RESEARCH ARTICLE

CORRELATIONS BETWEEN RESEARCH ATTITUDES, RESEARCH COMPETENCY RESEARCH ANXIETY OF NURSING DOCTORAL STUDENTS

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ARTICLE INFO	ABSTRACT
	Problem Statement: Individual's research activities are reported to be influenced by a number of issues such as disinterest in the research area, taking research process as a threatening factor or incapability of doing research. Identification of research competency, attitude and anxiety factors in nursing doctoral students is vital for demonstrating the current state in nursing doctoral students. **Methods:** This descriptive correlational study's sampling was limited to the nursing doctoral students chosen from the Nursing College and Faculties listed by The Council of Higher Education. The Pearson's Correlation Analysis and the Independent Samples T-test were utilized to evaluate the survey data. **Results:** Increase in the students' appreciation of research and caring for research corresponded to higher research competency scores. The students that regard the scientific research unrealistic scored high in research anxiety. **Conclusion:** In the light of the findings, further investigation of the reasons lie behind the research anxiety among the doctoral students, identification of those challenges in the course of establishing and enhancing positive attitude towards researching, and developing solutions key to the problems are recommended.

INTRODUCTION

Research is a scientific questioning process that helps identify unknown factors and events, ameliorate established knowledge in order to find a solution to a problem and accordingly establish concepts, theories and laws (Emiroğlu, Ünlü, Terzioğlu, & Bulut, 2005). Scientific research could be carried out only if one was given insight about scientific approach and intellect (Saracaloğlu, Varol & Ercan 2005). In this regard, introducing the students to the research culture is crucial. Research training helps the students familiarize themselves with the principles of research manners and attitudes, and help promote scientific research consciousness develop in the society with the embracement of added scientific competence. Thus, the ultimate goal of a research training is to build individuals with inquisitive manners and form of conduct accordingly (Saracaloğlu *et al*., 2005).

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Nursing research deals with the scientific problems questioned in the light of scientific research process which benefit advancement in nursing occupation. Aim of nursing research is to establish sound knowledge framework for proof based process conduct and applied nursing (Emiroğlu *et al*., 2005). In Turkey, the historical development of nursing originates back to years 1950's with the establishment of the Nursing High Schools. Accordingly, the nursing research has started with the post-graduate degree dissertations. Therefore, emphasis on conveying the principles of research shall be as important as establishing other means for attaining a desired quality in nursing research. Among numerous roles taken under, researching is considered important (Akın & Ege, 2008). Nursing research is part of the syllabus given in undergraduate level and an advanced version of the course is required in the post graduate level programs (Velioğlu & Oktay, 1999; Emiroğlu *et al*., 2005). In order to help students develop skills for an independent research, the interpretation of scientific phenomenon within a broader and in depth perspective, and the ability to set out a viable methodology to reach new syntheses, the nursing research is extended to doctoral education (YÖK

Lisansüstü Eğitim ve Öğretim Yönetmeliği 1996; Ergöl, 2011). According to Turkish Higher Education Credential Framework (THECF), a PhD student shall demonstrate a high level grasp of academic research skills that ensures utilization of proper methodology for the applied researches (TYYÇ, 2011). An ample knowledge for scientific research can only be gained via a PhD degree (Emiroğlu, 2004; Akın & Ege, 2008). Thereby, providing a research training proper to the level of education is critical in addition to a quality nursing training (Akın & Ege, 2008). It is stated that providing students with fundamental knowledge and skills is the basic provision for research orientation but not necessarily the sole sufficient criteria since an individual's research activities are reported to be influenced by a number of issues such as disinterest in the research area, taking research process as a threatening factor or incapability of doing research (Köklü, 1992; Büyüköztürk & Köklü, 1999). Studies on under-graduate and graduate students provided positive correlation between the researcher practice and the researcher attitude, likewise, the students with more research experience showed more positive attitude towards research (Tavşancıl, 1995; Benett, 1994; Walker & Cousins 1994; Winans & Madhavan, 1992).

The research competency is a combined construct of a researcher's existing research techniques, knowledge in the statistics, surveying, measurement and assessment techniques, and related computer domains (Saracaloğlu et al., 2005). The research attitude and conduct are a series of virtues, such as critical thinking and judgement, innovativeness, independency, and heedfulness, in order to put one's technical competency in practice (Köklü, 1992). In this regard, presenting positive research attitude is important aside having built research knowledge (Mattila & Eriksson, 2007). The competency is the sum of requisite features such as certain talent, knowledge and skills required to fulfill a task successfully or efficiently. The term emphasizes the required capacity to able a person complete a task or function acceptably (Şahin, 2004). Alhas (2006, p:127) states that research competency acquired at the graduate programs is a resultant of building abilities to access, evaluate, and interpret information, developing good relationships with the professional environment, and using information on the solution of social problems. Factors that affect the scientific research competency are research training, individual characteristics and socio-cognitive factors among of which research training is emphasized (İpek, Tekbıyık & Ursavaş, 2010; Gezer, 2012). Graduate students' ability to distinguish scientific research, evaluate and criticize, and the capability of doing independent research are the important aspects of their professional development (Taşdemir & Taşdemir, 2011). A study by Büyüköztürk (1996) showed that the research competency of students studying social sciences were higher than the students in science education. On the contrary, Karasar's (1984) study stated that the research competency of students studying in the engineering and health sciences were higher than the students studying social sciences. Another study by Büyüköztürk and Köklü (1999) commented that the graduate students had a lesser degree of research competence compared to doctoral students. One of the variables that affect research conduct is the research anxiety. Anxiety, as a term, is a form of prolonged feeling less severe than fear with uncertainty (Cüceloğlu, 1993).

Klausmeier and Goodwin (1971) state that the anxiety factor plays a complex part in the learning process. In this case, it is emphasized that low anxiety has profound effect in facilitating the learning process. Particularly, Büyüköztürk (1997) deem necessary to identify students with a high level of research anxiety and consequently suggest taking a number of measures to alleviate the condition. Research anxiety manifest itself with one's behaviors such as abstaining from doing research unless it is necessary, feeling embarrassed when set on research, displaying reluctance when bothered with the idea of doing research, and experiencing discomfort and self-distrust in the course of research (Yılmaz & Çokluk 2010; Çokluk, Bökeoğlu & Yılmaz 2005). In a survey conducted by Büyüköztürk (1996) ascertained that the under-graduate students had negative attitudes towards research due to research anxiety. Saracaloğlu et al., (2005) found the scientific research anxiety of graduate students vary depending on universities, institutes, educational background and the state of attendance to research methods course. The study revealed that Educational Sciences students had the highest anxiety scores compared to Physical Sciences students. In addition, graduate students experienced anxiety more intensely. The students that attended the research methods course experienced higher anxiety levels compared to ones didn't. The same study also showed that students with past work experience that attended the research methods course had higher research attitude and research competency scores.

Furthermore, a positive and significant correlation was found between scientific research competency, scientific research attitude, past work experience, age, and success in the research methods course. Interestingly, the research studies on this issue predominantly focused on the students majoring in social sciences and physical sciences, and the teachers who completed their training in those fields (Büyüköztürk, 1996; Saracaloğlu et al., 2005; Stetler & DiMaggio, 1991; Funk, Tornquist & Champagne, 1995; Veeramah, 2004; Oranta, Routasalo & Hupli 2002; Kuuppelomaki & Tuomi 2003, 2005; Björkström & Hamrin, 2001). No studies were found in the literature that analyzes the correlation between the variables pertaining to scientific research attitudes, competency and anxiety of graduate and/or nursing doctoral students. According to the THECF, the nursing students attending master programs shall acquire abilities to perform planning and execution of research, whilst at doctorate level, students shall gain high level skills to implement research methods in the pursued fields. Hence, identification of research competency, attitude and anxiety factors in nursing doctoral students is vital for demonstrating the current state. Additionally, the research results on these variables will contribute to the course content of nursing doctoral education and is expected to shed light on the relevant literature. Thus, the aim of this study is to analyze the correlation between the research attitudes, the research competency and the research anxiety of nursing doctoral students.

MATERIALS AND METHODS

Research Design

This study was planned as a descriptive study. The study was comprised of nursing doctoral students chosen from the

Nursing College and Faculties listed by The Council of Higher Education (CHE).

Research Sample

The sampling was carried out on a volunteer basis and the surveys were delivered with a consent form. According to the list by CHE, 11 universities that offer doctorate degrees were identified. Even though the data collection method was principally set to be an e-mail-out survey, the survey participants residing in Izmir were delivered their survey package in person. The survey package included a personal information form, the scales forms, and a consent form. From the total of 64 participants, 22 participants were surveyed online and the remainder 42 participants' responses were solicited in person (face-to-face). The dependent research variables were the research attitude of nursing doctoral students, their research competency, and their anxiety relevant to research and self-competency. The independent research variables were the age, the doctoral education term being attended, the occupational statue, the past research experience and the state of attendance to research methods course during doctorate.

Research Instrument and Procedure

The survey participants were solicited to fill out "Personal Data Form" comprise of 7 questions along with the scales for Attitude to Scientific Research Scale, Research Competency Scale and Research Anxiety Scale. In detail, "Personal Data Form" collected information about the participant's age, occupational status, current term of doctoral education being attended, past research experience and the state of attendance to research methods course.

Attitude to Scientific Research Scale

In order to assess the research attitudes of doctoral student, a "Scientific Research Attitude" Scale (SRAS) comprised of 30 items was adopted from the study by Korkmaz, Şahin, & Yeşil (2011) by which its validity and reliability studies were confirmed for the students in the faculty of educational sciences. The items were tested in Likert Scale of 5, respectively, "Strongly Disagree (1)", "Disagree (2)", "Neutral (3)", "Agree (4)" and "Strongly Agree (5)". The SRAS items, listed in a shuffled manner, were basically grouped in four dispositions. The first group of items that tested "Reluctance to assist researchers" and the second group of items that tested "Negative attitudes towards research" were the indicators of negative attitude escalation, whereas the third group of items that tested "Positive attitudes towards research" and the forth group of items that tested "Positive attitudes to researchers" were the indicators of increase in positive attitudes. First two and last two groups were inversely correlated. All items belong to the first and second group were negative statements and vice versa. Thus, total sum of scores for the entire scale was incoherent which mandated an item by item statistical analysis. The Cronbach Alpha Internal Consistency value of this scale as reported by Korkmaz *et al*. (2011) was 0.70. In this study, the Cronbach Alpha Internal Consistency value was 0.67.

Research Competency Scale

In order to evaluate the students' research competency perceptions, a "Research Competency" scale (RCS) comprised of 7 items was adopted from the study by Büyüköztürk (1999). Each item was tested in Likert Scale of 5, respectively, "None (1)", "Some (2)", "Quite a Bit (3)", "An Extreme Amount (4)" and "All (5)". A respondent could achieve a minimum score of 7 and a maximum score of 35. Total score of scale was divided by the number of items for assessment (Büyüköztürk, 1999). The Cronbach Alpha Internal Consistency value of this scale reported by Büyüköztürk (1999) was 0.82. In this study, the Cronbach Alpha Internal Consistency value was 0.90.

Research Anxiety Scale

In order to assess the students' research anxiety perceptions, a "Research Anxiety" scale (RAS) was adopted from the study by Büyüköztürk (1997) by which its validity and reliability studies were confirmed for the under graduate and post graduate level students in the faculty of educational sciences. The scale was a construct of 7 items. Each item was tested in Likert Scale of 5, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Five of the items, specifically 2th, 3th, 4th, 8th and 11th, were positive statements that didn't directly depict an anxiety state. These were inverse coded. Thereby, a higher scale score corresponded to a higher anxiety level and vice versa. A respondent could achieve a minimum score of 12 and a maximum score of 60. The Cronbach Alpha Internal Consistency value of this scale reported by Büyüköztürk (1997) was 0.87. In this study, the Cronbach Alpha Internal Consistency value was 0.82.

Data Analysis

Percentile, median, standard deviation tools were used to evaluate the sociodemographic variables. Mann Whitney U test was utilized for the comparison of several dependent variables against some independent variables. Pearson's Correlation Analysis was used to solicit the relationship of participants' responses to "Research Attitude", "Research Competency" and "Research Anxiety" scales.

RESULTS

The age range of survey participants was 24-43, while the median was 29.6 (±3.93). The work experience range of survey participants was 2-23 years, while the median was 7.7 years (±4.79). 88% (n=56) of the sample population was comprised of academist nurses. 61% (n=39) of the respondents attended the research methods course during the doctoral program. 98% (n=63) of the respondents reported having a past research experience. According to Table 1, there is no meaningful relationship was identified between the scores of nursing doctoral students for Research Attitude, Research Competency and Scientific Research Anxiety (p>.05, r=.63). Table 2 shows that each SRAS item's relationship to RCS and RAS total scores were checked respectively. As a result, a positive correlation between SRAS item 11 "Scientific research does not attract my attention because I find unrealistic" and RAS total score (r=.30, p<.05) was found.

Table 1. Relationship of Scientific Research Attitude, Competency and Anxiety of Nursing Doctoral Students (n=64)

	Total Score for Scientific Research Attitude		Total Score for Scientific Research Competency		Total Score for Scientific Research Anxiety	
	r	p	r	p	r	p
Total Score for Scientific Research Attitude	1	.	-.63	0,62	.14	0,24
Total Score for Scientific Research Competency	-.63	0,62	1	.	.06	0,61
Total Score for Scientific Research Anxiety	.14	0,24	.06	0,61	1	.

Table 2. Relationship of each SRAS Response to "Research Competency" and "Research Anxiety" Total Scores Respectively (n=64)

SRAS Items	RCS Total Score		RAS Total Score	
	r	p	r	p
Item 1	-.043	0,73	.002	0,98
Item 2	-.081	0,52	.098	0,44
Item 3	-.101	0,42	-.121	0,34
Item 4	-.052	0,68	.039	0,75
Item 5	-.033	0,79	.076	0,54
Item 6	-.104	0,41	.022	0,86
Item 7	-.060	0,63	.068	0,59
Item 8	.036	0,77	.145	0,25
Item 9	-.203	0,10	-.042	0,74
Item 10	-.096	0,44	.175	0,16
Item 11	.01	0,93	.300	0,01
Item 12	-.085	0,50	-.094	0,46
Item 13	-.28	0,02	.119	0,34
Item 14	.074	0,56	.028	0,82
Item 15	-.165	0,19	.082	0,52
Item 16	-.182	0,14	.140	0,26
Item 17	-.358	0,00	.06	0,59
Item 18	.226	0,72	-.053	0,67
Item 19	.294	0,01	-.09	0,45
Item 20	.105	0,41	-.012	0,92
Item 21	.207	0,10	-.002	0,98
Item 22	.249	0,04	-.086	0,49
Item 23	.190	0,13	-.110	0,38
Item 24	.106	0,40	-.080	0,53
Item 25	.000	0,99	.184	0,14
Item 26	-.019	0,88	.149	0,24
Item 27	.111	0,38	.084	0,51
Item 28	.140	0,26	-.028	0,82
Item 29	-.026	0,83	.033	0,79
Item 30	.081	0,52	.057	0,65

Table 3. Comparison of Several Variables with the Scientific Research Attitude of Nursing Doctoral Students (n=64)

RAS Items	Defining Characteristics	n(%)	M±SD	t	p
	Professional Status				
RAS11	Clinic Nurse	8(12.5)	1.12±.35	-2.43	
	Academist Nurse	56(87.5)	1.58±1.07		0.02
RAS29	Clinic Nurse	8(12.5)	4.87±.35		
	Academist Nurse	56(87.5)	4.30±.85	3.38	0.00
	Term of Doctorate				
RAS16	Pre-thesis Term	32(50.0)	1.31±.53		
	Thesis Term	32(50.0)	1.06±.24	2.40	0.02
	State of Attendance to Research Methods Course				
RAS8	Taken	39(60.9)	2.05±1.12		0,046
	Not Taken	25(39.1)	1.52±.82	2.03	
RAS21	Taken	39(60.9)	4.30±.86		0,030
	Not Taken	25(39.1)	3.84±.74	2.22	
RAS28	Taken	39(60.9)	4.71±.51		
	Not Taken	25(39.1)	4.40±.50	2.45	0,017

Table 4. Comparison of Several Variables with the Scientific Research Competency of Nursing Doctoral Students (n=64)

Defining Characteristics	n(%)	M±SD	t	p
Professional Status				
Clinic Nurse	8(12.5)	26.50±3.50	-.63	
Academist Nurse	56(87.5)	27.60±4.70		.525
Term of Doctorate				
Pre-thesis Term	32(50.0)	26.93±4.36	-.81	
Thesis Term	32(50.0)	27.87±4.78		0,42
State of Attendance to Research Methods Course				
Taken	39(60.9)	28.38±4.98		
Not Taken	25(39.1)	26.04±3.42	2.22	0,02
Past Research Experience				
Yes	63(98.4)	27.46±4.59		
No	1(1.6)	28.00	-.11	0.90

Table 5. Comparison of Several Variables with the Scientific Research Anxiety of Nursing Doctoral Students (n=64)

Defining Characteristics	n(%)	M±SD	t	p
Professional Status				
Clinic Nurse	8(12.5)	27.50±5.63		
Academist Nurse	56(87.5)	30.41±3.69	-1.94	0,05
Term of Doctorate				
Pre-thesis Term	32(50.0)	29.37±4.96		
Thesis Term	32(50.0)	30.71±2.77	-1.33	0,18
State of Attendance to Research Methods Course				
Taken	39(60.9)	29.46±4.04		
Not Taken	25(39.1)	30.96±3.96	-1.45	0,15
Past Research Experience				
Yes	63(98.4)	30.09±4.06		
No	1(1.6)	27.00	.75	0,45

Thus, students which regarded scientific research unrealistic had higher anxiety scores. A negative correlation between SRAS item 13 "I find the research results unreliable due to data compilation from limited resources" (r=-.28, p<.05) and RCS total score (r=-.35, p<.05) translated to the outcome that data compilation from limited resources had negative impact on the research competency. A negative correlation between SRAS item 17 "Research findings often worries me" (r=-.35, p<.05) and RCS total score (r=-.35, p<.05) unraveled the conclusion that research competency decreased as the case of finding research results perturbing increased. SRAS item 19 "I take pleasure in conducting scientific research" (r=.29, p<.05) and item 22 "I care about scientific research" (r=-.24, p<.05) were positively correlated with RCS total scores (r=-.35, p<.05) respectively. This translated to the finding that an increase rendered in level of having high opinion on scientific research and taking pleasure in conducting scientific research yielded an increase in RCS scores.

According to Table 3, 11th and 29th items of SRAS had significant differences based on the professional status of students (p<.05). Accordingly, response to SRAS item 11 "Scientific research does not attract my attention because I find unrealistic" was scored significantly different by the group of academist nurses than the group of clinic nurses. Further, response to SRAS item 29 "Scientist, regardless of whatever reason does not act contrary to the ethical rules" was scored significantly different by the group of clinical nurses than the group of academist nurses. 16th item of SRAS "Protracted researches are excrescences" showed a significant difference based on student's term of doctorate (p<.05). Nursing doctoral students at thesis-term scored significantly higher compared to ones at pre-thesis term. 8th, 21th and 28th items of SRAS had significant differences based on the state of attendance to research methods course. Accordingly, responses to SRAS item 8 "I feel bored due to frequently encounter with the data collection practices" (p<.05), SRAS item 21 "I try to solve my problem using scientific methods" (p<.05) and SRAS item 28 "The scientist should be continuously open to improvement and self-development" (p<.05) were scored significantly higher by the nursing doctoral students at thesis-term. Statistically, a significant difference was noted between the total score derived from the research competency scale and the state of attendance to the research methods course (p<.05). Respectively, the research competency of nursing students that attended the research methods course was higher.

No meaningful difference was found between RCS total scores and the variables such as professional status, term of doctorate, and past research experience (Table 4).

According to Table 5, there was no significant difference between the research anxiety scores of nursing doctoral students and the afore-mentioned variables.

DISCUSSION

Nursing research plays a vital role in the development of nursing profession while tackling the problems of nursing research in line with the scientific research process. Clinical applications, management practices and political decision-making process based on the research results and made in the light of scientific developments gain recognition. A doctoral degree with a good research training and competency is a necessary attribute in taking responsibility for a research undertaken in application areas which eventually helps the development of nursing research (Medoff-Cooper & Lamb, 1989). Same as the developed countries, research methods courses currently being registered in the Nursing doctorate syllabuses provide an adequate level of education for nursing research (Emiroğlu, 2004). In this respect, this study aims to analyze the correlations between the research attitudes, the research competency and the research anxiety of nursing doctoral students. This study found no significant statistical relationship between research attitudes, research competency and research anxiety of nursing doctoral students, which didn't concur with the findings of Saracaloğlu (2008) and Saracaloğlu *et al.*, (2005). Those studies with a higher count of sampling space could be the case of conflict. Our study also included all universities offering doctorate in nursing programs in Turkey. Each university's nursing doctorate programs is unalike in terms of nursing research course content and research curriculum undertaken. These differences are thought to have profound effect on the relationship of student attitudes, competencies and concerns.

In this study, students, who acknowledged that research findings were unrealistic, showed increased levels of research anxiety. In addition, students, who found the research results unreliable given the fact that the data was compiled from the limited resources, showed decreased levels of research competency. These results signified the relationship between competence and anxiety towards scientific research attitudes.

In the study, the competency perceptions were affected negatively owing to doctoral students' doubts in the research process. According to a description made by Büyüköztürk (1997), research culture depends on the joint development of one's cognitive and affective characteristics. A researcher's affective characteristics such as interests, attitudes, values, habits and concerns are overemphasized as the technical knowledge and skills gained in the course of training. Onwuegbuzie and Wilson (2003) addressed that the research anxiety had negative impact on academic performance. Anxiety state that unveils or triggers the psychological and physical discomforts can lead to absence of higher level thinking skills, difficulties in understanding, mental confusion, and desire loss (Onwuegbuzie, Slate & Schwartz, 2001; Onwuegbuzie, DaRos & Ryan, 1997). Lei (2008) asserts that a high level of research anxiety dims student's self-competency emotion which sets the foundations to develop negative research attitudes. Bökeoğlu and Yılmaz (2005) define research anxiety as unwillingness to do research unless required, feeling uncomfortable and restless while doing research, lack of self-confidence in research and tediousness when forced to do research. Tekin (2007) examined the anxiety level of graduate students in terms of different variables. The study determined higher research anxiety level which was inversely proportioned to research competency. Bökeoğlu & Yılmaz (2005) reported an inverse relationship between research anxiety and critical thinking skills. This statement was in concurrence with our finding: "The higher the case of finding research results perturbative, the lesser the research competency perceptions are". On the other hand students enjoyed doing and cared about scientific research had higher research competency scores. This statement is also in concurrence with Büyüköztürk's (1997) findings on graduate students.

Study showed no statistically significant difference for research anxiety levels based on respondent gender, term of education being attended, and age. This result is in concurrence with the study findings by Bayar, Bayar, Eğmir, Ödemiş, & Kayır (2013) in which the research anxiety levels of graduate students in the field of educational sciences predicated no statistically significant difference compared to variables such as age, term of education being attended and gender respectively. SRAS item 11, "Scientific research does not attract my attention because I find unrealistic", was found to be significantly higher with the students in the academic group. Accordingly, it may be inferred that the academist students are critically assessing the scientific researches given the fact that they are more exposed to research articles and more frequently involved in the research environment. Besides, this result may be related to the disparate sampling number of students with respect to their occupation status. The academic group was sampled disproportionately larger than the clinician group. SRAS item 29, "Scientist, regardless of whatever reason does not act contrary to the ethical rules", was found to be significantly higher with the students belong to clinician group. A study by Bayar *et al*. (2013) examining the research ethics of graduate students concluded that the participants should have received education about unethical behaviors and misconduct. Furthermore, discussions with the academic colleagues rendered "act of taking the emergent

ideas as the basis of research" as the leading case for ethics violation. None of the participants regarded the matters, namely, "breach of promises about research privacy" and "manipulation of the research results" as ethical. Thesis-term students scored higher on 16th item of SRAS, "Protracted researches are excrescences". This outcome is consistent with the finding of Saracaloğlu *et al*. (2005) which predicates that the research attitudes vary according to the past research experience and the state of attendance to research methods course. Higher score of thesis-term students could be explained by the challenges of preparing a doctoral thesis compared to a graduate dissertation, difficulties pertinent to thesis planning and execution.

The scores of students, who attended the research methods course, in response to SRAS item 8 "I feel bored due to frequently encounter with the data collection practices", SRAS item 21 "I try to solve my problem using scientific methods" and SRAS item 28 "The scientist should be continuously open to improvement and self-development", were significantly higher than the scores of students who hadn't taken the research methods course. This study confirmed higher research competency levels for the nursing doctoral students who attended the research methods course. This outcome may ascend from the doctoral students' frequent exposure to scientific researches or their affinity with attending scientific research methods, measurement and assessment techniques courses. Similarly, studies by Saracaloğlu *et al*., (2005) and Büyüköztürk & Köklü (1999) confirmed higher student competency scores for the students who attended the research methods course. Winans & Madhavan (1992) asserted that students with a high sense of confidence in their research competency had higher academic achievements. The studies by Saracaloğlu *et al*., (2005) limited to undergraduate students, and Büyüköztürk (1996), limited to graduate students, deemed "Measurement and Assessment" and "Statistics" courses responsible for affecting student research competency. Alternately, a study by Saracaloğlu (2008) confirmed a higher research competency level for students attending the research methods and statistics courses. The sampling of this study was comprised of doctoral students chosen from all universities offering the nursing doctorate programs in Turkey. Evidently, each university keeps its own discretion of establishing a specific doctoral syllabus for the research courses which lead to discrepancies in time frame allocations for the theoretical pre-thesis term and the thesis-term. Such as, some universities provide a year long theoretical pre-thesis term whilst the others biennial. In biennial pre-thesis term, mainly due to the preparation and participation of students to courses taken, time that should have been allocated for research planning and execution remains minor. Therefore, a review of credit distribution in doctoral training and the standardization of curricula in the favor of thesis-term time frame allocation are expected to have influence on research attitude, competency and anxiety. In the meantime, Bologna Process has the potential to lend assistance. Bologna Process is program to furnish the standards on academic issues and minimize the differences in order to build a unified and well-integrated higher education system across the Europe. This process has been committed by the universities in Turkey as well. When this standardization is achieved, nursing doctoral students will

have the opportunity to experience all stages of research process, thus the research attitudes are expected to be more constructive.

The state of attendance to research methods course, one of the independent variables of our study, was found to have influence on the research attitudes and competencies of the nursing doctoral students. Based on this result, the content of undergraduate and graduate level courses, namely, research methods, research statistics, measurement and evaluation, and qualitative research methods, needs to be revised to include the research anxiety and the issues related to factors causing research anxiety. In order to reduce the obstacles to alleviate research anxiety, doctoral students should be encouraged to participate in a variety of activities such as courses, seminars and conferences. Another important limitation of this study is the non-existence of similar studies contemplating the variables such as research attitude, research competency and research anxiety of nursing doctoral students and thus the lack of comparison of the findings across the studies. Testing the same variables with a bigger sampling space comprised of nursing doctoral students is recommended. In-depth qualitative studies that interpret research attitude, competency and anxiety of nursing doctoral students are recommended.

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