Academic E-Dishonesty and Research Anxiety Among the Preservice Teachers

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Article Info	Abstract
	The current study investigated the relationship between research anxiety and academic e-dishonesty among preservice teachers. The participants were 558 students, attending teacher education faculties of eight state universities located in different districts of Turkey. Data was collected through "Research Anxiety Scale" and "Internet-Triggered Academic Dishonesty Scale (ITADS)". Findings revealed that research anxiety levels of preservice teachers are moderate and academic e-dishonesty levels are low. There is a significant relationship was found between the level of research anxiety and academic e-dishonesty. Research anxiety of the preservice teachers did not change according to taking a research oriented course or gender. Academic e-dishonesty levels varied with gender revealing that women were higher than men. Implications and suggestions for further research are provided.

Introduction

The Internet has started to make life easier with entering our lives in many areas including learning and making research. The innovations brought by technological developments have been effective in facilitating the daily lives of individuals and in adapting to the changing and developing society more easily and quickly. Many people and especially students have Internet connections by wireless options and from cell phones in all time. Students are using the Internet for making search; preparing their assignments; connecting with friends, other students or instructors; having fun etc. But in addition the convenience it brings to human life, problems resulting from incorrect or incomplete use of the Internet as a major issue, especially emerges in academic works.

Academic dishonesty has become a global issue widely studied in many countries (Cheng, Hung, & Hsu, 2021; Thomas, 2017; Wowra, 2017). It is basically defined as the act of cheating during exams or copying research from other people to gain illegitimate advantages (Thomas, 2017). Sisti (2007) investigated that 35% of the high school students had an experience of copy-pasting texts or ideas from others as their own without crediting the original source; or Murphy (2013) found that about half of a class of 250 students was caught cheating on an exam in a prominent university in America. In another study of 1222 international undergraduate students at UK universities found that around three-fifths of students self-reporting at least a moderate level of internet-based plagiarism during the past twelve months (Selwyn, 2008); 57% of students had cheated within the previous six

months in the United States (Hensley, Kirkpatrick, & Burgoon, 2013); or by using a plagiarism detection software, one third of the articles in a university in China rejected because of plagiarism (Rezanejad & Rezaei, 2013).

In this information age widespread use of Internet for instructional purposes brings some ethical problems as well. Unethical use of Internet in education is seen as a serious problem too (Karim, Zamzuri & Nor, 2009; Akbulut et al., 2008; Selwyn, 2008; Ki & Ahn, 2006). Especially with the introduction of technology into learning environments, it has become easier to make academic e-dishonesty in homework and projects. Making involvement in academic e-dishonesty may occur by getting invalid data, committing harmful behavior on the respondents while conducting their research using the Internet, translating Internet resources and claiming personal authorship, sabotaging other people's academic work through Internet, manipulating the ideas in a scientific study through personal comments (Karim et al., 2009; Odabası et al. 2007). In recent years why students apply to academic e-dishonesty or examining the variables related to academic e-dishonesty are among the current research topics. Akbulut et al. (2008) have identified and measured four types (fraudulence, falsification, plagiarism, delinquency and unauthorized help) of academic dishonesty behaviors that can be linked to the use of the Internet. Freestone and Mitchell (2004) identified 24 aberrant behaviors under five basic factors including illegal, questionable activities, hacking related, human Internet trade and downloading based on inappropriate Internet use. Karim, Zamzuri, & Nor (2009) recognized academic dishonesty as unethical behavior refer to fraudulence, plagiarism, falsification, and Internet misuse.

Anxiety is the emotional state that accompanied by unpleasant physiological symptoms such as fear or worry. Sanders (2003) define "anxiety is a complex network of different elements - cognition, emotion, biology, behavior and environment - which are linked and trigger one another off" (p. 4). Making academic research may be stressful, anxiety-producing, and sometimes depressing for students (Tindall, Fu, Tremayne, & Curtis, 2021). Research anxiety, on the other hand, arises with behaviors such as not to do research unless it is necessary, feeling bored when it is needed to make research, the thought of doing research disturbs the individual, the individual generally feels uneasy while doing research, and the individual does not trust himself/herself in researching (Çokluk-Bökeoğlu & Yılmaz, 2005). Rapid and continuous developments in the world require the undergraduate students to be aware of the importance and necessity of doing research in order to respond to the expectations in the fields. Having research anxiety is a proved issue by many of the studies (Kartal, & Hızlıol, 2021; Tekin, 2007; Çokluk-Bökeoğlu, & Yılmaz, 2005; Saracaloğlu, Varol, & Ercan, 2005; Onwuegbuze, & Wilson, 2003; Papanastasioua, & Zembylasb, 2008; Wilson, & Onwuegbuzie, 2001; Büyüköztürk, 1997) but the relationship with the academic e-dishonesty is not been adequately examined.

When we look at the education systems in modern societies, one of the most important issues they focus on is the acquisition of scientific thinking skills. Research culture, which is defined as having the technical knowledge, skills and competence required by scientific research, and developing positive attitudes and behaviors towards research, is one of the features that education programs in our country want to bring to individuals (Saracaloğlu, Varol, & Ercan; 2005). Undergraduate education is an important stage in which the basic perspective and skills about doing scientific research are gained and learned about ethical issues. In the

literature, undergraduate or graduate students' scientific research situations have been studied and it was determined that research anxiety influences making research (Kartal & Hızlıol, 2021; Saracaloglu, 2008; Tekin, 2007; Çokluk-Bökeoğlu, & Yılmaz, 2005; Saracaloğlu, Varol, & Ercan, 2005; Wilson, & Onwuegbuzie, 2001; Büyüköztürk, 1997). Although students' Internet use is common and easily use search engines, social media and multimedia applications, it is seen that they do not have the experience, knowledge and skills to evaluate information in an ethical framework (Pfannenstiel, 2010; Howard, & Davies, 2009). The university students who extensively use the Internet during their academic studies, might make involvement in academic e-dishonesty. The preservice teachers who will deal with education in the future are asked to be honest, to bring this into their lifestyle and to expect this sensitivity from their students. It is also important to determine the understanding of the involvement in online academic dishonesty and research anxiety levels of teacher candidates. There are limited studies that directly linking negative emotions to academic dishonesty (Tindall et al, 2021; Karim et al. 2009), and determining the perspectives of teacher candidates makes the research important. Evidence highlighting the research anxiety is linked with academic e-dishonesty may be the impetus for anxiety focused interventions to prevent academic dishonesty.

Moving from these points, in this study, it is planned to explore the relationship between research anxiety and academic e-dishonesty of the preservice teachers. Besides the students' research anxiety and unethical Internet using behavior are also investigated in accordance with gender and the research courses/ethics courses they take during education. In this respect the research questions were as the following:

- What is the level of academic e-dishonesty of preservice teachers?
  - Do the preservice teachers' academic e-dishonesty differ according to gender?
  - Do the preservice teachers' academic e-dishonesty differ according to taking informatics ethics courses?
- What is the level of research anxiety of preservice teachers?
  - Do the preservice teachers' research anxiety levels differ according to gender?
  - Do the preservice teachers' research anxiety levels differ according to taking research courses?
- Is there a significant relationship between research anxiety and unethical Internet using behavior of preservice teachers?

Methodology

In this study relational research method is used in which the level of relationship between two or more variables is tried to be determined by statistical methods (Creswell, 2012). The method was chosen with the attempt to investigate the relationship between research anxiety and unethical Internet using behavior of preservice teachers in academic studies.

Participants

In the study, convenience sampling method which is one of the qualitative sampling strategies was used to determine the study group (Creswell, 2012). According to this method, the sample of the research consists of the

participants who are willing to participate in the research and available to be studied (Creswell, 2012). The study participants consisted of the undergraduates from easily accessible universities' educational faculties in Turkey. From the total of 558 participants 38% (n=212) were female and 62% (n=346) were male. Participants were from different grade levels and departments of education faculties from eight different universities (Adnan Menderes, Akdeniz, Amasya, Gazi, Mersin, Kocaeli, Pamukkale, and Ondokuz Mayıs) from different regions. Of the participants selected from all grade levels, 67% (n=374) are in first year, 28.9% n=161 are in the second year, 1.8% (n=10) are in the third year, and 2.3% (n=13) are in the fourth year.

56.5% (n=315) of the participants stated that they have been using computer for 5-10 years, 16.5% (n=92) 1-5 years, and 1.8% (n=10) less than 1 year. 25.3% (n=141) of them who have experience of using computers for more than 10 years. All of the participants stated that they had Internet access, and that they had the opportunity to use the Internet from their mobile phones or computers during the day. It was also examined whether they took any research courses and informatics ethics courses during education. Accordingly, 61.6% (n=344) of the participants stated that they did not take any course related to research, while 38.4% (n=214) mentioned that they took a research oriented course during undergraduate education. And 31% (n=385) of the participants stated that they did not take informatics ethics course, while 69% (n=173) mentioned that they took the course during undergraduate education.

Instruments

Data were gathered using a form organized in three sections. In the first section, there are questions that formed to gather the demographic information of the participants. These questions are aimed at collecting information about participants' gender, grade levels, PC experience, Internet usage frequency and whether they took a research-oriented and informatics ethics course or not.

In the second section, the participants' research anxiety was gathered by Research Anxiety Scale developed for undergraduate students by Büyüköztürk (1997). The instrument had 12 Likert type items. 5 items (2,3,4,8,11) were positive items (not expressing anxiety) and other 7 items (1,5,6,7,9,10,12) were negative (expressing anxiety) and thus reversed during coding. The reliability coefficient of the instruments was calculated $\alpha=.87$ (Büyüköztürk, 1997). These items are included in the analysis by reverse coding. A minimum of 12 and a maximum of 60 points can be obtained from the scale. A high score from the scale indicates that the research anxiety is low, while a low score indicates that the person has anxiety about doing research.

In the third section, ITADS was used to gather information about participants' unethical Internet using behavior. ITADS was developed by Akbulut et al. (2008) measuring Internet triggered academic dishonesty and the reliability coefficient of the instruments was calculated $\alpha=.92$. The scale is consisted of two parts. In the first part, there are 26 statements of opinion on the case of academic e-dishonesty, and in the second part, there are 16 items on the reasons. For the purpose of this study, 26 items in the first part of the scale were used. The questionnaire was a five Likert scale including (1) never, (2) rarely, (3) sometimes, (4) often, and (5) always to reflect the degree or frequency of the participants. ITADS' designed to measure fraudulence (eleven items-

α=91), plagiarism (five items-α=.88), falsification (three items-α=.76), delinquency (four items-α=.71), and unauthorized help (three items-α=.69).

Data Analysis

Data used in the study have been obtained via an online form. E-mails have been sent to 650 students of which 605 have answered. Out of 605 responded forms, 558 forms were usable for further analysis. In the study, SPSS 18 version of a statistics package program was used. Descriptive statistics and relational analyzes were used to analyze the collected data. Descriptive statistics was used for the analysis of demographic information and Spearman's Rho has been used for the determination of relationship between research anxiety and unethical Internet using behavior. Mann Whitney U tests were used to analyze the scales according to gender and whether the participants took a research/ethics course or not.

Results

Findings Regarding the Research Anxiety and Academic E-Dishonesty Levels of Preservice Teachers

Participants' general scores of academic e-dishonesty, sub-factor scores and research anxiety scores were calculated using descriptive statistical methods. According to the findings, they got low scores ($\overline{X}$=42.48, SS=15.46) from the ethical instrument. That means preservice teachers do not think that they make involvement in academic e-dishonesty during their research. When the sub-factors are examined, it is seen that all sub-factors are close to the minimum level, therefore, the students think that the cases of fraudulence, plagiarism, falsification, delinquency and unauthorized help during their academic studies are at a low level (Table 1). The findings show that the research anxiety of the preservice teachers participating in the research are not very high or low and it is close to average ($\overline{X}$=42.81, SS=8.98).

Table 1. Preservice Teachers' Scores Regarding Academic E-Dishonesty

	Minimum	Maximum	$\overline{X}$	SS
Fraudulence	11.00	55.00	15.33	6.32
Plagiarism	5.00	24.00	8,91	4.52
Falsification	3.00	15.00	4.65	2.38
Delinquency	4.00	20.00	8.52	3.11
Unauthorized Help	3.00	14.00	5.06	2.20
Sum	26.00	120.00	42.48	15.46

The Relationship between Research Anxiety and Academic E-Dishonesty of Preservice Teachers

In the study, the relationship between the research anxiety and academic e-dishonesty was investigated. Since the data did not show normal distribution, non-parametric Spearman rho was applied in the analysis (Table 2). According to the results of the research, a positive and low relationship was found between the participants' research anxiety and unethical Internet using behavior (r_s =.174, p<.05).

Table 2. Relationship Between Academic Anxiety and Academic E-Dishonesty (Spearman Rho Results)

		1	2
Spearman's Rho	1. Research Anxiety	-	
	2. ITADS	.174*	-

p<.05

Findings Regarding the Preservice Teachers' Research Anxiety Differs According to Gender

In order to understand whether the scores of women and men from the anxiety scale differ statistically, firstly, the distribution of the data obtained from the scale was examined. Since the data did not show normal distribution Mann-Whitney U test was applied in the analysis. Results revealed there is no statistically significant difference was found between the research anxiety levels of women and men (U=36489.00, z=-.101, p>.05) (Table 3).

Table 3. Research anxiety levels of preservice teachers' according to gender

Variable	Gender	N	Mean Rank	Sum of Ranks	U	p
Research Anxiety	Women	212	278.62	59067.00	36489.00	.919
	Men	346	280.04	96894.00		

Findings regarding the Preservice Teachers' Research Anxiety Differs According to Taking a Research Course

In order to understand whether the research anxiety scores of the participants' change depending on taking a research related course before or not are given in the table 4. Mann-Whitney U test was conducted in the analysis and results revealed there is no statistical difference (U=35694.50, z=-602, p>.05) between the research anxiety of the participants whether they have taken a research course or not before (Table 4).

Table 4. Research anxiety levels of preservice teachers' according to taking a research course or not

Variable	Taking Research Course	N	Mean Rank	Sum of Ranks	U	p
Research Anxiety	Yes	214	284.70	60926.50	35694.50	.547
	No	344	276.26	95034.50		

Findings Regarding the Preservice Teachers' Academic E-Dishonesty Differs According to Gender

In order to understand whether the scores of women and men from ITADS differ statistically, firstly, the distribution of the data obtained from the scale was examined. Since the data did not show normal distribution Mann-Whitney U test was applied in the analysis. Results revealed that a statistically significant difference was

found between the academic e-dishonesty levels of gender groups (U=32034.0, z=2.513, p<.05) (Table 5). Academic e-dishonesty levels of women (median=73, n=212) were higher than men (median=70, n=346). According to these findings, it can be concluded that women make involvement in academic e-dishonesty more than men.

Table 5. Academic e-dishonesty levels of preservice teachers' according to gender

Variable	Gender	N	Mean Rank	Sum of Ranks	U	p
Academic e-dishonesty	Women	212	301.40	63896.00	32034.00	.012
	Men	346	266.08	92065.00		

Findings Regarding the Preservice Teachers' Academic E-Dishonesty Differs According to Taking a Course in Informatics Ethics

Mann-Whitney U test results, which was conducted to determine whether the e-dishonesty scores of the students participating in the research change depending on whether they have taken informatics ethics course before, are given in Table 6. Results revealed there is no statistical difference [U=32190.0, z=-.632, p>.05] between e-dishonesty scores of the participants according to whether they have taken an informatics ethics course or not. That means making involvement in academic e-dishonesty is not related to informatics ethics course.

Table 6. Academic e-dishonesty levels of preservice teachers' according to taking informatics ethics course or not

Variable	Taking Informatics Ethics Course		N	Mean Rank	Sum of Ranks	U	p
Academic dishonesty	E-	Yes	173	285.93	49466.00	32190.0	.527
		No	385	276.61	106495.00		

Discussion and Conclusion

The main aim of this study is to explore the relationship between research anxiety and academic e-dishonesty of preservice teachers. Besides their research anxiety and involvement in academic e-dishonesty are also investigated in accordance with gender and the research/ethics courses they take during their education. The study found that preservice teachers had a moderate level of research anxiety. In the literature there are studies in line with the results revealing that university students from different faculties have low levels of research anxiety (Yılmaz & Çokluk, 2010), moderate level of research anxiety (Kartal & Hızlıol, 2021; Karagül & Aslan, 2016) and also studies the found high level of research anxiety (Tekin, 2007; Saracaloğlu, Varol, & Ercan, 2005; Büyüköztürk, 1997). With the developing technologies, the need for research is increasing day by day, and the quality of education will become qualified with academic research. It is important for preservice teachers who will guide the younger generations to be able to conduct scientific research and to use the

scientific research process effectively. Moving from this the research anxiety levels of preservice teachers who will be the future teachers should be even lower.

In the study, it was determined that the fact that participants have taken or not taken a course on scientific research methods does not significantly affect their anxiety levels about doing research. This result is interesting and unexpected. There are studies it has been shown that taking a course on research methods is effective on the level of research anxiety (Bulduk & Hulusi, 2021; Yılmaz and Çokluk, 2010). But consistent with the study findings, there are also studies that found research anxiety scores do not differ significantly although research methods course (Karagül & Arslan, 2016; Saracaloğlu, 2008). Moving from study results it can be said that taking research oriented courses is not related to research anxiety. Preservice teachers take a series of research-oriented courses during their four-year education. It is thought that the students taking research related course have learned what to do, how to do research, and the steps to be followed while doing research, which reduces students' anxiety about doing research. As the research anxiety levels does not reduce despite these courses, it may be appropriate to revise the research-oriented courses in the education faculties. Also considering this result may be due to the lack of knowledge and awareness about scientific research, enabling and supporting participation in scientific meetings required for preservice teachers' professional development might decrease research anxiety levels. Additionally, Büyüköztürk (1999) pointed that the performance observed in the research course is an important factor in predicting the anxiety that university students will have about doing research. In addition, according to the results of some studies (Çokluk-Bökeoğlu & Yılmaz, 2005; Onwuegbuzie & Wilson, 2003) the fact that many students had high levels of anxiety in statistics and research courses may have affected their success in the courses they took. Moving from these points it is important to design the courses with activities that will make students active and integrate student-centered strategies into the lesson.

Results revealed research anxiety of the preservice teachers did not change according gender. That means woman and men have similar research anxiety levels. Results supported by previous studies that revealed research anxiety is not changed by gender (Bulduk & Hulusi, 2021; Yılmaz & Çokluk, 2010; Çokluk-Bökeoğlu & Yılmaz, 2005; Büyüköztürk, 1999; Trimarco, 1998). However, results of the research contradict the findings in the literature that male students have higher level of anxiety about doing scientific research than female students (Arslan & Karagül 2016).

According to the study results academic e-dishonesty levels of preservice teachers are low. These findings revealed preservice teachers' do not make much academic dishonesty during researches and involvement in online academic dishonesty is low. Also findings related preservice teachers' views on academic e-dishonesty related to all the sub-dimensions were low. Participants stated that they conducted the acts of fraudulence, delinquency, plagiarism, falsification and unauthorized use at the lowest level. These findings are consistent with the findings of the previous studies (Kocaman-Karoğlu & Bakar-Çörez, 2020; Sıcak & Arslan, 2016; Eret & Ok, 2014; Şendağ, Duran, & Fraser, 2012; Akbulut, et al., 2008) which indicated academic e-dishonesty levels of the university students is low. It is more important for preservice teachers to be honest and do not show unethical behavior in their studies and assignments when considering that they are the people who will raise future generations. For this purpose, it is clear that a certain level of awareness needs to be developed. One way

might be informative trainings and including practical applications about informatics ethics in lessons. Preservice teachers studying in different fields who will train future students should be informed about Internet research ethics so that they can guide their students in professional lives.

In the study, it was examined that if the preservice teachers' academic e-dishonesty levels differ according to gender. Results revealed academic e-dishonesty levels of women were higher than men. According to these findings, it can be concluded that while making research, women make more involvement in online academic dishonesty than men. This result is interesting that in that many studies in the literature claim the opposite that women showed less academic dishonesty (Cheng, Hung, & Hsu, 2021; Kocaman-Karoğlu & Bakar-Çörez, 2020; Kıral & Saracaloğlu, 2018; Eret & Ok, 2014; Hensley et al., 2013; Keçeci, Bulduk, Oruç, & Çelik, 2011; Akbulut, Uysal, Odabaşı, & Kuzu, 2008). Also results of this study showed that academic e-dishonesty of the preservice teachers did not change according to taking an informatics ethics course. This finding is interesting that taking a course on informatics ethics is not significantly associated with academic dishonesty behavior. Reconsidering the contents of the courses and including practical applications about ethical issues may be beneficial.

Based on the study findings a low and positive relationship was found between research anxiety and unethical Internet using behaviors of preservice teachers. The study showed that the preservice teachers involved in academic e-dishonesty have anxiety about scientific research. In other words, it is seen that individuals who make involvement to academic e-dishonesty are more concerned about research. Or feeling anxiety about doing research increases the incidence of making academic e-dishonesty. Due to the research anxiety levels of the students' increases, their research proficiency levels decreases (Tekin, 2007) and thus it might be causing unethical Internet using behaviors of the students.

Recommendations

This study offers some important findings about the relationships and differences in accordance with research anxiety and unethical Internet using. The fact that these findings determined for all variables have similar or opposite characteristics with the studies in the literature, may be due to different sample groups, different sizes of the study groups, and the fact that the studies were carried out in different fields. In line with the research findings, the following suggestions were made:

- For the future research directions, it is hoped that the research results can provide a reliable reference for instructors. As research anxiety is related with academic e-dishonesty, then plans reducing research anxiety might reduce academic e-dishonesty or vice versa.
- It is important to minimize the preservice teachers' anxiety about research. For this reason, the quality of existing research-oriented courses should be increased. Designing the courses with product-based activities related to the field and integrating student-centered strategies might be effective.
- As far as the results revealed taking research-oriented courses did not lead to a difference in preservice teachers' research anxiety, in future studied it will be useful to examine research anxiety levels by looking each of the research-oriented courses by one by one and in detail.

- As far as the results revealed taking informatics ethics course did not lead to a difference in preservice teachers' involvement in academic e-dishonesty, the content of the courses should be reviewed. Practical trainings and real life examples can be added to courses.

- It has been revealed that preservice teachers think that they do not make involvement in academic e-dishonesty during research. But in the literature there are studies that found behaviors of e-dishonesty increasing among university students. Therefore, it is important to investigate this situation qualitatively as well as quantitative methods in order to obtain more detailed findings.

- It is a limitation of the study, the fact that study findings are based on preservice teachers' self-reported statements. Thus, it is suggested making new studies that are verified through different data sources such as observation and interviews.

- As each faculty has a specific academic and social structure, it would be better to conduct further studies in different faculties.

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