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Article

Digital burnout and perceptive failure: The example of physical education teachers during the COVID-19 pandemic

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Abstract: This research was conducted to examine physical education teachers' levels of digital burnout and perceptual fatigue during the COVID-19 pandemic. Material and methods: This study was designed according to the quantitative research model and conducted within the framework of the relational screening model. The research group consists of 504 physical education teachers, including 240 women and 264 men, who work in high schools and secondary schools in Adana and Mersin provinces. Results: The results showed that the teachers working in high schools were in the digital environment too much. At the same time, teachers stated that they did not feel stressed when they were in a lot of digital/virtual environments. Another result of the study is that the variables of daily internet usage time are partially effective on physical education teachers' digital burnout and perceptual fatigue levels. Conclusions: Nowadays, especially during the COVID-19 pandemic, digitalization, which is used in educational institutions as well as in other sectors, has become a necessity. This proves that it is necessary to measure the perceptual fatigue tendency, which is the precursor of many organizational behavior variables.

Keywords: physical education teacher, fatigue, perceptual fatigue, digitalization, burnout, digital burnout.

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1. Introduction

The phenomenon of burnout was first discussed by Freudenberger in 1974 and defined as the failure, weariness, and loss of power or energy that individuals experience as a result of unfulfilled demands and overload [1]. On the other hand, as the process that starts with the stress sources that occur in the work of individuals, covers the behaviors of coping with this stress, and ends with the termination of the individual's psychological relationship with his work [2].

According to another definition, Maslach and Jackson [3] defined the concept of burnout as a situation that deals with the physical and cognitive dimensions of physical exhaustion, long-lasting fatigue, helplessness, hopelessness and undesirable behaviors towards work. Among the studies on the concept of burnout today, Christina Maslach's definition is the most accepted; she provided the measurement of burnout and developed the "Maslach Burnout Inventory" [4].

Maslach defined burnout as "a syndrome that manifests itself in the professions where people work face to face with a lot of people, feeling emotionally exhausted, depersonalization towards the people they encounter due to the nature of the job, and a decrease in their sense of personal accomplishment" and discussed burnout in three dimensions [5].

These dimensions are "Emotional Exhaustion", "Depersonalization" and "Low Personal Accomplishment". Emotional exhaustion is defined as the emotional and physical exhaustion of individuals and the decrease in their energy. In the emotional exhaustion syndrome, individuals feel worn out, tired and exhausted, and in this case, it has a negative effect on the individuals' obligation to go to work [6]. Depersonalization is defined as the indifferent, cold and rigid behaviors that individuals develop towards other employees and their jobs [7]. In the dimension of depersonalization, individuals treat people as if they are objects, have difficulty in establishing relationships with people, display indifferent attitudes and make a mocking approach to people [6]. The feeling of low personal accomplishment is defined as individuals seeing themselves as inadequate for their work and not being able to achieve success [8]. Individuals with a low sense of personal accomplishment begin to have negative feelings towards themselves due to their negative thoughts towards other people and describe themselves as unsuccessful [9]. It is also possible that individuals who experience burnout in general experience digital burnout in today's pandemic conditions. Especially the transition to online education in schools has created an extra stress on teachers. This stress has caused teachers to feel emotionally and psychologically under pressure, and this pressure on teachers has led to a decrease in the quality of education, a decrease in job performance, and even students' failure [10, 11].

Therefore, it can be said that during the pandemic, teachers are exposed to negative emotional, social and psychological effects connected with online education and digitalization. Although the concept of digital burnout is considered as a phenomenon that has not been understood yet, it is seen that its destructive results are the same as general burnout [12]. These devastating results are expressed as low productivity, inability to cope with routines, constant fatigue and inability to control emotions [13].

Döşyılmaz & Şirin stated that career values, which they define as a combination of individuals' needs, motives, attitudes, values and skills, negatively affect the burnout experienced by individuals. In addition to these effects, it can be said that digital burnout also causes perceptual fatigue [14]. Fatigue is defined as a problem that all individuals experience, know and generally encounter in daily life [15]. Turkish Language Institution (TLI), on the other hand, defined fatigue as a decrease in an individual's the productivity level of in terms of mental and physical activities due to reasons such as working [16]. It is observed that individuals who experience fatigue have difficulty in fulfilling their daily life activities; they constantly feel exhausted, are weak and lack motivation [17]. Therefore, if these conditions cannot be controlled, they may negatively affect the daily quality of life of individuals who may thus lose their functionality [18]. When we look at the factors that cause fatigue, it is seen that these factors appear as environmental, personal and work-related factors [19]. For this reason, individuals experience more fatigue in work environments that are heavily involved in the daily lives of individuals [20]. It can be said that the fact that the teachers moved away from their work environments and switched to online education, especially during the pandemic, caused the teachers to feel perceptually tired, to be affected mentally and physically, and to decrease their productivity levels.

As in all branches, physical education teachers have moved away from their normal routines during the COVID-19 pandemic and have been exposed to digital media and tools at home. Therefore, this process has taken physical education teachers away from the physical environments where they continue their education and training and has dragged them into the online education process. In this case, it may cause physical education teachers to feel physically and mentally tired. Because with the effect of the pandemic process, the daily living environments and activities of individuals have changed, and in this case, it can be said that digital burnout and perceptual fatigue cause a decrease in work efficiency in individuals. Therefore, this study aimed to examine physical education teachers' levels of digital

burnout and perceptual fatigue, which are thought to occur during the pandemic. In literature there are studies on teachers' general burnout or professional burnout levels [7, 11, 21, 22, 23, 24, 25, 26, 27]. No studies were found that specifically examined teachers' digital burnout and perceptual fatigue levels. Therefore, this study should contribute to bridging the literature gap.

2. Materials and Methods

2.1. Participants

The research group consisted of 504 physical education teachers, 240 women and 264 men, working in high school and secondary schools in Adana and Mersin. The sample selection was carried out according to the convenient (accidental) sampling method, which is one of the non-random sampling methods. In this method, the sample is chosen from easily accessible and applicable units due to the limitations in terms of time, money and labor [28].

2.2. Data Collection Tool

In this study, a questionnaire method was used as the data collection tool. "Personal Information Form" was used in the first part of the questionnaire, which consists of three parts, "Digital Burnout Scale" in the second part, and "Perceptual Fatigue Scale" in the third part.

In the personal information form, independent variables were included in order to reflect the demographic and professional information of physical education teachers. The frequency and percentage values of the participants' demographic characteristics are as follows: 47.6% were female (n=240) and 52.4% were male (n=264). 17.7% of the participants were in the age range of 22–26 (n=89), while 21.2% were in the age range of 47 and over (n=107). 35.9% of the participants were single (n=181), 64.1% were married (n=323). 45.4% of the participants worked in secondary school (n=229) and 54.6% in high school (n=275). While 16.1% of the participants had an administrative duty (n=81), 83.9% did not have an administrative duty (n=423). 37.3% of the participants used the internet for 1–3 hours (n=188), and 5.0% use the internet for 10 hours or more (n=25) daily. 14.1% of the participants used a computer (n=71), while 84.7% used the internet from the phone (n=427). 50.8% of the participants saw themselves as too virtual or digital (n=256), 49.2%of them did not see themselves as virtual or digital (n=248). While 41.3% of the participants felt under stress in the digital environment (n=208), 58.7% did not feel under stress in the digital environment (n=296).

Digital Burnout Scale: The "Digital Burnout Scale", which aims to determine the digital burnout levels of individuals by Erten and Özdemir [12], is a 3-dimensional, 24-item and 5-point Likert type. The digital burnout scale sub-dimensions are defined as "Digital Aging", "Digital Deprivation" and "Emotional Exhaustion". The lowest score that can be obtained from the scale is "24" and the highest score is "120". In this study, the Cronbach Alpha value was found to be .958.

Perceptual Fatigue Scale: The perceptual fatigue scale, developed by Hooper et al. [29], is a five-point scale (calculated in increments from 1 to 5 points) to measure athletes' relaxation, sleep quality, general muscle soreness, stress levels, and moods.

A study was conducted to adapt the perceptual fatigue scale into Turkish. In the adaptation study of the perceptual fatigue scale into Turkish, the scale statements were translated from English to Turkish by expert academics. The scale translated into Turkish by language experts was converted into a single form. After the translation, the Turkish form of the scale was found to be close to the English form. The scale was finalized in line with the opinions and suggestions received from the experts. In order to test the linguistic equivalence of the scale, the Turkish form of the scale was applied to the students of the Faculty of Sport Sciences Coaching Department, with an interval of two weeks. Then, confirmatory factor analysis of the scale was performed in Mplus 7.0 program.

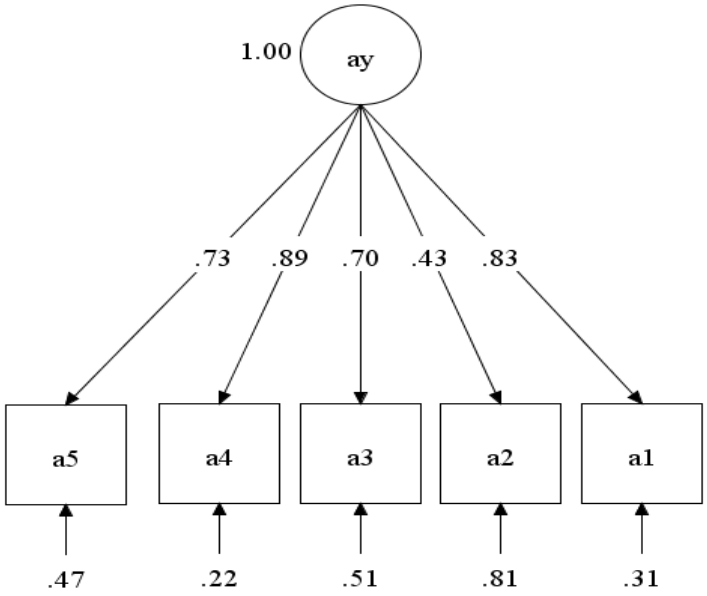

Figure 1. Confirmatory Factor Analysis Model of the Perceptual Fatigue Scale.

When the model fit index is examined, it shows that the model with CFI and TLI values greater than 0.90 and 0.90 and RMSEA and SRMR values less than 0.08 is at an acceptable level ($X^2(70,5)=1.152$; CFI=1.00; TLI01,00; RMSEA=0.00; SRMR=0.01) [30].

Five items, which include features such as fatigue, sleep quality, general muscle pain, stress levels and moods of the participants, are connected to the factor related to perceptual fatigue. To calculate the reliability of the scale, the Cronbach alpha internal consistency coefficient was calculated and found to be 821. This supports that the scale is reliable.

2.3. Analysis of Data

After the data were collected, they were analyzed with the SPSS package program. In addition to descriptive statistics, the normality structure of the distributions was examined through skewness and kurtosis tests. Due to the normal distribution structures, parametric tests were conducted. Independent Samples t-Test was used to determine differences according to binary variables, and one-way analysis of variance (ANOVA) was used to determine differences between groups.

3. Results

The arithmetic mean and standard deviation of the Perceptual Fatigue Scale amounted to 13.95±3.34. When the sub-dimensions of the Digital Burnout Scale are examined, it is seen that physical education teachers achieved the highest mean in the sub-dimension of "Digital Aging" (37.96±9.82) followed by “Digital Deprivation” (19.72±5.57) and “Emotional Exhaustion” sub-dimensions (20.42±5.12).

When Table 2 is examined, a statistically significant difference was observed in the PFS according to the gender variable of the participants ($p<0.05$), while there was no statistically significant difference in any of the sub-dimensions of the DBS ($p>0.05$).

As seen in Table 3, no statistically significant difference was found in any sub-dimension of the PFS and DBS according to the marital status variable of the participants ($p>0.05$).

Table 1. Mean and prevalence measures for the PFS and DBS sub-dimensions.

	Sub-Dimensions	X̄	S	Min.	Max.	n
PFS	Perceptual Fatigue	13.95	3.34	5.00	25.00	504
DBS	Digital Aging	37.96	9.82	12.00	60.00	504
	Digital Deprivation	19.72	5.57	6.00	30.00	
	Emotional Exhaustion	20.42	5.12	6.00	30.00	

Table 2. T-Test results of the sub-dimensions of the PFS and DBS by gender.

	Sub-Dimensions	Gender	N	X̄	S	SD	t	p
PFS	Perceptual Fatigue	Woman	240	13.55	3.09	502	-2.59	0.01
		Man	264	14.31	3.52			
DBS	Digital Aging	Woman	240	37.46	9.50	502	-1.08	0.27
		Man	264	38.41	10.10			
	Digital Deprivation	Woman	240	19.85	5.40	502	0.49	0.61
		Man	264	19.60	5.73			
	Emotional Exhaustion	Woman	240	20.30	4.79	501.65	-0.51	0.60
		Man	264	20.53	5.41			

Table 3. T-Test results of the sub-dimensions of the PFS and DBS by marital status variable.

	Sub-Dimensions	Marital Status	N	X̄	S	SD	t	p
PFS	Perceptual Fatigue	Single	181	14.11	3.26	502	0.79	0.42
		Married	323	13.86	3.38			
DBS	Digital Aging	Single	181	38.48	9.96	502	0.88	0.37
		Married	323	37.67	9.74			
	Digital Deprivation	Single	181	19.44	5.89	502	-0.83	0.40
		Married	323	19.87	5.39			
	Emotional Exhaustion	Single	181	20.77	5.33	502	1.13	0.25
		Married	323	20.23	4.99			

When Table 4 is examined, a statistically significant difference was observed in the DBS's digital deprivation and emotional exhaustion sub-dimensions according to the variable of work unit in the secondary education level of the participants ($p<0.05$).As manifested by the arithmetic means, this difference was in favor of physical education teachers working at high school. There was no statistically significant difference in the digital aging sub-dimension of the PFS and DBS ($p>0.05$).

According to Table 5, no statistically significant difference was found in any sub-dimension of the PFS and DBS according to the variable of the participants having or not having an administrative duty ($p>0.05$).

As presented in Table 6, a statistically significant difference was observed in the DBS's digital aging, digital deprivation and emotional exhaustion sub-dimensions according to the variable of whether the participants see themselves as someone who uses virtual and digital environments or tools a lot ($p<0.05$). According to the arithmetic means, this

difference is in favor of physical education teachers who do not see themselves as those who use virtual and digital environments or tools. There was no statistically significant difference in PFS (p>0.05).

Table 4. T-test results regarding the sub-dimensions of PFS and DBS by working unit variable at secondary education level.

	Sub-Dimensions	Working Unit	N	$\bar{X}$	S	SD	t	p
PFS	Perceptual Fatigue	Middle School	229	13.87	3.12	502	-0.48	0.62
		High School	275	14.01	3.51			
DBS	Digital Aging	Middle School	229	37.19	9.39	502	-1.60	0.10
		High School	275	38.60	10.14			
	Digital Deprivation	Middle School	229	19.11	5.63	502	-2.23	0.02*
		High School	275	20.22	5.48			
	Emotional Exhaustion	Middle School	229	19.85	4.84	502	-2.29	0.02*
		High School	275	20.90	5.30			

Table 5. T-test results for the lower dimensions of the PFS and DBS according to the variable of performing an administrative task.

	Sub-Dimensions	Administrative Duty	N	$\bar{X}$	S	SD	t	p
PFS	Perceptual Fatigue	Yes	81	14.24	3.53	502	0.86	0.38
		No	423	13.89	3.30			
DBS	Digital Aging	Yes	81	38.22	10.56	502	0.25	0.79
		No	423	37.91	9.69			
	Digital Deprivation	Yes	81	20.13	5.86	502	0.73	0.46
		No	423	19.64	5.52			
	Emotional Exhaustion	Yes	81	21.23	5.43	108.07	1.55	0.14
		No	423	20.27	5.05			

Table 6. T-test results for the lower dimensions of the PFS and DBS by variable of seeing oneself as someone who uses more virtual and digital environments or tools.

	Sub-Dimensions	Virtual/Digital Environment	N	$\bar{X}$	S	SD	t	p
PFS	Perceptual Fatigue	Yes	256	13.87	3.34	502	-0.52	0.59
		No	248	14.03	3.35			
DBS	Digital Aging	Yes	256	36.32	9.89	502	-3.86	0.00*
		No	248	39.66	9.47			
	Digital Deprivation	Yes	256	18.17	5.80	491.31	-6.59	0.00*
		No	248	21.31	4.84			
	Emotional Exhaustion	Yes	256	19.70	5.32	502	-3.23	0.00*
		No	248	21.16	4.80			

As follows from Table 7, there is a statistically significant difference in the sub-dimensions of digital aging, digital deprivation and emotional exhaustion of the PFS and DBS according to the participants' feeling of stress in digital/virtual environments ($p<0.05$). Based on the arithmetic means, this difference is in favor of physical education teachers who do not feel under stress in digital/virtual environments.

According to Table 8, no statistically significant difference was found in any sub-dimensions of the PFS and DBS according to the variable of the participants' age ($p>0.05$).

Table 9 shows a statistically significant difference in the sub-dimensions of digital aging, digital deprivation and emotional exhaustion of the PFS and DBS according to the variable of daily internet use by the participants ($p<0.05$).

Table 7. T-test results for the lower dimensions of the PFS and DBS by variables of feeling stressed in digital/virtual environments.

	Sub-Dimensions	Stress in the Virtual/Digital Environment	N	$\bar{X}$	S	SD	t	p
PFS	Perceptual Fatigue	Yes	208	12.41	3.06	502	-9.343	0.00*
		No	296	15.03	3.10			
DBS	Digital Aging	Yes	208	32.27	9.28	40553	-12.16	0.00*
		No	296	41.96	8.08			
	Digital Deprivation	Yes	208	17.76	5.57	502	-6.89	0.00*
		No	296	21.09	5.16			
	Emotional Exhaustion	Yes	208	17.86	4.99	408.89	-10.15	0.00*
		No	296	22.22	4.39			

Table 8. One-Way ANOVA results on the sub-dimensions of the PFS and DBS by age.

	Sub-Dimensions	Age	N	$\bar{X}$	S	F	p
PFS	Perceptual Fatigue	1. 22-26 Age	89	14.70	2.78	1.520	0.18
		2. 27-31 Age	41	13.24	3.41		
		3. 32-36 Age	54	14.07	3.14		
		4. 37-41 Age	89	13.64	3.65		
		5. 42-46 Age	124	13.78	3.27		
		6. 47 Age and Over	107	13.99	3.60		
DBS	Digital Aging	1. 22-26 Age	89	38.50	9.90	0.590	0.70
		2. 27-31 Age	41	36.14	10.01		
		3. 32-36 Age	54	38.44	8.85		
		4. 37-41 Age	89	37.11	10.12		
		5. 42-46 Age	124	38.58	10.26		
		6. 47 Age and Over	107	37.96	9.45		

	Sub-Dimensions	Age	N	X̄	S	F	p
	Digital Deprivation	1. 22-26 Age	89	19.53	6.08	1.470	0.19
		2. 27-31 Age	41	18.31	6.02		
		3. 32-36 Age	54	19.05	5.08		
		4. 37-41 Age	89	20.40	5.90		
		5. 42-46 Age	124	20.43	5.39		
		6. 47 Age and Over	107	19.34	5.04		
	Emotional Exhaustion	1. 22-26 Age	89	20.64	5.60	0.289	0.91
		2. 27-31 Age	41	19.56	5.24		
		3. 32-36 Age	54	20.61	4.10		
		4. 37-41 Age	89	20.43	5.41		
		5. 42-46 Age	124	20.37	5.31		
		6. 47 Age and Over	107	20.53	4.69		

Table 9. One-Way ANOVA results on the sub-dimensions of the PFS and DBS by the variable of daily internet use time by the participants.

	Sub-Dimensions	Daily Internet	N	X̄	S	F	p	SD
PFS	Perceptual Fatigue	1.1-3 Hours	188	14.43	3.28	4.458	0.00	1*-2
		2.4-6 Hours	217	13.39	3.19			
		3.7-9 Hours	74	13.95	3.39			
		4.10 Hours and Over	25	15.16	4.16			
DBS	Digital Aging	1.1-3 Hours	188	40.45	9.28	6.828	0.00	1*-2
		2.4-6 Hours	217	36.39	9.63			
		3.7-9 Hours	74	37.05	9.27			
		4.10 Hours and Over	25	35.56	13.16			
	Digital Deprivation	1.1-3 Hours	188	21.38	4.96	9.708	0.00	1*-2 1*-3
		2.4-6 Hours	217	18.85	5.56			
		3.7-9 Hours	74	18.18	6.07			
		4.10 Hours and Over	25	19.28	5.80			
	Emotional Exhaustion	1.1-3 Hours	188	21.46	4.86	4.340	0.00	1*-2
		2.4-6 Hours	217	19.75	5.13			
		3.7-9 Hours	74	19.77	4.95			
		4.10 Hours and Over	25	20.40	6.27			

4. Discussion

In this study, physical education teachers' perceptual fatigue and digital burnout levels were examined according to some demographic variables. Nowadays, especially during the COVID-19 pandemic, digitalization, which is used in educational institutions as well as in other sectors, has become a necessity. This means that it is necessary to measure the perceptual fatigue tendency, which is the precursor of many organizational behavior variables.

Therefore, in this study, the "Perceptual Fatigue Scale" by Hooper et al. [29] was adapted into Turkish because of its superior conceptual and structural features and its intelligibility features. As a result of the analyses, it was determined that the scale showed

a structure consisting of a single factor measuring the fatigue, sleep quality, general muscle pain, stress levels and moods of the athletes in accordance with the original factor structure. As a result of the reliability analysis, the Cronbach alpha coefficient for the whole scale was calculated as .82.The results showed that the adapted scale is a valid and reliable and that it can be used to measure the perceptual fatigue levels of teachers working in educational institutions in Turkey.

As a result of the research, it was determined that physical education teachers experienced moderate perceptual fatigue and digital burnout (Table 1). It can be said that teachers experience perceptual fatigue and digital burnout due to the transition to online education during the pandemic and the fact that they have to spend a lot of time in the digital environment. At the same time, no difference was observed between the gender and marital status of teachers and their digital burnout status (Tables 2–3). It can be said that the reason for this result is that all physical education teachers continue their classes online due to the Covid-19 epidemic and the conditions and situations that will affect their digital burnout levels are very different. When the literature is examined, it is seen that there are studies in parallel with the research results [7, 31, 32, 33]. While there is a difference in favor of female participants between the gender variable and perceptual fatigue, no such difference is seen with the marital status. There are studies stating that participation in sports and exercise has benefits, such as helping women to become stronger both physically and psychologically, discovering their own physical skills and developing a sense of achievement [34, 35]. Based on these results, it can be said that due to the pandemic, female physical education teachers have to work at home, they are deprived of sports and exercise, as well as women have many responsibilities at home in their daily lives apart from their professions, and therefore they feel perceptually tired.

In the study, it was found that the digital deprivation and emotional exhaustion levels of the physical education teachers working in the high school department were higher than the secondary school teachers, and the perceptual fatigue averages of the teachers working in the high school were higher. This result can be explained as the transition to online education with the pandemic process and the fact that there are more physical education lessons in high schools compared to secondary schools, and physical education teachers working in high schools experience more digital exhaustion and perceptual fatigue. When the literature is examined, it is seen that there are studies in parallel with the research results [7, 36, 37].

Şirin et al. in their study [37] concluded that secondary school teachers stated that they felt stressed when they were in digital/virtual environments too much. In the literature, there are results that contradict our research result [38, 39].

As another result of the research, the participants with administrative duties have higher perceptual fatigue and digital burnout scores, which may be due to the fact that they have to use digital tools more and they have many responsibilities outside of the classroom. According to the results of the research, physical education teachers stated that they did not see themselves as someone who uses digital tools and that the virtual environment did not make them feel under stress, and in this case, digital burnout and perceptual fatigue did not occur. Perceptual fatigue and digital burnout perceptions of the participants who used the internet between 1–3 and 4–6 hours per day were found to be high. Therefore, it can be said that with the pandemic process, people have to use the internet very often in their daily lives and this situation causes physical education teachers to experience perceptual fatigue and digital exhaustion, like many individuals.

5. Conclusions

In conclusion, it can be said that the variables of physical education teachers' education levels, seeing themselves as someone who uses virtual and digital environments a lot, feeling under stress in the digital environment, and daily internet usage time variables have a small effect on digital burnout and perceived fatigue levels. Therefore, it can be

said that physical education teachers, who had to spend a lot of time in the digital environment during the pandemic period, experienced digital exhaustion due to their excessive exposure to digital environments with the online education period, which they were not accustomed to, and this situation caused physical education teachers to experience perceptual fatigue. In future studies, the perceptual fatigue scale, which has been adapted, can be applied to other branch teachers to determine perceptual fatigue levels and contribute to the literature.

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