Mirjalili (2020) stated in their research on health organizations that ethical leadership reduces the error rate and increases the rate of reporting errors. Additionally, people working in organizations that exhibit a high error management culture tend to take responsibility for their errors (Van Dyck et al., 2005). Thirdly, this culture motivates employees to get feedback from customers and improve quality to provide better customer service (Guchait et al., 2012). Finally, creating an error management culture has a positive impact on employee performance (Wang et al., 2020).

1.2. Withdrawal from Work

Withdrawal behaviors involve a set of attitudes and behaviors that employees adopt when they stay at work but decide to become less engaged for some reason (Shapira-Lishchinsky, 2012). Hulin (1991) discusses the attitudes and behaviors of withdrawal from work at the organizational level in terms of absenteeism, lateness, turnover, fulfillment, and satisfaction. In another saying, withdrawal from work is generally the employee's isolating himself within the organization, his psychological escape from the organization, or his physical departure. Withdrawal behaviors can be resulted from different reasons. Mgbemena (2022) has concluded from his research with corporate employees that command, control, and poor reward management are responsible for withdrawal behaviors rather than participatory organizational structure. The author also mentioned that withdrawal behaviors have detrimental effects on organizational performance. Spendolini (1985) has also listed three reasons for withdrawal from work:

(1) Individual factors (age, seniority, character, attitude, family situation, professional interest, etc.),

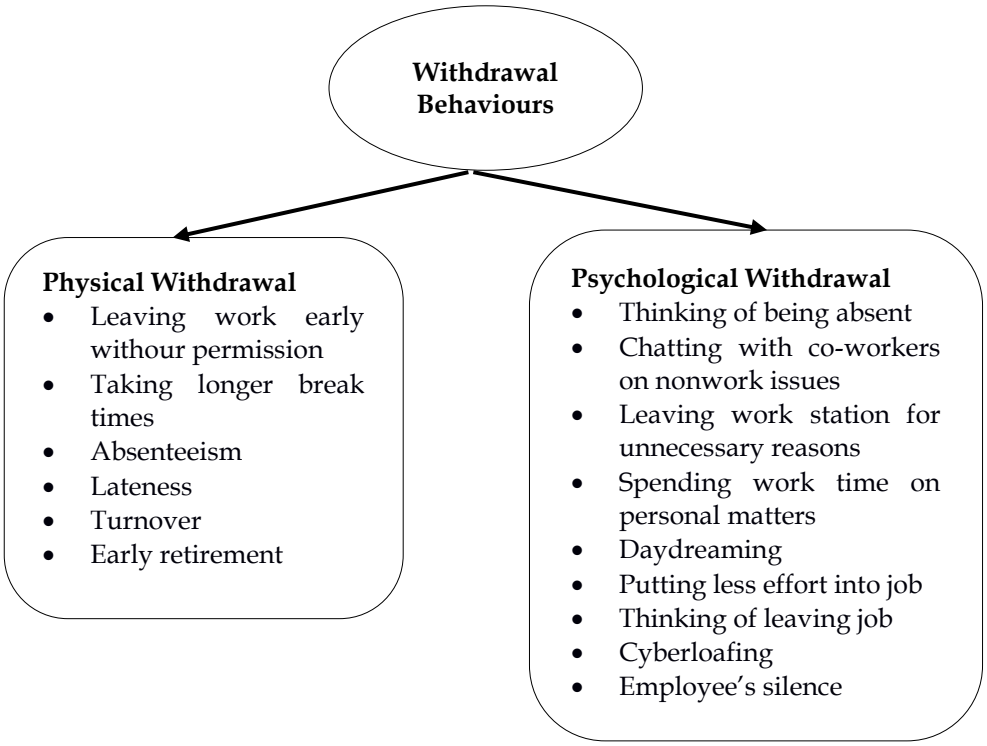
(2) Work-related factors (job unit size, job content, leadership style, job satisfaction, fulfillment, organizational commitment, intention to leave, equality, performance, etc.),

(3) Economic opportunities (general economy, location, unemployment status, employment opportunities, alternative income sources).

Withdrawal behaviors are divided into physical or psychological depending on how the employee reacts (Fisher, 2004; Lehman & Simpson, 1992). Physical withdrawal includes behaviors such as lateness, arriving late to work (or leaving work early), and prolonged breaks (Mirsepasi et al., 2012). These behaviors demonstrate that the employees are not physically present in the workplace. As a result, employees neglect or fail to fulfill their job responsibilities (Lehman & Simpson, 1992). On the other hand, Fisher (2004) explains psychological withdrawal as actions that provide a mental escape from the work environment. Hulin (1991) underlines that with psychological withdrawal, employees are mentally disoriented despite being physically present at the workplace. Physical and psychological withdrawal behaviors are summarized in Figure 1.

As can be seen in Figure 1, employees withdraw from work physically or psychologically with various behaviors. Physical withdrawal consists of actions that provide a short or long-term physical escape from the work environment like absenteeism, lateness or leaving work early. On the other psychological withdrawal manifests itself in the form of different behaviors in the workplace. The most harmless of these behaviors is daydreaming. In this case, employees appear

Figure 1
Withdrawal beahaviours



Note. Adapted from Erdemli (2015a), Fisher (2004), Lehman and Simpson (1992), and Mirsepasi et al. (2012).

to be working while thinking about unrelated things or worrying. Another topic is chatting with co-workers about non-work subjects, under the name of socializing at work. Too much time spent on these conversations can cause disruptions in work. Another form of psychological withdrawal is looking busy. In this way, employees can give the impression that they are working even when they are deliberately avoiding their obligations. Additionally, employees use their working hours and resources to complete their personal work other than their job responsibilities (Mirsepasi et al., 2012).

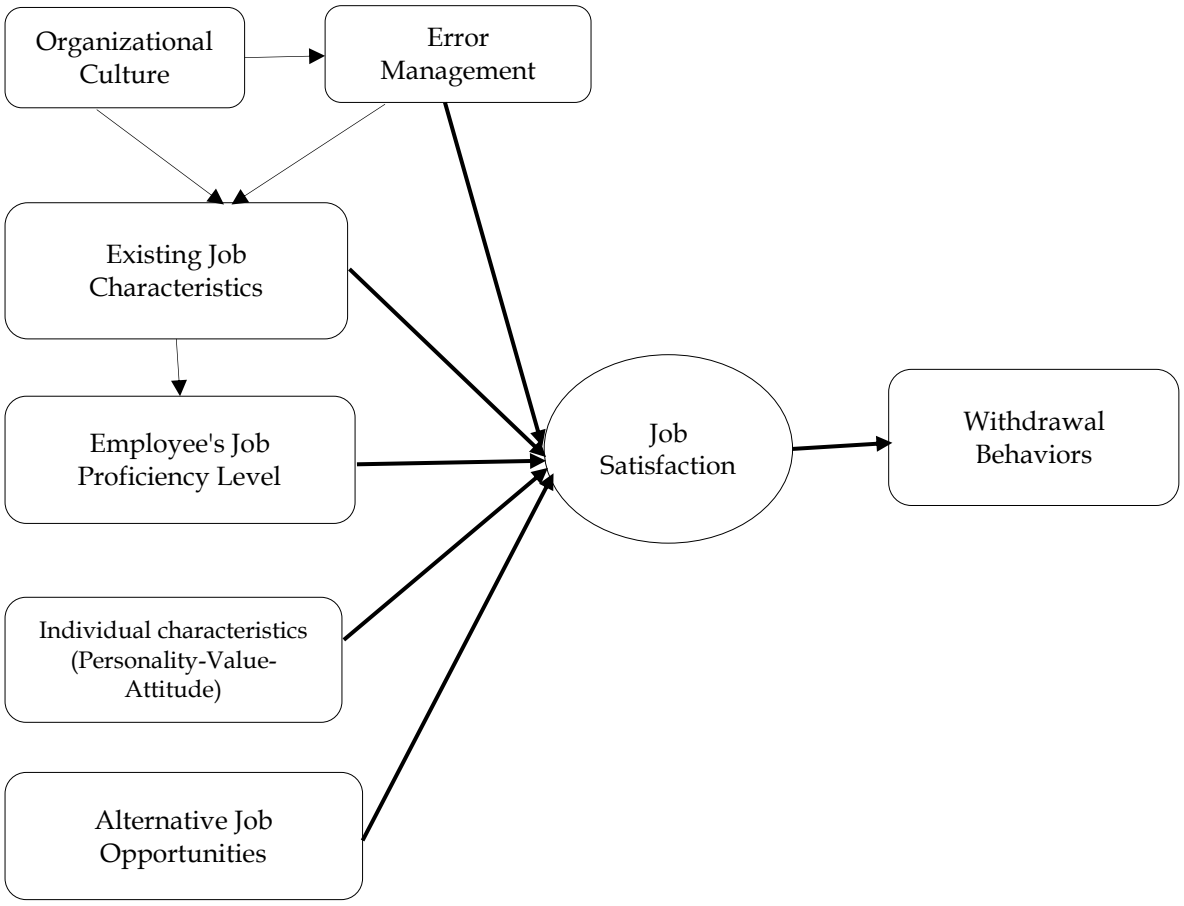
1.3. The Relationship between Error Management Culture and Withdrawal Behaviors

Error management culture includes organizational practices related to communicating with errors, sharing errors, quickly detecting and handling errors, and providing help in error situations (Guchait et al., 2016). Organizations with a high error management culture first recognize that it is natural to make errors. Since these organizations see errors as a tool for learning, they learn from errors and analyze their causes, helping employees avoid repeating similar errors in the future (Frese, 1991). On the other hand, organizations with weak error management culture, concentrate on the negative effects of errors and do not take initiatives to prevent errors. Members are reluctant to talk about errors since they are penalized in these organizations (Van Dyck et al., 2005). This situation is also likely to lead to employee withdrawal behaviors such as silence and decreased effort for work.

As can be seen, withdrawal from work is a kind of reaction of an employee who is not satisfied with his working condition. Oh (1995) also expresses this reaction as a response to the negative feelings of employees who are dissatisfied with their job situation. Low satisfaction, fulfillment, morale, and motivation at work feed the thought of withdrawing from the work. Additionally, factors including insufficient professional opportunities, limited professional autonomy, and low salary trigger withdrawal from work (Shapira-Lishchinsky, 2012). Likewise, error management culture (Van Dyck et al., 2005), which is a reflection of organizational culture, is also affected by job satisfaction (Lund, 2003). Given this information, error management culture and withdrawal behaviors can be related within the framework of job satisfaction. The relationship between these

variables is presented in Figure 2.

Figure 2
Model of relationship between error management culture and psychological withdrawal behaviors



Note. Adapted from Berte (1982), Lund (2003), and Van Dyck et al. (2005).

As illustrated in Figure 2, while job satisfaction is affected by organizational culture and error management culture within the scope of individual characteristics, employee competencies, alternative job opportunities, and existing job characteristics, it also affects withdrawal behaviors. This relationship model is also supported by various studies (Berte, 1982; Carmeli, 2004; Dicke et al., 2020; Jung & Yoon, 2017; Lund, 2003; Van Dyck et al., 2005). Job satisfaction is generally expressed as the evaluation of the suitability of the job conditions that the employee has. Job satisfaction has been defined as an important determinant of employee retention, organizational commitment, and intention to leave the current job. Berte (1982), on the other hand, explains withdrawal behaviors through job satisfaction. The author indicates that job satisfaction is influenced by current job characteristics and employee competencies, individual characteristics, alternative job opportunities, and efforts to solve work-related problems; and that job satisfaction also affects withdrawal behaviors. On the other hand, Zimmerman et al. (2016) underline that job satisfaction, as the affective response of employees based on job characteristics, is one of the essential elements of withdrawal behaviors. Similarly to this, Oh (1995) contends that organizational commitment and job satisfaction have a significant impact on the display of withdrawal behaviors.

Research (Demir, 2005; Judge et al., 2002; Lund, 2003; Tsai, 2011) has shown that there are significant relationships between job satisfaction and organizational culture. Moreover, it is possible to improve the job satisfaction, performance, and motivation of employees with organizational culture (Demir, 2005). It is also acknowledged that error management reflects organizational culture (Van Steenbergen et al., 2020). Similarly to this, error management culture is

an important factor in organizational performance, learning, job satisfaction, and commitment (Frese & Keith, 2015; Van Dyck et al., 2005). This is supported by Jung and Yoon's (2017) study, which examines the relationship between hotel employees' perceptions of error management culture and their job satisfaction, and their intention to leave their jobs. The authors have found that there is a positive relationship between the error management culture and the job satisfaction of the employees. The findings of the research also show that employee job satisfaction reduces the intention to leave the current job. Additionally, job satisfaction acts as a mediator between error management culture and the intention to leave the job.

As can be seen, the majority of previous studies (Barkhordari-Sharifabad & Mirjalili, 2020; Guchait et al., 2012; Van Dyck et al., 2005) were conducted in business and health organizations. Errors are also a definite reality for educational organizations. For this reason, it is essential to create a culture of error management in schools. Because the culture of error management, which affects factors such as innovation, learning, sustainability, creativity, and performance, demonstrates how errors are handled in schools and the effect of this understanding on teacher behaviors. As a result of this culture, teachers either put forth more effort or withdraw. In the study of Nanto (2021), which he conducted with primary and lower secondary school teachers, a positive relationship was found between error management culture, organizational creativity, and work engagement. On the other hand, primary school administrators, claim that while errors sometimes lead to learning at school, they typically cause negative consequences such as a negative climate, a decrease in education quality, loss of labor and time, and punishment (Akuzum & Ozmen, 2013).

Errors in higher education are mostly ignored and not prevented without causing a major crisis (Gokturk et al., 2017). Erdemli (2015b), on the other hand, states that primary school teachers openly discuss leaving their jobs whenever they get the chance. The author explains this situation with teachers' low performance, decreased voluntariness, reluctance, and indifference behaviors. Shapira-Lishchinsky (2010) revealed that upper secondary school teachers react to the unprotective climate (formal climate) through lateness. Da'as et al. (2020) found a negative relationship between organizational learning climate and primary school teachers' withdrawal behaviors (intention to leave and voluntary absence). Also, the authors found that organizational learning climate has a significant relationship between school principals' innovative behaviors and teachers' withdrawal behaviors. In summary, these studies (Da'as et al., 2020; Gokturk et al., 2017; Nanto, 2021; Shapira-Lishchinsky, 2012) have revealed the importance of error management culture for teachers to put forth more effort in issues such as organizational learning, innovation, more effective education process. However, both teachers' perceptions of error management culture and withdrawal behaviors differ from primary to upper secondary school. One could argue that the school level is also effective in this differentiation. Because each teacher develops a perception and acts according to his/her life in the school.

As a result, it is possible to say that a high error management culture has a good impact on job satisfaction and fulfillment while reducing withdrawal behaviors. Guchait et al. (2016) support this finding with their research on business organizations. According to this, a high error management culture in the organization reduces the withdrawal behaviors of employees such as turnover intention. When an evaluation is made in the context of educational organizations, in schools with low error management culture although teachers cannot show physical withdrawal behavior (such as lateness, leaving early, absenteeism) as required by the legislations (Official Gazette, n.d.), they exhibit psychological withdrawal behaviors in the form of silence, making less effort related to work and appearing to work (Mirsepasi et al., 2012). These behaviors mean that teachers minimize their educational efforts in schools (Shapira-Lishchinsky, 2012).

As seen, teachers should be supported to make more efforts in the education process by effectively managing errors in schools. By building the culture of error management, it is possible to make sure that the school community learns from the errors, does not make the same errors again, and realizes new learnings on this subject. The low error management culture in schools

indicates that teachers are not satisfied with the environment in which they work. This dissatisfaction among teachers may also lead to withdrawal from work. In this context, the purpose of this study is to determine the views of teachers on the culture of error management and psychological withdrawal behaviors in schools. In line with this general purpose, answers to the following questions are investigated.

RQ 1) In terms of school level, is there a significant difference between teachers' views on error management culture in schools and their psychological withdrawal behaviors?

RQ 2) At what level of accuracy do the scores on error management culture and psychological withdrawal behaviors in schools classify teachers working in primary, lower secondary, and upper secondary schools according to school levels?

RQ 3) Is there a significant relationship between teachers' views on error management culture in schools and psychological withdrawal behaviors?

2. Method

Current study employed a correlational research model.According to Privitera (2013), the correlational research model determines the extent to which two factors are related, not how much a factor causes a change in another factor. Discriminant analysis was used as it was aimed to determine at what level of accuracy the scores on the culture of error management and psychological withdrawal behaviors in schools could classify teachers working in primary, lower secondary and upper secondary schools according to school levels. In discriminant analysis, one or more functions consisting of the linear combination of variables that maximize the differences between individuals forming two or more groups are revealed. In this regard, correlational research models are most frequently used for discriminant analysis (Cokluk et al., 2014).

2.1. Procedures and Participants

The research data were collected in the fall semester of 2021-2022, from teachers working in public schools at different regions of Türkiye. Before collecting data, the approval for the study was obtained from the ethical committee of the institution, where the researcher is employed. Online survey links prepared through Google Forms were distributed to teachers. The significant difference between school levels in terms of teachers' error management culture views and psychological withdrawal behaviors was examined with the multivariate analysis of variance [MANOVA] test. To explain this difference obtained by MANOVA, discriminant analysis was conducted. The level and direction of the relationship between teachers' views on error management culture in schools and psychological withdrawal behaviors were evaluated with the Pearson correlation coefficient.

The study group consists of 440 teachers working in public schools (primary-lower secondary-upper secondary schools) in Turkey, selected by convenient sampling from random sampling methods (Sonmez & Alacapinar, 2017). Because the teachers own the characteristics which suits to aims of this study. With this sampling method, participants are chosen according to a certain criterion of convenience, for example, their immediate availability, being well acquainted with the school culture, having at least one year of seniority and working at the current school for at least one year. 287 (65.2%) of the teachers in the study group of the research were female and 153 (3.8%) were male. In terms of school level, the number of teachers working in primary school (40%), lower secondary school (33.2%), and upper secondary school (26.8%) is close to each other. In terms of professional seniority, more than half of the teachers (58%) have a seniority of 11 years or more. On the other hand, the majority of teachers (57%) have been working in their current school for at least one year. When we look at the distribution of teachers in terms of education status, it is seen that 73% of them have a bachelor's degree, 24% have a postgraduate degree, and only 3% have an associate degree.

2.2. Measures and Analysis

To determine teachers' views on error management culture and psychological withdrawal

behaviors, the *Error Management Culture Scale in Schools* and the *Psychological Withdrawal Behaviors Scale* were used.

2.2.1. Error Management Culture Scale in Schools

This 8-item scale was developed by the researcher. Respondents were asked to rate their school on a five-point Likert scale ranging from never (1) to always (5). There is no reverse-scored item, and it includes one dimension. The total variance explained by the scale is 56.09%. For reliability, Cronbach Alpha coefficient (.90) and Omega coefficient (.90), item-total correlations (.78-.47) were calculated. According to the CFA results, the model fit indexes of the scale (χ^2/df) = 2.66, RMSEA=.09, SRMR=.04, NFI=1.00, NNFI=1.00, CFI=1.00, GFI=1.00, AGFI=.99) show that it has a good fit. These findings show that the scale is valid and reliable for determining teachers' views on error management culture in schools (Kurum Tiryakioğlu, 2022). For this study, the Cronbach Alpha coefficient of the scale was calculated as .94.

2.2.2. Psychological Withdrawal Behaviors Scale

The *Psychological Withdrawal Behaviors Scale* developed by Erdemli (2015a) was used to determine teachers' psychological withdrawal behaviors. The factor loading values of the items of the five-point Likert-type scale (1.00 = Never Exhibits, 2 = Rarely Exhibits, 3 = Sometimes Exhibits, 4 = Often Exhibits, 5.00 = Always Exhibits) vary between .63 and .84. The total variance explained by this scale is 57.72%. The Psychological Withdrawal Behaviors Scale consists of 12 single-factor items. It was found to be reliable according to the Cronbach Alpha coefficient (.93). According to CFA, the χ^2/df ratio was found to be 2.66 (χ^2/df = 2.66), RMSEA=0.079. Also, NFI=0.97, NNFI=0.98, and CFI=0.98; GFI = 0.92, AGFI = 0.88 was calculated and these values indicate that the scale is within the limits of good or acceptable fit (Erdemli, 2015a). For this study, the Cronbach Alpha coefficient of the scale was calculated as .90.

The data set was examined before the analysis of the data. To achieve this, it was first checked whether the quantitative variables were within the possible limits (1.00-5.00) with descriptive statistics (such as mode-median-mean, and kurtosis-skewness coefficients). Univariate outliers were analyzed with standardized z-scores. Accordingly, the z-score range should be between -3.00 and +3.00 (Tan, 2016). Values other than these values (47 data) were excluded from the data set. In addition, Mahalanobis distance values for multivariate extreme values were examined and no extreme values were found. While the mean, mode, and median values should be close to each other for the data set to show a normal distribution, it is considered sufficient for the skewness and kurtosis coefficients to be between ±1.5 (Tabachnick & Fidell, 2014). This information on continuous variables is summarized in Table 1.

Table 1
Skewness and kurtosis coefficients of continuous variables

			Coefficients		
Variables	*M*	*Mode*	*Median*	*Kurtosis*	*Skewness*
Error Management Culture Scale in Schools	27.53	31	29	−0.356	−0.545
Psychological Withdrawal Behaviors Scale	19.61	12	18	0.827	−0.001

As can be seen in Table 1, regarding the distribution of scale scores; mean, mode, and median values are close to each other. The skewness and kurtosis coefficients are also between +1 and −1. Additionally, scatter diagram, histogram, and box-whisker plot were examined. All these analyses show that the variables are normally distributed. Afterward, Levene's test for univariate homogeneity (p >.05) and the variance-covariance homogeneity between the groups were tested with the Box M test (p >.05). These values show that univariate and multivariate homogeneity is achieved. Moreover, when the correlations between the variables ($r < 0.70$) were examined, no multicollinearity problem was detected. Accordingly, it was accepted that the data set showed a normal distribution. Thus, the assumptions of univariate and multivariate normal distribution,

linear relationship between dependent variables, and homogeneity of variance-covariance matrices were provided for the MANOVA test. Although the MANOVA analysis shows a significant difference, it is not possible to say where this difference originates from with the ANOVA test. Therefore, discriminant analysis was performed to explain this difference. For the discriminant analysis to be at an optimal level, equal covariance Box M test (p >.05), multicollinearity (r < 0.70), and normal distribution assumptions were met. In this context, analyzes were carried out with 393 data.

3. Findings

This study focused on teachers working in primary, lower secondary, and upper secondary schools. In this context, MANOVA statistics were used to examine the significant differences in teachers' views on error management culture and psychological withdrawal behaviors according to the school level. MANOVA results on dependent variable scores reveal that teachers' views on error management culture and psychological withdrawal behaviors differ significantly according to school level [Wilks Lambda (λ)= 0.892, Partial Eta Squared (partial η^2)= 0.055, F(4.778) = 11.38, p <.01]. This finding shows that the scores obtained from the linear component consisting of the error management culture in schools and the scores of teachers' psychological withdrawal behaviors vary depending on the school level. The descriptive statistics and MANOVA results based on the school level are shown in Table 2.

Table 2
The descriptive statistics and MANOVA results

Variable / School Level	*n*	*M*	*SD*	*df*	*F*	*p*	*Partial η²*	*Group Sig.*
Error Management Culture								
Primary School	157	27.57	7.57	2	11.10	.000	0.054	1-3
Lower Secondary School	132	29.63	7.85					2-3
Upper Secondary School	104	24.80	8.12					
Psychological Withdrawal Behaviors								
Primary School	157	18.59	6.65	2	16.81	.000	0.079	1-3
Lower Secondary School	132	18.30	6.22					2-3
Upper Secondary School	104	22.83	7.02					

As shown in Table 2, according to the teachers' opinions, both the error management culture (F(2,390)= 11.10, p <.01, Partial Eta Squared (partial η^2) = 0.054) scores and psychological withdrawal behaviors (F(2,390)= 16,81, p <.01, Partial Eta Square (partial η^2) = 0.079) scores show a significant difference according to the school level. When the mean scores are examined, the scores of the teachers working in lower secondary schools regarding the error management culture are relatively higher than the scores of the teachers working in primary and upper secondary schools. This finding can be interpreted as a relatively high error management culture in lower secondary schools. On the other hand, the scores of teachers working in upper secondary schools on psychological withdrawal behaviors are relatively higher than the scores of teachers working in primary and lower secondary schools. This finding can be interpreted as upper secondary school teachers exhibiting psychological withdrawal behaviors relatively more frequently.

Moreover, the importance of the effect of school level on the culture of error management in schools and the psychological withdrawal behaviors of teachers has been evaluated with the effect size (partial eta square) statistic. While this value was calculated as 0.054 for the error management culture, it was calculated as 0.079 for the psychological withdrawal behaviors. Accordingly, it explains 5.4% of the variance in the scores of error management culture, while it explains 7.9% of the variance in the scores of psychological withdrawal behaviors. These effect values can be accepted as medium effect according to Cohen's (1988) criteria (0.01 = small effect, 0.06 = medium effect, 0.14 = large effect).

MANOVA analysis shows a significant difference, but it is not explained where this difference originates from (Kalayci, 2014). Therefore, discriminant analysis was conducted to explain the difference between school levels in terms of error management culture views and psychological withdrawal behaviors. Canonical Correlation and Eigen Value are shown in Table 3.

Table 3
Eigen values and canonical correlation coefficients

Function	*Eigen value*	*Variance %*	*Canonical Correlation (rc)*
1	.111	93.2	.317
2	.008	6.8	.090

As can be seen in Table 3, two functions were derived. The eigenvalue of the first function was calculated as 0.111 and explains 93.2% of the total variance. The large eigenvalue indicates that most of the variance in the dependent variables can be explained by the obtained function. This value (.111<.40) shows that the function does not provide good discrimination (Kalayci, 2014). On the other hand, the Canonical Correlation coefficient is .317 (rc^2=.100). This value can be interpreted as the independent variables explaining the dependent variables by 10%. Wilks' Lambda statistic (see Table 4) shows the part (ratio) of the total variance in the discrimination scores that is not explained by the differences between the groups (Kalayci, 2014).

Table 4
Wilks' Lambda Statistics

Function	*Wilks' Lambda (λ)*	*Chi-square*	*df*	*p*
1 through 2	0.892	44.323	4	.000
2	0.992	3.151	1	.076

In Table 4, two variables together (1 through 2) were found to be significant (p <.01), but when the first variable was excluded and only the second variable was considered, it was seen that it was not significant (p =.076). In other words, it is possible to say that the two variables together significantly discriminate the data. Wilks' Lambda (λ) is 0.892. If this value is 0, it means that the group averages are different, and 1 means that the group averages are similar (Cokluk et al., 2014). In this case, approximately 90% (0.892) of the total variance in the discrimination scores cannot be explained by the differences between the groups. On the other hand, the success of the discriminant analysis depends on the correct classification percentage. In other words, the higher the percentage of correct classification, the more successful the analysis is (Kalayci, 2014). Accordingly, the classification results are shown in Table 5.

Table 5
Classification results

School Level	*f*	*%*	*f*	*%*	*f*	*%*
Primary School	43	27.4	67	42.7	47	29.9
Lower Secondary School	29	22	67	50.8	36	27.3
Upper Secondary School	19	18.3	25	24	60	57.7

Note. 43.3% original group cases correctly classified.

According to Table 5, 27.4% of primary school teachers, 50.8% of lower secondary school teachers, and 57.7% of upper secondary school teachers were correctly classified in terms of error management culture and psychological withdrawal scores. The overall correct classification rate of the discriminant function is 43.3%. To test the accuracy of this classification, the relative chance criterion and the maximum chance criterion were calculated and compared. In this study, the maximum chance criterion is 40% and the relative chance criterion is 34.18%. The correct classification rate (43.3%) obtained as a result of the discriminant analysis is above these values (40% maximum chance criterion and 34.18% relative chance criterion). Therefore, discriminant analysis can be considered a successful analysis with a high percentage of correct classification.

The objective of the study was to determine the relationship between teachers' views on the error management culture in schools and psychological withdrawal behaviors. As a result, there is a low-level and negative significant relationship ($r = -0.282$, $p < .01$) between teachers' views on error management culture in schools and psychological withdrawal behaviors. This finding can be interpreted as the level of teachers' psychological withdrawal behavior decreases as the culture of error management increases in schools.

4. Discussion

First, there is a significant difference between the culture of error management in schools and the psychological withdrawal behaviors of teachers in terms of school level. School level affects teachers' perceptions of error management culture and their psychological withdrawal behaviors moderately. In this direction, it is seen that teachers' perceptions of error management culture and psychological withdrawal behaviors differ in favor of the lower secondary school level. In other words, it is possible to say that there is a high error management culture in lower secondary schools. However, the lowest error management culture in terms of the school level is found in upper secondary schools. Contrary to this study, Nanto (2021) states that there is a higher error management culture in primary schools.

Psychological withdrawal behaviors are rarely seen in lower secondary schools and frequently in upper secondary schools. This finding is also supported by Shapira-Lishchinsky's (2012) study. This result may be due to the high commitment of primary school teachers. Because, unlike branch teachers, primary school teachers work with the same student group for longer periods. Yorulmaz and Celik (2016) also reveal that primary school teachers have high affective commitment. Additionally, according to studies (Frese & Keith, 2015; Jung & Yoon, 2017; Shapira-Lishchinsky, 2012), job satisfaction is related to both error management culture and withdrawal behaviors. In this regard, Azimi and Akan (2019) also state that as the school level rises, the job satisfaction of teachers decreases. Similarly, Kumas and Deniz (2013) also found upper secondary school teachers had low levels of job satisfaction. In short, as the school level rises, teachers' job satisfaction decreases and this affects teachers' perceptions of error management culture and psychological withdrawal behaviors. Consequently, it is seen that the school level is an important variable to determine teachers' perceptions of error management culture and psychological withdrawal behaviors.

Second, discriminant analysis was used to explain the difference between school levels in terms of teachers' views of error management culture and psychological withdrawal behaviors. Error management culture and psychological withdrawal variables together discriminate the data significantly. Yet, these variables explain only 10% of the discrimination at the school level. However, the percentage of correct classification in the discriminant analysis (43.3%) is higher than the maximum chance criterion (40%) and the relative chance criterion (34.18%). These findings are interpreted as the discrimination of teachers according to school level is relatively successful in terms of error management culture and psychological withdrawal scores. Additionally, in terms of the school level, the MANOVA statistic differs against the upper secondary school group in terms of teachers' error management culture and psychological withdrawal scores. According to the results of the discriminant analysis, it is seen that teachers are classified correctly at the highest rate in terms of error management culture and psychological withdrawal scores in upper secondary school (57.7%).

Norms, values, and expectations that make up the organizational culture affect withdrawal behaviors (Zimmerman et al., 2016). Since error management culture is an indicator of organizational culture, it is accepted as an effective factor in employees' withdrawal behaviors. Accordingly, correlation finding provided evidence for this factor that there is a low-level and negative significant relationship between teachers' perceptions of error management culture in schools and psychological withdrawal behaviors. It shows that as the culture of error management increases in schools, the level of teachers' psychological withdrawal behavior decreases. Nadav et

al. (2023) have also reached similar finding that school culture, strictly depending on central authority, has the teachers withdraw from school. In parallel with this finding, Kruse and Wegge (2024) also have found the positive effect of constructive error management culture on employees' taking social responsibility. This finding can be interpreted as employees in organizations with a constructive error management culture fulfilling their responsibilities without withdrawal from work. On the other hand, the leadership style of the administrators directly influences the error management in the organization (Oliveira et al., 2023). In this regard, school administrators react to errors within the framework of the legislation may be a sign of a strict and controlling school culture. An error management culture relying on such a school structure may also lead to teachers' withdrawal behaviors.

This result on relation is supported by the research conducted with the employees of the business organization (Guchait et al., 2016). On the other hand, error management culture positively affects organizational performance (Javed et al., 2020). In this regard, Klamar et al. (2022) assert that open communication is a very important component in the error management culture. Therefore, the authors underline that a culture of error management can be particularly beneficial for tasks that require creative problem-solving, such as brainstorming. In educational organizations with a dynamic structure, many tasks require open communication, creativity, innovation, learning, and problem-solving. In this respect, the culture of error management in schools is an important factor in reducing the psychological withdrawal behaviors of teachers and promoting their active participation in the education process.

As a result, according to the school-level variable in this study, teachers' perceptions of error management culture and psychological withdrawal behaviors in schools differ significantly. In this context, the results of error management culture and psychological withdrawal were against the teachers working in upper secondary schools. This can be resulted from the low levels of job satisfaction, fulfillment, and commitment among upper secondary school teachers. In addition, organizational factors such as national exams in the Turkish Education System and the concentration on academic success expectations in upper secondary school, school culture, leadership style, communication, and relationships may also be effective. In summary, teachers differ in error management culture and psychological withdrawal scores, although it is at a low rate (10%) compared to the school level, and it is possible to say that this discrimination is especially at upper secondary school level.

5. Conclusion

This study suggests that teachers' perception of error management culture in schools relates to negatively their psychological withdrawal behaviors. Another finding indicates that school level has affected teachers' perceptions of error management culture and their psychological withdrawal behaviors in a moderate level. Accordingly, the effect size values explain the variance in a medium level. This separation occurs especially at the upper secondary school level. In other saying, teachers' perceptions of error management culture and psychological withdrawal behaviors differ against the upper secondary school level. This finding can be interpreted as upper secondary school teachers' perception of error management culture is lower and they have exhibited psychological withdrawal behaviors relatively more frequently than the teachers working at primary and lower secondary schools. Conclusively, this study may contribute to theory and practice on the relation between error management culture and withdrawal behaviors in terms of school level.

6. Limitations

This study has certain limitations regarding the sample, methodology, and the variables examined. First of all, this study was carried out with limited participation of teachers working in public schools. In this context, it is not possible to generalize the research findings in the context of educational organizations as a whole. Researchers can make a more comprehensive study of the

error management culture in the school in terms of school administrators, students, and parents. On the other hand, qualitative or mixed studies can be conducted to reach more in-depth results on the variables of error management culture and psychological withdrawal in schools. Thus, the way the school administration handles the error and the reasons underlying the teachers' withdrawal behaviors are determined. Another limitation of this study is that it was conducted with only two dependent variables. For this reason, researchers can examine the mediating role of variables such as job satisfaction and fulfillment, which relate to the error management culture and psychological withdrawal variables. This study also focused on the school-level variable. Teachers' perceptions of error management culture and psychological withdrawal behaviors may vary depending on the variables of education level and seniority. Despite these limitations, this study presents significant findings demonstrating that teachers' perceptions of error management and psychological withdrawal behaviors differ according to school levels. In light of these findings, upper secondary school administrators should be made aware of error management. Moreover, school self-evaluation studies should be conducted to determine the causes and effects of psychological withdrawal, particularly among upper secondary school teachers.

7. Recommendations

The findings of this study demonstrate the significance of an error management culture in schools. First of all, innovation and creativity are seen as learning tools in organizations with a high error management culture, since errors are accepted and openly discussed. On the contrary, organizations with low error management culture display an approach of ignoring, blaming, and punishing because they approach errors negatively. These attitudes and behaviors reduce the job satisfaction, motivation, and fulfillment of the employees. Thus, employees may show withdrawal behaviors such as silence, reluctance to work, making less effort, doing other things at school, slacking, and cyberloafing. The same is true for schools and teachers. For this reason, a culture of error management should be established in schools. Instead of punishment and sanction, teachers should be given the awareness that it is natural to make errors and to talk about errors. Because the studies (Demirdag, 2015; Divsar & Dolat Pour, 2018) show that the error management culture of the school closely affects the reaction of the teachers to the students' errors in the classroom. Errors are an important way of learning new things. For this reason, with a high error management culture in schools, new learning paths should be opened for both teachers and students. In error management, it is necessary to clarify the rules explaining the functioning of the organization and share them with everyone. In this regard, the school administration should inform the teachers, students, and relevant stakeholders promptly. Moreover, a record of errors and their consequences should be kept, and education and training support should be provided to teachers based on how frequently errors are made. Teachers should be given the right to speak about the current situation in the school in various events such as meetings. This practice requires a democratic and participatory management approach.

Declaration of interest: No potential conflict of interest was reported by the author.

Ethics declaration: Author declared that the study was approved by Trakya University Ethics Committee on 09.08.2021 with approval code: 08.09.2021/07/07.

Funding: No funding source is reported for this study.

References

Akuzum, C., & Ozmen, F. (2013). Attitudes of school administrators towards organizational mistakes in the school environment. *Dicle University Journal of Ziya Gökalp Faculty of Education, 21*, 332-351.

Azimi, M. & Akan, D. (2019). Teachers' job satisfaction levels. *Journal of National Education Academy, 3*(2), 126-138. https://doi.org/10.32960/uead.559025

Balci, A. (2013). *Etkili okul okul geliştirme: Kuram uygulama ve araştırma* [Effective school-school development: theory application and research]. PegemA Pub.

Barkhordari-Sharifabad, M., & Mirjalili, N. S. (2020). Ethical leadership, nursing error and error reporting from the nurses' perspective. *Nursing Ethics, 27*(2), 609-620. https://doi.org/10.1177/0969733019858706

Berte, D. L. (1982). *A multivariate analysis of employee withdrawal behaviors* (Publication No. 303269666) [Doctoral dissertation, DePaul University]. ProQuest Dissertations and Theses Global.

Bursalioglu, Z. (2012). *Okul yönetiminde yeni yapı ve davranış* [New structure and behavior in school management]. Pegem Pub.

Carmeli, A. (2004). The relationship between organizational culture and withdrawal intentions and behavior. *International Journal of Manpower, 26*(2), 177-195. https://doi.org/10.1108/01437720510597667

Cohen J. (1988). *Statistical power analysis for the behavioral sciences.* Lawrence Erlbaum Associates.

Cokluk, O. Sekercioglu, G. & Buyukozturk, S. (2014). *Çok değişkenli istatistik SPSS ve LISREL uygulamaları* [Multivariate statistics SPSS and LISREL applications]. Pegem Akademi.

Corporate Research Associates. (2011). Costs of employee disengagement and withdrawal [Research report]. http://www.peterdavison.ca

Cusin, J., & Goujon-Belghit, A. (2019). Error reframing: studying the promotion of an error management culture. *European Journal of Work and Organizational Psychology, 28*(4), 510-524. https://doi.org/10.1080/1359432X.2019.1623786

Da'as, R., Watted, A. & Barak, M. (2020). Teacher's withdrawal behavior: examining the impact of principals' innovative behavior and climate of organizational learning. *International Journal of Educational Management, 34*(8), 1339-1355. https://doi.org/10.1108/IJEM-12-2019-0449

Demir, N. (2005). *The relation between organizational culture and job satisfaction: A research in plastics industry* (Publication no. 215100) [Doctoral dissertation, İstanbul University]. Council of Higher Education Thesis Center.

Demirdag, S. (2015). Management of errors in classrooms: student mistakes and teachers. *International Journal of Humanities and Social Science, 5*(7), 77-83.

Dicke, T., Marsh, H. W., Parker, P. D., Guo, J., Riley, P., & Waldeyer, J. (2020). Job satisfaction of teachers and their principals concerning climate and student achievement. *Journal of Educational Psychology, 112*(5), 1061–1073. https://doi.org/10.1037/edu0000409

Divsar, H., & Dolat Pour, E. (2018). Error management behaviors in EFL classrooms: teachers' responses to students' errors. *Iranian Journal of English for Academic Purposes, 6*(2), 86-99.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350-383. https://doi.org/10.2307/2666999

Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies, 40*(6), 1419-1452. https://doi.org/10.1111/1467-6486.00386

Erdemli, Ö. (2015a). *Teachers' withdrawal behavior and it's relationship with work ethics* (Publication no. 381790) [Master's thesis, Ankara University]. Council of Higher Education Thesis Center.

Erdemli, Ö. (2015b). Teachers' withdrawal behaviors and their relationship with work ethic. *Eurasian Journal of Educational Research, 15*(60), 201-220. https://doi.org/10.14689/ejer.2015.60.12

Fisher, A. (2004). Turning clock-watchers into stars. *Fortune, 149*(6), 60-60.

Frese, M. (1991). Error management or error prevention: Two strategies to deal with errors in software design. In H. J. Bullinger (Ed.), *Human aspects in computing: Design and use of interactive systems and work with terminals* (pp. 776–782). Elsevier.

Frese, M., & Keith, N. (2015). Action errors, error management, and learning in organizations. *Annual review of psychology, 66*, 661-687.

Gokturk, S., Bozoglu, O. & Guncavdi, G. (2017). Error management practices interact with national and organizational culture. *The Learning Organization, 24*(4), 245-256. https://doi.org/10.1108/TLO-07-2016-0041

Guchait, P., Kim, M. G., & Namasivayam, K. (2012). Error management at different organizational levels–frontline, manager, and company. *International Journal of Hospitality Management, 31*(1), 12-22. https://doi.org/10.1016/j.ijhm.2011.04.007

Guchait, P., Paşamehmetoğlu, A., & Madera, J. (2016). Error management culture: impact on cohesion, stress, and turnover intentions. *The Service Industries Journal, 36*(3-4), 124-141. https://doi.org/10.1080/02642069.2016.1158253

Gullu, B. F., & Serin, H. (2020). The relationship between fear of missing out (fomo) levels and cyberloafing behaviour of teachers. *Journal of Education and Learning*, *9*(5), 205-214. https://doi.org/10.5539/jel.v9n5p205

Hulin, C. (1991). Adaptation, persistence, and commitment in organizations. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 445–505). Consulting Psychologists Press.

Javed, B., Jalees, T., Herani, G. M., & Rolle, J. A. (2020). Error Management Culture and its impact on organizational performance: A moderated mediation model. *Journal of Business and Retail Management Research*, *15*(1). https://doi.org/10.24052/JBRMR/V15IS01/ART-03

Judge, T. A., Parker, S. K., Colbert, A. E., Heller, D., & Ilies, R. (2002). Job satisfaction: A cross-cultural review. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology* (pp. 25–52). Sage Pub.

Jung, H. S., & Yoon, H. H. (2017). Error management culture and turnover intent among food and beverage employees in deluxe hotels: The mediating effect of job satisfaction. *Service Business, 11*, 785-802. https://doi.org/10.1007/s11628-016-0330-5

Kalayci, Ş. (2014). *SPSS uygulamalı çok değişkenli istatistik teknikleri* [SPSS Applied Multivariate Statistics Techniques]. Dinamik Akademi Pub.

Klamar, A., Horvath, D., Keith, N., & Frese, M. (2022). Inducing error management culture–evidence from experimental team studies. *Frontiers in Psychology, 12,* 6526. https://doi.org/10.3389/fpsyg.2021.716915

Kruse, P., & Wegge, J. (2024). A constructive error management culture promotes innovation and corporate social responsibility: A multi-level analysis in 10 countries. *German Journal of Human Resource Management*, 1-29. Advance online publication. https://doi.org/10.1177/23970022231226318

Kumas, V. & Deniz, L. (2013). An investigation about job satisfaction of teachers. *Marmara University Atatürk Education Faculty Journal of Educational Sciences, 32*(32), 123-139.

Kurum Tiryakioğlu, G. (2022). Error management culture in schools scale: a study of validity and reliability. *Inonu University Journal of the Faculty of Education, 23*(3), 1280-1301. https://doi.org/10.17679/inuefd.1076546

Lehman, W. E. K., & Simpson, D. D. (1992). Employee substance use and on-the-job behaviors. *Journal of Applied Psychology, 77*(3), 309-321. https://doi.org/10.1037/0021-9010.77.3.309

Li, L. (2016). An overview of error management climate. *Psychology, 7*(4), 623-626. https://doi.org/10.4236/psych.2016.74064

Lund, D.B. (2003). Organizational culture and job satisfaction. *Journal of Business & Industrial Marketing, 18*(3), 219-236. https://doi.org/10.1108/0885862031047313

Mgbemena, G. C. (2022). Employee withdrawal behaviours and organizational performance: A study of Cutix Cables Plc, Nnewi and Juhes Industries Limited Awka, Anambra State. *International Journal of Academic Management Science Research, 6*(10), 48-58.

Mirsepasi, N., Memarzadeh G., Alipour H., & Feizi M. (2012). Citizenship and withdrawal behaviors in contingency cultures. *Journal of Basic and Applied Scientific Research, 2*(9), 9398-9406.

Nadav, N., Benoliel, P., & Schechter, C. (2023). Principals' systems thinking and teachers' withdrawal behaviours: The intervening role of school structure and principal–teacher gender (dis) similarity. *British Educational Research Journal*, *49*(2), 405-426. https://doi.org/10.1002/berj.3848

Nanto, Z. (2021). *The relationship between error management culture, work engagement and organizational creativity* (Publication no. 659550) [Doctoral dissertation, Fırat University]. Council of Higher Education Thesis Center.

Official Gazette (n.d.). 657 sayılı Devlet Memurları Kanunu [(DMK) Civil Cervants Law numbered 657]. https://www.mevzuat.gov.tr/MevzuatMetin/1.5.657-20140206.pdf

Oh, K. H. (1995). *The impact of job satisfaction and organizational commitment on withdrawal: A cross-cultural approach* [Unpublished doctoral dissertation]. University of Illinois, Illinois.

Oliveira, M. F., Santos, E., & Ratten, V. (2023). Strategic perspective of error management the role of leadership and an error management culture: a mediation model. *Journal of Economics, Finance and Administrative Science*, *28*(55), 160-175. . https://doi.org/10.1108/JEFAS-01-2022-0028

Privitera, G. J. (2013). *Research methods for the behavioral sciences.* Sage.

Schein, E. H. (1996). Culture: The missing concept in organization studies. *Administrative science quarterly, 41*(2), 229-240.

Shapira-Lishchinsky, O. (2012). Teachers' withdrawal behaviors: integrating theory and findings. *Journal of Educational Administration, 50*(3), 307-326.

Sonmez, V. & Alacapinar, F. G. (2017). *Örneklendirilmiş bilimsel araştırma yöntemleri* [Illustrated scientific research methods]. Anı Pub.

Spendolini, M. J. (1985). *Employee withdrawal behavior: Expanding the concept (Turnover, Absenteeism)* (Publication No. 8516557) [Doctoral dissertation, California University]. ProQuest Dissertations and Theses Global.

Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate statistics.* Harper Collins College Publishers.

Tan, Ş. (2016). *SPSS ve excel uygulamalı temel istatistik-I*[Basic statistics with SPSS and excel application-I]. Pegem Akademi

Tsai, Y. (2011). Relationship between organizational culture, leadership behavior, and job satisfaction. *BMC health services research, 11*(1), 1-9. https://doi.org/10.1186/1472-6963-11-98

Van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: a two-study replication. *Journal of Applied Psychology, 90*(6), 1228. https://doi.org/10.1037/0021-9010.90.6.1228

Van Steenbergen, E., Van Dijk, D., Christensen, C., Coffeng, T., & Ellemers, N. (2020). Learn to build an error management culture. *Journal of Financial Regulation and Compliance, 28*(1), 57-73. https://doi.org/10.1108/JFRC-12-2018-0156

Wang, X., Guchait, P., & Pasamehmetoglu, A. (2020). Anxiety and gratitude toward the organization: Relationships with error management culture and service recovery performance. *International Journal of Hospitality Management, 89,* 102592. https://doi.org/10.1016/j.ijhm.2020.102592

Yorulmaz, A., & Celik, S. (2016). The relationship between primary school teachers' organizational commitment, organizational cynicism and organizational citizenship behaviors. *KALEM International Journal of Educational and Human Sciences, 6*(1), 161-193.

Zimmerman, R. D., Swider, B. W., Woo, S. E., & Allen, D. G. (2016). Who withdraws? Psychological individual differences and employee withdrawal behaviors. *Journal of Applied Psychology, 101*(4), 498-519. https://doi.org/10.1037/apl0000068