Problematic Internet Usage Behaviours of Undergraduate Students: A Modeling Study[1]

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ABSTRACT
This study aims to examine the problematic Internet usage behaviours of undergraduate students through structural equation model. The research group of this study consists of 2026 undergraduate students enrolled in universities representing the seven geographical regions of Türkiye. Universities were selected via stratified method and individuals from these universities were selected by random sampling. In

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order to collect data, the Problematic Internet Usage Behaviours Scale for Undergraduate Students, developed by the researchers, was used. The scale consists of 32 items and 9 factors, including demographic information. The results revealed that problematic Internet usage behaviours of the students affecting by the factors were: social satisfaction which means meeting the expectations of the individual from the social environment, emotional satisfaction which means the individual's sense of emotional satisfaction, internalization which means the individual's assimilation of the situation she/he is in, perception of prestige which express dignity in social environments, physical negative impact means physical ailments that occur in the body of the individual, overuse which is about the usage of the Internet more than enough, loss of control which means being unable to control and continue to perpetuate one's negative behavior, academic failure, and internal deception which means deceiving oneself that one has misbehaved. In addition, correlation of factors was modelled and evaluated. When the structured model was examined it was seen that perception of prestige, internal deception, and overuse did not affect the physical negative impact factor. In addition to this, it was determined that the emotional satisfaction factor did not affect the overuse factor. Apart from these examples, all the other factors affect each other at different levels.

Introduction

The Internet has become an unconditional and indispensable element of daily life since it is becoming more and more easily accessible to every individual in society, its use is fast and easy, it is the shortest method of obtaining information, and it can be used for purposes such as shopping, communication, entertainment which are needed in daily life. The advantages of the Internet have a great impact on the spread of it. On the other hand, there

are many disadvantages of the uncontrolled, oblivious, indefinite and excessive use of the Internet. With the 2019 COVID pandemic, individuals have started to use the Internet more frequently and widely than usual for many different purposes. In this widespread use process, the negative effects of the Internet remained behind. Many studies state that excessive and uncontrolled use of the Internet causes problematic Internet usage (Akar, 2017; Gu, 2020; Günlü, 2016; Lim & Nam, 2020; Spada, 2014; Vadher et al., 2019; Yavuzarslan Gok, 2017). It is very important to recognize and regulate such negative behaviours, which are generally called "Problematic Internet Usage", in the early period so that these behaviours do not become permanent. According to TUSI (Turkish Statistical Institute) 2021 statistics in Türkiye, the most common group of Internet users is between the ages of 16-24 with 26.6%. Other groups follow as; with 15.7% individuals who are at 25-34 age group, with 9.4% individuals who are at 35-44 age group, with 5.5% individuals who are at 45-54 age group, with 1,6% individuals who are at 55-64 age group and lastly with 0,4% individuals who are at 65-74 age group (TUSI, 2021). On the other hand, Erikson (1968) stated that the developmental periods of the individuals within the 16-24 age group with the highest number of people as Internet users, are called the Young Adulthood period. Prominent behaviours of individuals in this period are identity confusion and intimacy versus isolation. Intimacy versus isolation is defined as the struggle of being able to establish close relationships with individuals of the same and opposite gender, identity confusion is defined as an effort to create an identity of one's own (Erikson, 1968). In other words, it is stated that establishing relations and forming their own identity are two stress factors for young individuals in this period (Ceyhan, 2011).

It is stated that young people in this isolation period see the Internet as a tool to cope with the stress factors mentioned (Guan & Subrahmanyam, 2009). It can be expected that the frequency of exhibiting problematic Internet usage behaviours could also be high, since these young individuals who use the Internet as an asylum from stress factors, can use the Internet uncontrollably. Besides; the ineffectiveness of the control mechanism of parents in this age group, the fact that classes direct students to use the Internet as a tool for research, classes being carried out via the Internet, there being no obligation to reveal identity in social networks, the opportunity to introduce themselves differently than they are, easy access to Internet from both school and social physical environment, being alone in social life, low cost of accessing to the Internet and the possibility of accessing any desired content are the factors that could cause the problematic use of the Internet by university students (Ceyhan, 2011; Ceyhan et al., 2007; Faghani et al., 2020; Gu, 2020; Hall & Parsons, 2001; Kandell, 1998; Karaca, 2007; Keser Ozcan & Buzlu, 2005; Turnalar Kurtaran, 2008). It is stated that outcomes frequently encountered in young individuals with problematic Internet usage can be understood from the disruptions of their familial, academic, and social responsibilities. Time spent on the Internet has a great effect on disrupting these responsibilities and it also creates an internal obstacle for individuals (Caselli et al., 2020; Chou et al., 2005; Esen, 2010). At this point, it is important to examine problematic Internet usage in detail.

Problematic Internet Usage

In the literature, many nomenclatures have been used to describe the normal or unacceptable amount of time spent while using the Internet. Before the problematic Internet usage has been nominated, Goldberg (1996); emphasized that the uncontrolled use of the Internet may

cause problems in fulfilling daily life responsibilities. In the following years, according to chronological naming:

- Young (1996) prepared a diagnostic criteria list with 8 items and stated that the fulfilment of 2 of these items can be diagnosed as "Internet addiction".
- Griffiths (1998) defined the aspects of Internet addiction as; attention-seeking, relapse, withdrawal, tolerance, mood change, conflict criteria and expressed it as intensive use of the Internet due to the opportunities it provides.
- Davis (2001) preferred compulsive Internet usage and pathological Internet usage instead of naming it Internet addiction. This concept can be defined as individuals' preference to use the Internet to meet their social needs apart from academic and business purposes and also Internets' uncontrolled and excessive use since all life is carried on the Internet.
- Tam ang Walter (2013), accepted all of the naming and definitions and stated that these naming changes occur according to the 3-stage behavioural level. According to the model, Level 1 is called the "regular Internet use" level, family and peers are important in determining and control ff the problematic Internet usage behaviour is displayed or not at this level. Level 2 is called " Problemaic/Heavy Internet Use " level and teachers/instructors are important in determination and control of the problematic Internet usage behaviour at this level. Level 3 is called the "Pathological Use/Internet & Gaming Addiction" level, psychologists, psychiatrists and families are important in determining and control of the problematic Internet usage behaviour at this level. It is stated that not only therapy or usage measures but

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also drug supports may be required in the treatment of fourth level users (Tam & Walter, 2013).

- Ceyhan and Ceyhan (2014) defined the behaviours regarding problematic Internet usage as not being able to control the use of the Internet and for this reason getting negatively affected on daily life skills.
- Similarly, Lim, and Nam (2020) used the term, problematic Internet usage and stated that it affects daily life and creates unhappiness and dissatisfaction in people when it is not used.

As it can be understood from the naming and the definitions of these nomenclatures, although similar behaviours are named differently, it has been determined that these definitions are gathered in a similar perspective and the term "problematic Internet usage" is often used in fields of education in recent years. But with the different levels of expressing these behaviours, problematic Internet usage can be the research subject of different branches (Ceyhan, 2011; Santarossa & Woodruff, 2017; Tam & Walter, 2013).

When the Internet's most common users' age groups are considered it can be seen that this correlates to university students' age groups and the models suggest that when the diagnosis of these behaviours is made early, improvements to these behaviours can be made more efficiently. It is thought that identifying the problematic Internet usage behaviours of young users at the first and second level, will help protect them from possible problems they may encounter in their social, academic, professional and family lives later. Since the most common age group which have a problematic Internet usage correlates with the university students' age group this the study was conducted with undergraduate students studying at various universities.

Within the context of the study, the following hypotheses were tested:

H1: Social satisfaction has a significant effect on loss of control.

H2: Social satisfaction has a significant effect on overuse.

H3: Social satisfaction has a significant effect on academic failure.

H4: Social satisfaction has a significant effect on physical negative impact.

H5: Emotional satisfaction has a significant effect on loss of control.

H6: Emotional satisfaction has a significant effect on overuse.

H7: Emotional satisfaction has a significant effect on academic failure.

H8: Emotional Satisfaction has a significant effect on physical negative impact.

H9: Internalization has a significant effect on loss of control.

H10: Internalization has a significant effect on overuse.

H11: Internalization has a significant effect on academic failure.

H12: Internalization has a significant effect on physical negative impact.

H13: Perception of prestige has a significant effect on loss of control.

H14: Perception of prestige has a significant effect on overuse.

H15: Perception of prestige has a significant effect on academic failure.

H16: Perception of prestige has a significant effect on physical negative impact.

H17: Internal deception has a significant effect on loss of control.

H18: Internal deception has a significant effect on overuse.

H19: Internal deception has a significant effect on academic failure.

H20: Internal deception has a significant effect on physical negative impact.

H21: Loss of control has a significant effect on overuse.

H22: Loss of control has a significant effect on academic failure.

H23: Loss of control has a significant effect on physical negative impact.

H24: Overuse has a significant effect on academic failure.

H25: Overuse has a significant effect on the physical negative impact.

Method

Research Model

This research was designed as a cross-sectional survey method. Survey methods aim to describe a past or present situation as it is. With these models, the researcher does not intend to modify, or influence the investigated situations. The event to be investigated is observed as it is (Kalaycı, 2006). Survey methods have differences among them. In this study, a single research survey model was used to determine the factors affecting the problematic Internet usage behaviours of undergraduate students, while the relational survey method was used to determine the relationships between the factors. While in single survey methods, the formations of the variables are determined one by one, in relational survey methods differences between two or more variables are examined (Karasar, 2006). In the analysis of data; Structural Equation Modelling was used to predict the causal relationships between dependent and independent variables and to systematically interpret complex problems in a single process (Anderson & Gerbing, 1988). IBM® SPSS® Amos™ 21 software was preferred for SEM.

Research Population and Sampling

The research population of this study consists of undergraduate students attending universities representing the seven regions of Türkiye during the 2014-2015 academic year. In the selection of institutions, the stratified sampling method was used, and the students were selected randomly from each university based on the total number of students they have. In line with this approach, it was aimed to reach 2026 students studying in 9 universities from 7 regions according to the size of the region. The distribution of the undergraduate students participating in the study according to their age, gender, and grade level is presented in Table 1.

Table 1
Distribution of Participants According to Demographic Characteristics

The average age	n	%
19-21	1401	69.5
22-24	505	24.9
25 and above	120	5.92
Gender	**n**	**%**
Female	1109	54.7
Male	917	45.26
Grade Level	**n**	**%**
1st Grade	903	44.57
2nd Grade	510	25.17
3rd Grade	261	12.88
4th Grade	300	14.80
Grade Retention	48	2.36
Unspecified	4	0.19
Total	*2026*	*100*

When Table 1 is examined, it can be seen that 1401 (69.15%) of 2026 undergraduate students participating in the study were between the ages of 19-21, 505 (24.9%) of them were between the ages of 22-24, 120 (5.92%) of them were in the age group of 25 and above. When the distribution of the genders of undergraduate students participating in the research is examined it can be seen that 1109 (54.7%) of 2026 undergraduate students participating in the study were female and 917 (45.26%) were male. In addition, among the 2026 undergraduate students who participated in the study, the highest participation rate belongs to 1st graders with 903 (44.57%) students and the lowest participation rate belongs to students with retention status with 48 (2.36%) students.

Data Gathering Tool

The Problematic Internet Usage Behaviours Scale for Undergraduate Students, which was 5-point-Likert type and developed by the researchers in 2 stages and consisted of 32 items and 9 factors, used to collect the data of the study. In the creation of the scale items and factors, initially the models in the literature were examined and determined by content analysis, they were subjected to content validation by consulting with field experts. Then, 2 pilot studies were conducted and finally the item pool was formed. In the first pilot application of the scale, undergraduate students of a university that would not participate in the actual research were selected. Explanatory Factor Analysis and Reliability analyses were made on the obtained data. The second pilot was conducted with the students of the same university who did not take part in the first pilot and Confirmatory Factor Analysis was performed. As a result of two applications, final form of The Problematic Internet Usage Behaviours Scale of Undergraduate Students was obtained. Also, Academic Failure, Social Satisfaction, Emotional Satisfaction,

Internalization, Perception of prestige, Physical Negative Impact, Overuse, Loss of Control, Internal Deception were found as factors of the Problematic Internet Usage Behaviours Scale. The Cronbach Alpha value for the scale was calculated as 0.83, Goodness of fit indexes were determined as; χ^2: 919.735; χ^2/df: 1.755; RMSEA: 0.088; GFI: 0.885; AGFI: 0.854 and CFI: 0.824.

Data Collection Procedures

The developed scale was applied online to the determined sample. The targeted number was reached in all universities except for one university because the university had no central student information system and information about the scale had to be send to students' personal e-mail addresses. As a precaution for missing data, the scale was applied to more students than the targeted number, and accordingly, complete feedback was obtained from a total of 2026 students.

Data Analysis

The data were gathered through an online electronic questionnaire and analysed with both IBM® SPSS® Statistics 21 and IBM® SPSS® Amos™ 21. Structural equation modelling was used to establish the model and determine its validity.

Findings

Problematic Internet Usage Rates

The mean scores of undergraduate students of problematic Internet usage were analysed according to the gender variable. If the average values are in the range of 1-3, it means that family, friends and teacher/instructor are authorized to determine and eliminate these behaviours. If it is between 3 and 4, it means that a psychologist must be consulted, and if it is between 4-5, it means that a

psychiatrist must be consulted (Tam & Walter, 2013). Relevant findings were presented in Table 2.

Table 2
The Distribution of Problematic Internet Usage Rate According to Gender (According to 1-5 Point Range)

Gender	n	$\underline{X}$(Avg.)
Female	1109	1.778
Male	917	2.030
Total	**2026**	**100**

When Table 2 is examined, the average score of female students of problematic Internet usage behaviours was determined as $\underline{X}$=1.778, while the score of male students was determined as $\underline{X}$=2.030. This showed that male students tend to exhibit more problematic behaviours than female students.

Measurement Model and Test Results

In this section, descriptive statistics of the gathered data regarding the measurement model were given. In this context, the validity characteristics based on the standard deviation, mean, skewness, and kurtosis scores were examined, and the findings are presented in Table 3.

Table 3
Mean, Standard Deviation, Skewness and Kurtosis Values of Factors Included in the Model

Factor	$\underline{X}$	SS	Skewness	Kurtosis	Item Number
Physical Negative Impact (PNI)	2.55	.799	.440	-.509	3
Overuse (O)	2.427	.870	.583	-.256	2

	Mean	SD	Skewness	Kurtosis	
Loss of Control (LC)	2.309	.903	.601	-.168	4
Academic Failure (AF)	2.217	.867	.760	.350	3
Perception of Prestige (PP)	2.258	.897	.538	-.373	5
Internalization (I)	2.223	.865	.597	-.131	5
Emotional Satisfaction (ES)	2.150	.864	.814	.151	4
Internal Deception (ID)	2.190	.855	.692	.061	2
Social Satisfaction (SS)	1.906	.917	1.021	.373	4

The results in Table 3 reveals that the mean values of the factors were less than 3.

This showed that the problematic Internet usage behaviours of undergraduate students participating in the research are at 2nd Level according to the Behaviour Level Model of Tam & Walter (2013) and that the family, social environment and education authorities were responsible for the detection and correction of these behaviours. When the factors were examined in detail, it was seen that the highest average score belongs to the Physical Negative Impact Factor (X=2.555), in other words, undergraduate students were mostly affected physically by their Internet usage behaviours. Also, it is noteworthy that the mean values of Overuse (X=2.427) and Loss of Control (X=2.309) factors were close to the median point. The lowest mean value belongs to Social Satisfaction Factor (X=1.906). In terms of the standard deviation scores, all scores were below 1 which proves that the measurement values were close to the mean scores. When the skewness and kurtosis values were examined, the fact that the Skewness value was between .440 and 1.021 and the Kurtosis value was between -.579 and .373 showed that the assumption of normality is met.

Testing the Model

In this section, the model developed in the study was tested within the scope of the structural equation model. The obtained measurement model was presented in Figure 1.
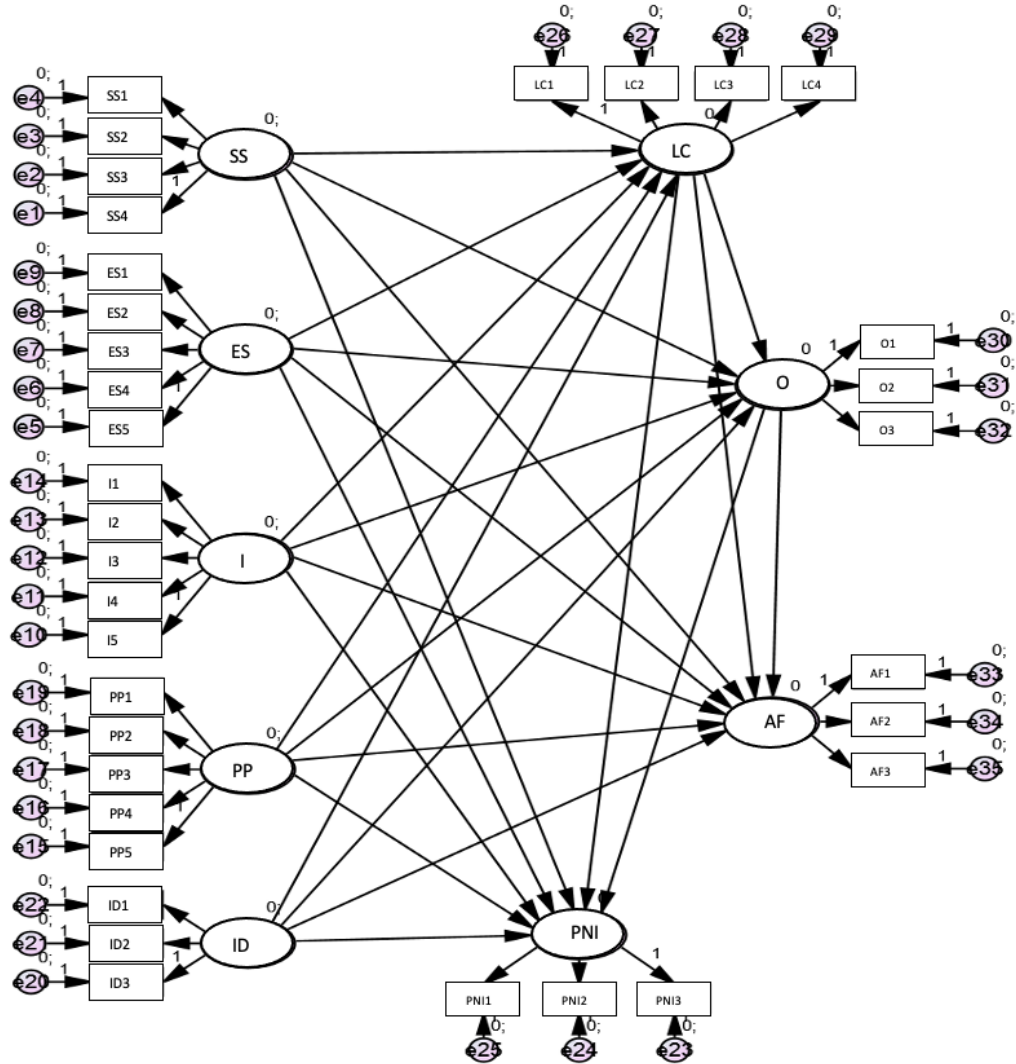

Figure 1- Measurement Model of Problematic Internet Usage Behaviours

Normality Assumption Values, Construct Validity and Goodness of Fit Indexes

The skewness and kurtosis values were examined in order to understand whether the model met the criteria of the assumption of normality. According to Kline (2005), skewness and kurtosis cut-off values should be between 3.0 and 10.0. The values related to the model were for the skewness value it was between the .440 and 1.021 and for the Kurtosis value, it was between -.579 and .373. These values showed that the normality assumption was met.

To evaluate the construct validity of the model, the convergent validity was evaluated via examining the mean, standard deviation, skewness, kurtosis, factor loadings, Cronbach's alpha and variance values. Discriminant validity was evaluated via examining the correlations among the factors in the model. The findings regarding the convergent validity of the model were presented in Table 4. In order to present the values, the construct validity table prepared by Ursavas (2014) was used.

Table 4

Construct Validity Results of the Measurement Model

Factor	$\underline{X}$	SD.	Skewness	Kurtosis	Load	Alpha	Variance
AF	2.217	.867	.760	.350		.783	.797
AF1	3.24	.867	-.137	-1.164	.77		
AF2	1.59	.902	1.827	2.383	.74		
AF3	1.82	.823	1.295	.607	.72		
SS	1.906	.917	1.021	.373		.810	.706
SS1	2.18	.812	.813	-.236	.78		
SS2	2.05	.931	.983	-.080	.81		
SS3	1.93	.803	1.144	.265	.72		
SS4	1.47	.930	2.128	3.981	.76		
ES	2.150	.864	.814	.151		.812	.644
ES1	3.15	.767	-.101	-1.203	.74		
ES2	2.34	.807	.640	-.734	.76		
ES3	2.06	.820	1.003	.027	.82		

ES4	2.66	.861	.337	-.651	.72		
I	2.223	.865	.597	-.131		.847	.718
I1	2.26	.805	.725	-.634	.73		
I2	1.59	.943	1.717	2.495	.77		
I3	1.83	.814	1.230	1.022	.82		
I4	1.91	.712	1.105	.378	.72		
I5	1.87	.919	1.189	.562	.78		
PP	2.258	.897	.538	-.373		.853	.698
PP1	1.49	.914	2.058	3.812	.80		
PP2	1.46	.926	2.178	4206	.74		
PP3	1.40	.835	2.326	5.215	.79		
PP4	1.58	.991	1.864	2.908	.76		
PP5	1.79	1.185	1.431	3.812	.81		
PNI	2.555	.799	.440	-.509		.729	.696
PNI1	2.78	.807	.201	-1.210	.87		
PNI2	2.39	.785	.597	-.917	.89		
PNI3	2.26	1.305	.725	-.634	.78		
O	2.427	.870	.583	-.256		.821	.738
O1	2.31	1.322	.665	-.717	.84		
O2	1.65	1.025	1.635	1.948	.81		
LC	2.309	.903	.601	-.168		.856	.732
LC1	2.02	1.223	.997	-.068	.79		
LC2	1.87	1.213	1.234	.390	.78		
LC3	1.51	.967	1.940	2.984	.78		
LC4	1.63	1.014	1.623	1.823	.84		
ID	2.190	.855	.692	.061		.867	.607
ID1	1.92	.708	1.157	.285	.82		
ID2	1.89	1.187	1.201	.410	.92		

AF: Academic Failure, SS: Social Satisfaction, ES:
Emotional Satisfaction, I: Internalization PP: Perception of

prestige, PNI: Physical Negative Impact, O: Overuse, LC: Loss of Control, ID: Internal Deception

To evaluate the convergent validity of the model, the factor loadings of the items, Cronbach's alpha values and variance values were examined (Table 4). Accordingly, factor loadings were between .72 and .92, alpha values were between .729 and .867, and variance values were between .607 and .797. When the scores were examined, it could be said that the models' convergent validity was confirmed (Fornell & Larcker, 1981; Hair et al., 2005). For the discriminant validity of the model, the correlations among the factors were examined. The results are presented in Table 5.

Table 5
Discriminant Validity Values of the Model

	LC	O	PNI	PP	I	ES	SS	AF	ID
LC	.726								
O	.336	.411							
PNI	.351	.195	.706						
P	.400	.254	.188	.538					
I	.441	.245	.227	.444	.576				
ES	.425	.196	.305	.301	.514	.823			
SS	.431	.253	.297	.467	.446	.498	.751		
AF	.398	.217	.222	.258	.274	.271	.270	.513	
ID	.392	.179	.193	.249	.284	.298	.270	.224	.466

*p < 0,001

When the data in Table 5 were examined, it could be said that the model had discriminant validity (Ursavas, 2014). Lastly, the goodness of fit indexes for the model were presented in Table 6.

Table 6
Goodness of Fit Indexes of the Measurement Model

Goodness of Fit Indexes of Model	Good Fit	Acceptable Fit	Model
χ2/df	$0 < χ2/df < 3$	$3 ≤ χ2/df ≤ 5$	.615
RMSEA	$0 < RMSEA < 0,05$	$0.05 ≤ RMSEA ≤ 0.10$	.070
GFI	$0 < GFI ≤ 1$	$0.80 ≤ GFI ≤ 0.95$	.916
AGFI	$0.90 ≤ AGFI ≤ 1$	$0.85 ≤ AGFI ≤ 0.9$	.921
CFI	$0 ≤ CFI ≤ 1$	$0.70 ≤ CFI ≤ 0.97$	.865

(Schermelleh-Engel et al., 2003)

According to Table 6, it could be said that the model's goodness of fit indexes was within the acceptable levels (Gefen et al., 2003; Klem, 2000; Kline, 2005; McDonald & Ho, 2002).

Testing of Hypotheses for the Hypothetical Model

Research hypotheses were tested within the framework of the developed model. Thus, in line with the hypotheses developed at the beginning of the research, the direct and indirect relations of the factors with each other were tried to be explained. The path model notation, which was explained earlier, was used in the representation of the model. A straight one-way arrow was used to indicate direct relationships, while a dashed one-way arrow was used to indicate indirect relationships. In order to determine whether the relationships were direct or indirect, the effect values of the factors on each other were examined. According to Cohen (1988), if the effect value is less than 0.2, it can be defined as an indirect relationship, and if the effect value is greater than 0.8, it can be defined as a strong relationship. However, Rosnow and Rosenthal (1989)

mentioned that there might be special cases where even an effect value of 0.2 could be considered as a strong effect. The findings obtained as a result of the analyses were presented in the Table 7 and Table 8. As a result of the findings, 5 of the relations between the factors were rejected and the remaining 20 hypotheses were accepted (Table 7).

Table 7: Results Regarding the Hypotheses

Hypothesis	Relationship Between Factors	Path Value	t value	Result
H_1	SS→LC	.431	16.321**	Accepted
H_2	SS→O	.253	7.372**	Accepted
H_3	SS→AF	.270	8.341**	Accepted
H_4	SS→PNI	.297	8.965**	Accepted
H_5	ES→LC	.425	15.783**	Accepted
H_6	ES→O	.016	.543	Rejected
H_7	ES→AF	.271	8.871**	Accepted
H_8	ES→PNI	.305	9.991**	Accepted
H_9	I→LC	.441	17.617**	Accepted
H_{10}	I→O	.245	6.345**	Accepted
H_{11}	I→AF	.274	8.871**	Accepted
H_{12}	I→PNI	.227	4.344**	Accepted
H_{13}	PP→LC	.400	16.645**	Accepted
H_{14}	PP→O	.254	7.112**	Accepted

H$_{15}$	PP→AF	.258	7.321**	Accepted
H$_{16}$	PP→PNI	.088	.621	Rejected
H$_{17}$	ID→LC	.392	15.754**	Accepted
H$_{18}$	ID→O	.032	.975	Rejected
H$_{19}$	ID→AF	.224	8.221**	Accepted
H$_{20}$	ID→PNI	.093	1301	Rejected
H$_{21}$	LC→O	.336	14.121**	Accepted
H$_{22}$	LC→AF	.398	15.972**	Accepted
H$_{23}$	LC→PNI	.351	15.418**	Accepted
H$_{24}$	O→AF	.217	7.732**	Accepted
H$_{25}$	O →PNI	.031	1.314	Rejected

*p<0.05, **p<0.001

When Table 7 is examined, it was seen that Social Satisfaction had an effect on Loss of Control (β=.431, p>.05), Overuse (β=.253, p>.05), Academic Failure (β=.270, p>.05) and Physical Negative Impact (β=.297, p>.05). Results showed that H1, H2, H3, and H4 were accepted. Emotional Satisfaction had an effect on Loss of Control (β=.425, p>.05), Academic Failure (β=.271, p>.05) and Physical Negative Impact (β=.305, p>.05), it also had an indirect effect on Overuse (β=.016, p>.05). Results showed that H5, H7, H8 were accepted but H6 was rejected. It was determined that Internalisation had a direct effect on Loss of Control (β=.441, p>.05), Overuse (β=.245, p>.05), Academic Failure (β=.274, p>.05) and Physical Negative Impact (β=.227, p>.05). Results showed that H9, H10, H11, H12 were accepted.

It was seen that perception of prestige had a direct effect on, Loss of Control (β=.400, p>.05), Overuse (β=.254, p>.05), Academic Failure (β=.258, p>.05) and had an indirect effect on Physical Negative Impact (β=.088, p>.05). Results showed that H13, H14, H15 were accepted but H16 was rejected. It was determined that Internalisation had a direct effect on Loss of Control (β=.392, p>.05) and Academic Failure (β=.224, p>.05) and had an indirect effect on Overuse (β=.032, p>.05) and Physical Negative Impact (β=.093, p>.05). The results showed that H17 and H19 were accepted but H18 and H20 were rejected.

Loss of control had an effect on Overuse (β=.336, p>.05), Academic Failure (β=.398, p>.05) and Physical Negative Impact (β=.351, p>.05). The results showed that H21, H22, and H23 were accepted. Overuse had a direct effect on Academic Failure (β=.217, p>.05) and it had an indirect effect on Physical Negative Impact (β=.031, p>.05). The results showed that H24 was accepted but H25 was rejected. It was determined that all effects were positive and significant. The Direct and Indirect Effect Values of the hypotheses were presented in Table 8.

Table 8
Confidence Interval Values for Hypotheses

Dependent Variables	Direct Effect	Indirect Effect	Total Effect
Loss of Control (R^2= .94)			
SS→LC	.104**	--	.104 (.075: .134)**
ES→LC	--	.058**	.058 (.046: .116)**
I→LC	-.647**	--	-.647 (-.706: -.589)**
PP→LC	.724**	--	.724 (.684: .767)**
ID→LC	.812**	--	.812 (.795:

.828)**

Physical Negative Impact (R^2= .92)

Path			
SS→PNI	-.338**	--	-.338 (-.373: -303)**
ES→ PNI	.336**	--	.336 (.267: .423)**
I→ PNI	--	.066**	.066 (-.009: .146)**
PP→ PNI	.465**	--	.465 (.407: .523)**
ID→ PNI	--	-.039**	-.039 (-.087: .011)**
O→ PNI	.590**	--	.590 (.531: .645)**
LC→ PNI	--	-.063**	-.063 (-.147: -.021)**

Overuse (R^2= .81)

Path			
SS→O	.171**	.031**	.202 (.156: .248)**
ES→O	-.412**	--	-.412 (-.485: -.344)**
I→O	-.129**	--	-.129 (-.210: -.050)**
PP→O	.893**	--	.893 (.840: .949)**
ID→O	.553**	--	.553 (.529: .577)**
LC→O	.647**	--	.647 (.634: .892)**

Academic Failure (R^2= .40)

Path			
SS→AF	.166**	.098 **	.264 (.165: .365)**
ES→AF	-.167**	--	-.167 (-.329: -.002)**
I→AF	.189**	--	.189 (.016: .358)**

PP→AF	.134**	--	.134 (.06: .259)**
ID→AF	.267**	.030**	.297 (.245: .350)**
O→AF	--	.252**	.252 (-.186: .274)**
LC→AF	.222**	--	.222 (.042: .376)**

*p< 0.05. ** p< 0.01. CI= Confidence Interval (%95)

According to the results presented in Table 8, factors affected dependently among the 9 factors were: Academic Failure, Overuse, Physical Negative Impact, Loss of Control. Impact levels of these factors were examined within the context of confidence interval. In this context, confidence intervals were examined under three categories as indirect, direct and total effect. As a result of the analysis, it was determined that the lowest variance was on Academic Failure with 40.8%. The variance of 5 variables (Social Satisfaction, Emotional Satisfaction, Internalization, Perception of Prestige, Internal Deception) on Loss of Control was 94%, the variance of 7 variables (Social Satisfaction, Emotional Satisfaction, Internalization, Perception of Prestige, Internal Deception, Overuse, Loss of Control) on Physical Negative Impact was 92%, the variance of 6 variables (Social Satisfaction, Emotional Satisfaction, Internalization, Perception of Prestige, Internal Deception, Loss of Control) on Overuse was 81% and the variance of 7 variables (Social Satisfaction, Emotional Satisfaction, Internalization, Perception of Prestige, Internal Deception, Overuse, Loss of Control) on Academic Failure was 40.8%.

Based on the data, Social Satisfaction (d=.104) and Internalization (d= -.647) had a negative effect, Perception of Prestige (d=.724) and Internal Deception (d=.812) had a direct effect and Emotional Satisfaction (d=.058) had an

indirect effect on Loss of Control. The variables that affected the variance on Loss of Control were mostly determined as Internal Deception with a total effect of d=.812 and Perception of Prestige with an effect of d=.724. Social Satisfaction (d= -.338) had a negative effect, Emotional Satisfaction (d=.336), Perception of Prestige (d=.465) and Overuse (d=.590) had a direct effect and Internalization (d=.066), Intrinsic Deception (d=-.039) and Loss of Control (d=-.063) had a negative indirect effect on Physical Negative Impact. The variables that most affected the variance on the Physical Negative Impact were determined as Overuse with a total effect of d=,590, Prestige Perception with an effect of d=,465, and Emotional Satisfaction with an effect of d=,336. It was determined that Social Satisfaction (d=.171), Emotional Satisfaction (d=-.412) and Internalization (d= -.129) had a negative effect, Perception of Prestige (d=.893), Internal Deception (d=.553) and Loss of Control (d=.647) had a direct effect on Overuse. The variables which affect the variance on Overuse mostly were Prestige Perception with a total effect of d=.893 and Loss of Control with an effect of d=.647 and Internal Deception with an effect of d=.553. It was determined that Social Satisfaction (d=.166) and Emotional Satisfaction (d=-.167) had a negative effect, Internalization (d=.189), Prestige Perception (d=.134), Internal Deception (d=.297) and Loss of Control (d=.222) had a direct effect, Overuse (d=.052) had an indirect effect on Academic Failure. The variables that affect the variance on Academic Failure were mostly determined as Internal Deception with a total effect of d=.297, Social Satisfaction with an effect of d=.264 and Overuse with an effect of d=.252. When the findings are examined, the rate of variance in the explanation of dependent variables was calculated as 94%, 92%, 81% and 40.8% respectively. These rates show that the rate of explanation of the variables is high and the model obtained as a result of the

method is strong (Cohen, 1988). The resulting hypothetical model is presented in Figure 2:

Figure 2 - Hypothetical Model
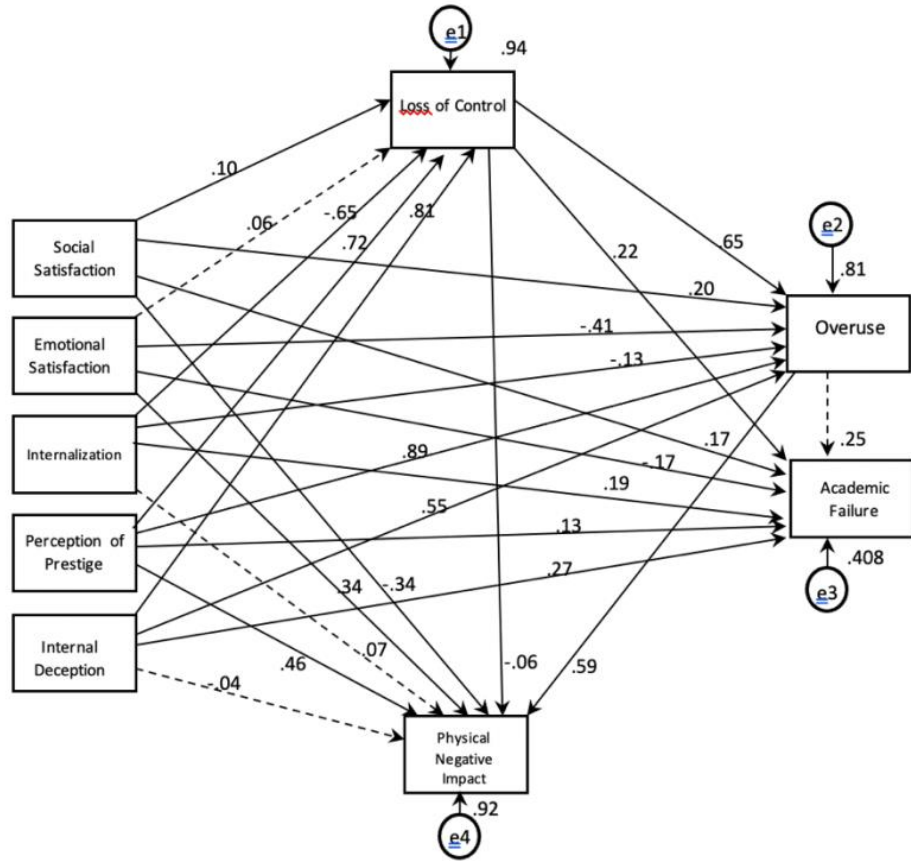
Results, Discussion, and Suggestions

Because Internet usage is one of the indispensable necessities of life, it is observed that individuals experience problems in their work/school and social life as a result of excessive Internet use. According to the studies, individuals with extreme Internet users who prefer the Internet environment in social interaction are exposed to loneliness in their natural social environment. Undergraduate students especially like the Internet in their social interaction with both genders and opposite sexes, negatively affecting the development of their social skills. It is stated that it is inevitable for young individuals who cannot develop these skills in the natural social environment to experience significant problems in other stages of their lives, such as work life and family environment, especially in occupational groups such as teaching, where social interaction skills should be used effectively. It is also stated that negative reflections such as excessive Internet use, disruption of responsible work, scheduling problems, reduced social interaction skills, and loneliness/isolation will lead to issues that cannot be compensated in the future in many occupational groups and cause permanent behavioural disorders in individuals (Fichter, 2006; Gremeaux, Coudeyre, Givron, Hérisson, Pélissier, Poiraudeau, ve Bénaïm, 2007; Gülnar, Balcı & Çakır, 2010; Khalid & Dix, 2007; Murero ve D'Ancona, 2006; Rafaeli, Raban & Kalman, 2005; White & Horvitz, 2009).

Although some factors are mentioned that are caused or related to Problematic Internet Use, it is noteworthy that a clear framework for the effect of factors within the framework of the cause-effect relationship is not drawn on this issue. In other words, removing the framework of *Problematic Internet Use* and observing the need to determine its sub-variables constituted this study's starting point.

In the study, the problematic Internet usage behaviours of undergraduate students were examined. The study started with the application of the scale developed by the researchers to 2026 undergraduate students attending at the universities for each region of the country. The results of the scale in total were taken into the analysis process. The findings obtained as a result of the analyses were discussed in line with the basic hypotheses of the research and comments on these findings were presented.

The students who participated in the research were between the ages of 19-25. When the studies on individuals with problematic Internet usage are examined, it is noteworthy that the majority of these studies indicate the highest risk group as the ages from adolescence to young adulthood (Akar, 2015; Çelikkaleli et al., 2018; Durak, 2018; Haug et al, 2015; Kim et al., 2010; Kowatsch & Schaub, 2015; Sırakaya & Seferoglu, 2018). In addition, young adults, aged between 19-25, might be exposed to a risk in terms of Problematic Internet Usage when daily Internet use is taken into account. The reason for this could be that this age group uses the Internet the most to fulfil their daily academic responsibilities. For this reason, it is considered important to renew the study, to make comparisons and to provide the necessary precautionary mechanisms after the COVID-19 pandemic.

When the distributions according to gender were examined, it was determined that female students had a higher rate of participation than male students. Results show that the Problematic Internet Usage average scores of male students were higher. Even though this result is supported by the studies of Buyuksahin et al. (2010), DiNicola, (2004), Frangos et al. (2010), Kubey et al. (2001), Morahan-Martin and Schumacher (2000), Odacı and Kalkan (2010), Although Çelik and Odacı (2011), Çelik and Odacı(2013), Durak-Batıgun and KılıC (2011), Leung and Lee (2012), it contradicts the results of the

studies by Doğan et al. (2008) and Odacı (2011). In addition, it can be seen that there are studies in the literature that show that problematic behaviours do not differ according to gender (Balcı & Gülnar, 2009, Kim et al., 2006; Odacı; 2013).

When the duration of Internet use of undergraduate students is examined, it can be said that their duration of Internet use is not excessive. It is at a controllable level, and the reason why this time is not excessive is that the users may have reached satisfaction due to their long-term use of the Internet. According to averages of the problematic Internet usage, male students exhibit more problematic behaviours than female students.

According to the measurement model, Academic Failure, Social Satisfaction, Emotional Satisfaction, Internalization, Perception of Prestige, Physical Negative Impact, Overuse, Loss of Control, and Internal Deception / Deception were determined as the variables which predict the problematic Internet usage behaviour. Also, the studies on Problematic Internet Usage and Internet addiction are very intertwined, and there are studies that assess the Problematic Internet Usage via Internet addiction scales. With this aspect, the study is thought to be important in terms of both developing a scale that measures the Problematic Internet Usage behaviours of undergraduate students and defining these behaviours within the framework of a model with the factors affecting them.

When the hypotheses obtained as a result of the measurements were examined, five of the twenty-five hypotheses developed at the beginning of the research were rejected (H6, H16, H18, H20, and H25). The rejected hypotheses are as important as the accepted hypotheses in the model. In order to understand these relationships more clearly, it is thought that examining the factors affecting problematic Internet usage behaviours and also more variables will be important for future studies. When the

model obtained as a result of the measurements is examined, it can be said that the predictive power of the model is high, valid and reliable. When the factors' variance rates are examined, there is a need for a more in-depth analysis of the reasons for the unexplained variance values. As a result of the measurements, it was determined that academic failure, loss of control, internalization and social satisfaction were important factors in predicting the problematic Internet usage of undergraduate students. The results of the present study are consistent with the study of Caselli et al. (2020) regarding the negative factors' effect on problematic Internet usage. Furthermore, the results of the study are consistent with the study of Faghani et al. (2020) in terms of the effects of hardships with emotional regulations (Loss of Control, Overuse and Internal Deception) on problematic Internet usage. The results of this study are also consistent with the model of Gu's (2020) study regarding the effect of Loss of Control on Social Satisfaction. In line with these results, the following suggestions can be made for future studies:

When the studies are examined, it was seen that most of the studies used surveys, and no experimental interventions was made. With this aspect, it is suggested that experimental studies with different research groups should be conducted in order to evaluate the relationships between the daily Internet usage time and problematic Internet usage behaviours, the Internet access source and problematic Internet usage behaviours, the department which participants attend and problematic Internet usage time and, the purpose of the Internet usage and problematic Internet usage behaviours. Also, new studies should be conducted with additional sample group different than the primary sample group of the study in order to compare the results regarding the unexplained variance rates. Scientific research is carried out to lay a foundation for and scientific applications assist them. This research is the main basis of

educational activities, especially since they are prepared according to the results of studies focusing on individual behaviours. It is thought that this study will shed light on Scientific research on problematic Internet usage behaviours that may pose a threat to individuals with the aspect of modelling individual problematic Internet usage behaviours.

In this study, problematic Internet usage behaviours of undergraduate students before the COVID-19 pandemic and the factors affecting these behaviours were examined within the framework of a model. Today, Internet technology is used by billions of people around the world for a wide variety of tasks in their personal, social and professional lives. Whether these uses are efficient or problematic is in the hands of the users themselves. Problematic usage behaviours, which can be explained as the difficulties experienced by users in regulating their Internet usage behaviours due to their (excessive) Internet use for a very long time, seem to cause many psychological, social, and physical consequences. Also, studies that indicate that individuals in many different age groups spend a long time on the Internet as a result of social isolation during the COVID-19 pandemic process indicate that their usage time has increased compared to the pre-pandemic period and they had some psychological problems during this process (Dong et al., 2020; Duan et al., 2020; Gómez Galán et al., 2020; Özdemir & Arpacıoğlu, 2020; Siste et al., 2020; Sun et al., 2020). Because data of this study was gathered before the COVID-19 process, the results of this study cannot be generalized to the current usage rate of the Internet. Accordingly, it is considered appropriate to re-examine the problematic Internet usage behaviours of individuals after the pandemic process due to their excessive use of the Internet during COVID-19 and compare them with the results before the pandemic. In this context, it is thought that the results of

the current study will provide an opportunity to make comparisons with the results of future studies.

The study has defined all the factors mentioned so far within the framework of a model. It is thought that the created model will guide and assist current, functional and future studies since it reveals the comprehensive factor structure for future modelling studies.

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