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Cyberloafing Level of University Students: A Scale Development Study*

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Abstract

Considering the destructive effects of cyberloafing behaviors on learning-teaching activities, it gains importance what the underlying causes of such behaviors, and which variables are related to them. In the literature, the emphasis on commonly used technologies in cyberloafing scales, which were frequently opted for, was generally developed necessitates these scales to be reviewed over time. In this context, it was aimed to develop a valid, reliable, and up-to-date scale for determining the level of cyberloafing behavior of university students in educational settings. For this purpose, the literature and previously developed scales related to cyberloafing were examined. Based on the literature review and the addressed cyberloafing scales, a 26-item scale form created. Data were collected from 312 participants with the online data collection form, and EFA and CFA were carried out with this collected data. As a result of the analyzes, a valid, reliable, and up-to-date cyberloafing scale in education settings with 13 items and 3-subscales was created. The internal consistency coefficient of the scale and subscales range between .77-91.

Key Words

Cyberloafing • Educational settings • Scale development • University students

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The use of information and communication technologies (ICT) in workplaces has composed a more creative, flexible environment for employees that will allow self-improvement (Anandarajan et al., 2004; Oravec, 2002; Stanton, 2002). Thus, IT has become an essential part of work environments (Henle & Blanchard, 2008). The widespread use of ICT in workplaces has facilitated the way of doing tasks and has significantly increased productivity, but it has brought its inconvenient usage instead of work tasks. As a matter of fact, in addition to ICT is used for communication, cooperation, and data management in workplaces, the employees exploit the opportunities maintained to them by using ICT for their purposes (Yildiz-Durak & Saritepeci, 2019). This situation is expressed as hidden laziness, which is called cyberloafing or cyberslacking (Lim, 2002). In other words, cyberloafing is stated as the use of ICT tools and Internet access facilities ensured in the workplace or owned by the employees outside of the duties expected from them (Lim, 2002; Lim et al., 2002). Employees generally exhibit cyberloafing for purposes such as communicating, getting information, and having fun (Li & Chung, 2006), and this situation is classified as counter-productivity behaviors (Blancard & Henle, 2008). Thus, the prevalence of cyberloafing behaviors causes various productivity-decreasing situations such as financial loss in workplaces, a slowdown in internet connection, and business disruption (Sipior & Ward, 2002). Especially with the increase in mobile device ownership and the improvement in access opportunities with these devices, cyberloafing is not limited to workplaces, but also emerges as an important problem in educational settings (Saritepeci, 2020b; Yildiz-Durak & Saritepeci, 2019).

Thanks to the use prevalence of ICT tools in educational settings, access to information has been made easy, and these tools have become an indispensable part of the educational settings. Learners can reach course content, training videos, and materials by computers, tablets, and smartphones (Galluch & Thatcher, 2011; Ragan et al., 2014; Taneja et al., 2015). Besides, by using these tools, they can actively participate in various creative design-based learning activities where they find the opportunity to reflect on themselves (Saritepeci, 2020a; Saritepeci & Çakır, 2019). However, the prevalence of ICT tools and individual mobile device ownership in educational settings revealed learners use them in a way that reduces the efficiency of both their own and others' learning-teaching processes (Saritepeci, 2020b). As a matter of fact, learners exhibit various cyberloafing behaviors such as surfing on social media, sharing, searching, gaming, texting, watching, gambling, and taking photos in educational settings (Koay, 2018; Vitak et al., 2011; Yildiz Durak, 2020).

Tindell and Bohlander (2012) stated in their study that 95% of the learners brought their smartphones to school. They reported that 92% of the learners used their smartphones for their personal purposes in the lesson, and 10% used them as a cheating tool during the exam. With the increase of access opportunities offered in schools, the use of these by students for purposes such as entertainment and gameplay, etc. becomes an important threat to effective learning and teaching day by day (Saritepeci, 2020b).

Considering the destructive effects of cyberloafing behaviors on learning-teaching activities, it gains importance what the underlying causes of such behaviors, and which variables are related to them. For this purpose, various scales have been developed in the literature to determine the form and level of cyberloafing in educational settings (CES) (Akbulut et al., 2016; Blanchard & Henle, 2008; Koay, 2018; Polat, 2018; Yaşar, 2013), and many studies have been conducted using these scales to detected cyberloafing level, antecedents and consequences (Baturay & Toker, 2015; Demirtepe-Saygılı & Metin-Orta, 2020; Dursun et al., 2018; Gökçearslan et al., 2018; Masadeh, 2021; Saritepeci, 2020b; Sharma, 2020; Wu et al., 2018; Yildiz Durak, 2020). In the

literature, the emphasis on commonly used technologies in cyberloafing scales, which are frequently opted for, is generally developed necessitates these scales to be reviewed over time. In this context, it is aimed to develop an up-to-date scale for determining the level of cyberloafing in educational settings.

Purpose of the Study

This study was aimed to improve a valid, reliable, and up-to-date Likert-type measurement tool used to determine the level of cyberloafing behavior of university students in educational settings.

Social Purposeful Cyberloafing in Educational Environments

Social factors constitute a substantial part of cyberloafing activities that express the use of ICT tools, especially the Internet, for personal purposes of individuals not related to tasks or learning in work/education settings (Hussain et al., 2017). The social factors stated here are closely related to the network of relationships in the real and virtual life of the individual. Interacting with others during work or class time is likely to reduce the individual's interest in the job/lesson (Wu et al., 2020). This condition affects decreasing productivity in both work and education settings. Additionally, using ICT for socializing during learning-teaching activities is one of the most common forms of cyberloafing encountered in educational settings (Baturay & Toker, 2015; Dursun et al., 2018; Saritepeci, 2020b; Toker & Baturay, 2021). This situation is bonded with the prevalence of social media use and the increase in the time spent on social media. As a matter of fact, in the Digital 2021 report, the number of active social media users increased by 13.2% compared to the previous year and reached 4.20B (We Are Social, 2021a). Likewise, in Turkey also an 11.1% increase compared to the previous year, the number of active social media users has been 60 million (We Are Social, 2021b). In this report, for people aged 16-64 in Turkey, daily use of social media has been 2H 57M.

Game Purposeful Cyberloafing in Educational Settings

Another type of cyberloafing behavior frequently encountered in work / educational settings is gaming (Akbulut et al., 2017; Vitak et al., 2011). Digital games appeal to a wide range of age groups with visual and auditory effects and realistic actions (Cha & Seo, 2018; Garris et al., 2002; Liu et al., 2016). Indeed, in the Digital-2021 report, the world rate of those in the 16-64 age group play digital games across 92.5%, while 86.9% are in Turkey (We Are Social, 2021a, 2021b). Also, in this age group, 74.9% in the world and 83.3% in Turkey play games via smartphone. It can be said that the prevalence of digital games that appeal to a large part of society and the ease of access with mobile devices have the potential to cause game addiction in individuals as a result of prolonged and uncontrolled playing (Lemmens et al., 2009). As the addiction level of individuals increases, they display cyberloafing behaviors by playing digital games in the work/education settings (Tanrıverdi & Karaca, 2018). The increment in GPC leads to a decline in productivity in learning and teaching processes.

Academic Cyberloafing in Educational Settings

CES is not just limited to behaviors, such as socializing, entertainment, and gaming, irrelevant to teaching-learning activities during course hours. Individuals also exhibit cyberloafing behaviors, which comprise the use of the Internet and ICT tools to reach different and detailed content related to self-development or education/work tasks (Blanchard & Henle, 2008; Seçkin & Kerse, 2017).

Method

This study is an up-to-date, valid, and reliable scale development study to specify the levels of CES of university students.

Participants

The participants of this study are 312 students, 36.22% of the participants are male, and 63.78% are female, enrolled in various universities in Turkey. The average age of the participants is 20.98, and 44.87% are first-year students. Besides, the average daily internet usage time of the participants is 5.39 hours.

Scale Development Process

To develop a valid and reliable measurement tool to determine the level of cyberloafing behaviors have exhibited by university students in educational settings, the literature and previously developed scales related to cyberloafing (Akbulut et al., 2016; Blanchard & Henle, 2008; Koay, 2018; Polat, 2018; Yaşar, 2013) were examined. Especially the "Cyberloafing Scale" developed by Akbulut et al. (2016), which is preferred frequently in the domestic literature, and the "Smartphone Cyberloafing Scale in Classes" developed by Polat (2018) were taken as a basis. The draft scale consisting of 26 items based on the literature review and the addressed cyberloafing scales to develop an up-to-date, valid, and reliable measurement instrument. The draft form prepared was rearranged in line with the feedback of two experts who were experienced scale development and had various studies on CES. Subsequently, interviewing four university students with a focus group study were reviewed the scale items in the context of clarity. With this review, the expression styles in some items were changed, and the 26-item scale form was made ready for application. The prepared scale form has a five-point Likert-type rating: "1= Never", "2= Rarely", "3= Sometimes", "4= Often", "5= Always". There are no items needed for reverse scoring on the scale, and high scores from the scale indicate that the level of cyberloafing is high.

Data Analysis

In specifying the sample size, the criteria for at least 10 observations for each item and reaching at least 300 participants (Comrey, 1988) were taken into account. In the study, 312 participants were achieved, and the number of observations for each variable was 12 (312/26). Pursuant, the sample size reached in the study is sufficient.

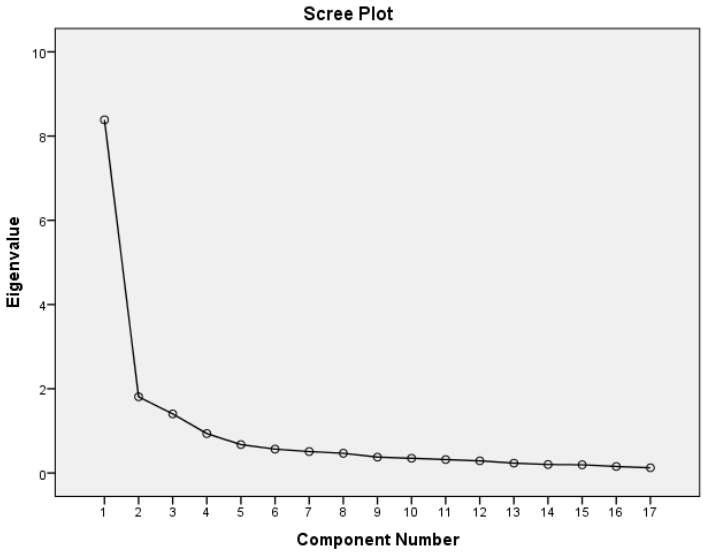
To specify the factor structure of the 26-item scale form, exploratory factor analysis (EFA) was analyzed using SPSS 27 software. Confirmatory factor analysis (CFA) was performed with AMOS 27 version to check the compatibility of the factor structure revealed as a result of EFA with the data. The goodness of fit metrics CMIN / DF, GFI (Goodness of Fit Index), CFI (Comparative Fit Index), and RMSEA (Root Mean Square Error of Approximation) were used to determine the fit between CFA and data. Cronbach alpha reliability coefficient was calculated for the scale and subscales to determine the reliability level of the final scale form created with EFA and CFA.

Results

The Kaiser Meyer Olkin coefficient of the data collected for Scale of Cyberloafing in Educational Settings (SCES) was calculated as .926, and Bartlett's Test of Sphericity was significant at the p <.01 level (X2=5350.412, p=.000). These values demonstrated that the Cyber Leisure Scale data set is suitable for EFA (Cohen et al., 2017; Tabachnick & Fidell, 2007). To specify the factor structure of the SCES, factors with an eigenvalue greater than 1, and at least 5% explanatory were taken into account within the framework of the Kaiser-Guttman principle. Besides, the lower limit of item factor load was determined as .45 (Büyüköztürk, 2011; Tabachnick et al., 2007). According to the EFA result, a 5-factor structure with an eigenvalue greater than 1 was formed. Even though the eigenvalue of the two factors is above 1, their explanatory remained below 5% and there were 2 items in each of these two factors. It is recommended that there are at least 2 and usually 3 or more items in one factor, and the least explanation level is around 5%. EFA was repeated by removing the items in these two factors since they did not meet these conditions and i16 that had no factor loading .45 or more. By the analysis results, there were 3 factors with eigenvalues greater than 1. It was specified that i1, i2, i8, i10, and i17 items have factor load values below .45 in all of the factors. These items were removed one by one from the lowest to the highest factor loading, and EFA repeated, and all of these items were removed from the scale because the factor loading was below the determined critical value. As a result, a structure with three factors (Factor 1: 7.83, Factor 2: 1.81, Factor 3: 1.35) was formed with an eigenvalue higher than one and an explanatory above 5% (See Figure 1, Table 1).

Figure 1

Line Chart of SCES Factor



According to Table 1, the factor load values of the items varied between .59 and .93. Factors were named in line with the relevant literature and the items (Factor 1: Social Purposeful Cyberloafing (SPC), Factor 2: Academic Cyberloafing (AC), and Factor 3: Gaming Cyberloafing (GPC)). There were 9 items in the SPC subscale, and it had 48.95% explanatory. AC subscale included 4 items, and 11.32% of the total variance was

explained. There were 3 items in the GPC subscale, and it had 8.46% explanatory. Accordingly, the total explanation of the three-factor structure was 68.73%.

Table 1

SCES factor load values

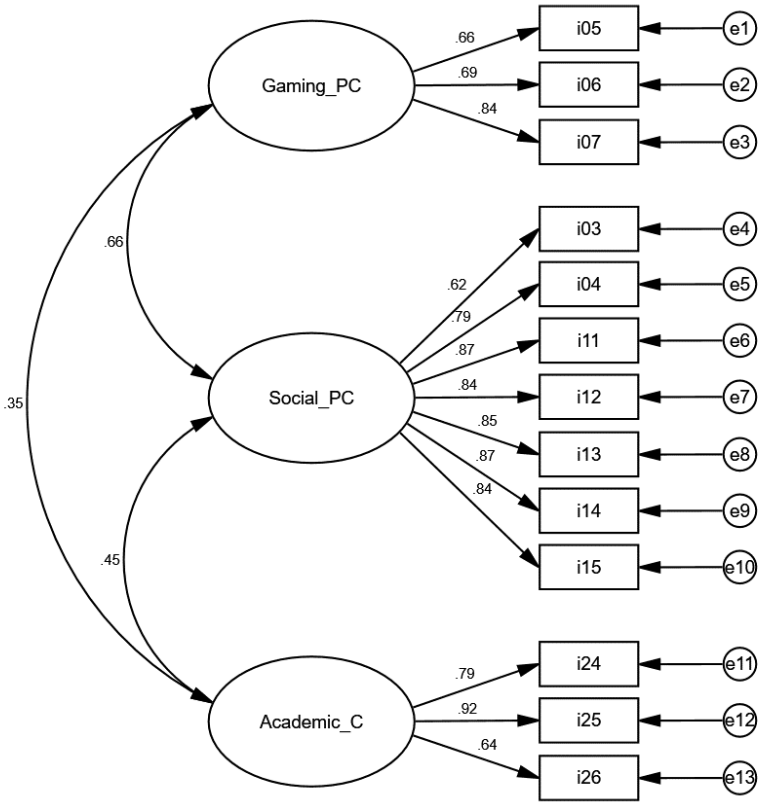
SCES Items	Factor loading		
	1	2	3
Factor 1: Social Purpose Cyberloafing			
04 I frequently check notifications on my social media (Instagram, Facebook, Twitter, TikTok, etc.) accounts.	.93		
14 I like and comment on social media (Instagram, Facebook, Twitter, TikTok, etc.) posts.	.85		
03 I often check for instant online messaging apps (WhatsApp, Messenger, etc.).	.83		
11 I browse through social media (Instagram, Facebook, Twitter, TikTok, etc.) posts.	.82		
12 I canvass my friends' social media (Instagram, Facebook, Twitter, TikTok, etc.) profiles.	.80		
09 I message via instant online messaging applications (WhatsApp, Messenger, Beep, etc.).	*.78**		
15 I share stories on social media (Instagram, Facebook, Twitter, TikTok, WhatsApp etc.).	.77		
13 I share text, photo, video etc. on social media (Instagram, Facebook, Twitter, TikTok, etc.).	.73		
22 I take a photo or a selfie.	*.62**		
Factor 2: Academic Cyberloafing			
24 I read digital texts on the issue covered in the course.		.89	
25 I watch videos on the subject covered in the lesson.		.89	
26 I try to find the answer to a question asked during the lesson on the Internet.		.77	
20 I use a smartphone, tablet PC or computer to study different lessons or topics of interest.		*.59**	
Factor 3: Gaming Purpose Cyberloafing			
05 I play games (Fortnite, PubG, Minecraft, etc.) that more than one person can play over the internet.			.83
06 I play digital games (candy crush, angry bird, arcade games, etc.) that do not require an internet connection.			.81
07 I download games or apps.			.68
Eigenvalues	7.83	1.81	1.35
Variance Explained	%48.95	%11.32	%8.46
Total Variance Explained	%68.73		

Note. N=312. The extraction method was principal component analysis with a direct oblimin with Kaiser normalization rotation. Factor loading below .30 are not presented in the table. **** Items written in italics were removed from the scale as a result of the CFA.***

The construct compatibility of the SCES was tested with CFA using AMOS 27.0. It was identified that the goodness of fit values was out of the reference range as a result of CFA. Primarily the standardized regression weights were checked, and it was understood that all values were above the acceptable threshold of .5. Thereupon, modification indices (MI) were examined, and it was seen that some items (i09, i20, i22) had high MI with items in different subscales. Thereupon Standardized Residual Covariances (SRC) were examined, and it was established that the SRC value between i09, i20, and i22 with items in other dimensions was above 2.58. Values greater than "2.58" are considered problematic values (Byrne, 2010). Therefore, these items were removed from the analysis one by one, and CFA was repeated, and these items were removed because the problematic view regarding the items continued. DFA was repeated after the corrections were applied (See Figure 2). According to the findings, acceptable and good fit values were obtained (X2 / df = 2.689 RMSEA = .074, CFI = .965, GFI = .926). The goodness of fit values acquired as a result of CFA showed that the three-factor structure is acceptable and compatible with the data (Tabachnick & Fidell, 2007).

Figure 2

CFA model of the SCES



EFA was repeated due to changes in the factor structure with CFA. As a result of EFA, the 3-factor structure was preserved, and the explained variance increased from 68.73% to 72.61% (See Appendix 1). Descriptive findings obtained from the final SCES were presented in Table 2. Accordingly, the SCES average score of the participants was 32.25. Pursuant, it can be said that the participants' CES level was low. While the highest mean score in the subscales was SPC (M / k = 2.70), the lowest mean score was in the GPC (M / k = 1.79) subscale.

Table 2

Descriptive Findings

Factor	k*	M	M/k	Sd	Min	Max	Skewness	Kurtosis
SPC	7	18.92	2.70	7.66	7.00	35.00	.346	-.847
AC	3	7.95	2.65	3.18	3.00	15.00	.436	-.560
GPC	3	5.39	1.79	2.88	3.00	15.00	1.207	.572
SCES	13	32.25	2.02	11.27	13.00	65.00	.355	-.630

**k: number of items*

After testing the factor structure of the scale and subsequently the construct validity, the Cronbach alpha value was calculated to determine the internal consistency level of the SCES. Accordingly, the SCES internal consistency coefficient was calculated as .91. Cronbach alpha internal consistency coefficients for the scale sub-dimensions were calculated as .82 for SPC, .82 for AC, and .77 for GPC. Since the calculated internal consistency coefficient was higher than .70 (Gürbüz & Şahin, 2014), it was an indication that SCES and scale sub-dimensions have a reliable structure. SCES scale item statistics presented in Table 3. Considering that 0.30

and above are acceptable values for item-total correlation, it could be said that all items in the scale were above the desired item-total correlation value and are good items.

Table 3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
i03	28.87	110.13	.60	.55	.905
i04	29.22	106.13	.72	.70	.900
i05	30.56	114.69	.44	.40	.911
i06	30.63	116.07	.48	.41	.909
i07	30.17	108.72	.61	.54	.905
i11	29.24	102.56	.82	.76	.895
i12	29.86	105.50	.76	.66	.898
i13	30.02	104.00	.79	.82	.897
i14	29.75	105.30	.78	.78	.897
i15	29.87	104.65	.77	.76	.898
i24	29.69	114.86	.43	.57	.911
i25	29.87	111.39	.52	.63	.908
i26	29.25	113.60	.44	.44	.912

Discussion

The concept of cyberloafing emerged as a result of the find a place of ICT tools in workplaces and the widespread use of Internet access among employees, and the use of these tools and Internet access for personal purposes not related to their work tasks. The widespread use of ICT in educational settings, the increase in the rate of mobile device ownership of students, and the widespread use of Internet access opportunities have made cyberloafing behavior an important issue for educational settings. It can be said that cyberloafing behaviors in educational settings affect learning-teaching efficiency in general negatively. Therefore, it often creates negative results in terms of learning-teaching activities. This situation reveals the need for a measurement tool to reveal the level of cyberloafing behaviors of students and the structures associated with them in educational environments and to take measures against them. In this context, the study aims to develop a reliable, valid, and up-to-date scale to determine the level of cyberloafing in university students' educational settings. For this purpose, the scales (Akbulut et al., 2016; Blanchard & Henle, 2008; Koay, 2018; Polat, 2018; Yaşar, 2013) frequently preferred in research and the literature related to cyberloafing in educational settings were examined. As a result of preliminary examinations, a 26-item scale form was created. Data were collected from 312 people with the online data collection form, and EFA and CFA were carried out with this collected data.

EFA unveiled a structure consisting of 3 factors and 16 items. CFA was performed to determine the construct validity of this 3-factor structure. As a result of CFA, 3-items were removed from the scale for various reasons. It was determined that the 3-factor structure showed an acceptable fit with CFA. EFA was repeated due to changes in scale structure with CFA (see Appendix 1). Accordingly, there are 7-items in the SPC subscale and explain 49.50% of the total variance. AC has 3-items and 13.25% explanatory, while GPC has 3-items and

accounted for 9.81%. Pursuant, the total variance explained by the three-factor structure is 72.61%. The Cronbach alpha internal consistency coefficient was calculated to determine the reliability level of the final form of the SCES, and the internal consistency value for the scale and subscales was calculated between .77 and .91.

Suggestions

In this study, a valid, reliable, and up-to-date scale has been developed to specify the types of cyberloafing behaviors of university students exhibit in educational environments and their level. With Covid-19, a significant portion of university students participates in educational activities through emergency remote teaching environments. In these settings, the form and direction of students' cyberloafing behavior might have changed. Therefore, it is thought that the screening studies to determine the cyberloafing levels of students in distance education settings and the variables they are related to will have important outcomes.

Social purpose cyberloafing stands out more than other dimensions in terms of average and number of items. It is suggested that future studies focus on social cyberloafing behaviors be addressed within the framework of students' sensitivity to social impact.

Limitations

This study had some limitations. One of the most substantial limitations of this study was that EFA and CFA analyzes were performed on data obtained from the same group in the scale development study. Although this situation has been seen as an acceptable limit in the literature, commonly, it is suggested that these analyzes are made with the data obtained from different groups.

Ethic

It has complied with ethical principles in this study. Ethics committee approval was obtained from Bartın University Social Sciences and Humanities Ethics Committee (Bartın Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurulu) for this study on 31.08.2020 with the decision numbered 2020-SBB-0180.

Conflict of Interest

The authors declare that they have no conflict of interest.

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