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Examining occupational anxiety level of Mathematics teachers for some variables

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The research aims to examine the occupational anxiety level of Mathematics teacher candidates according to some variables. The research sample included a total of 132 prospective teachers studying in Mathematics Teaching at Siirt University, Faculty of Education in the spring term of 2104-2015 academic year. The “Teacher Concern Checklist” adapted by Şaban et al. from Borich and the personal information form developed by the researcher were used. The unrelated sample t-test and one-way variance analysis technique were used to analyze the data. The research results showed that the overall anxiety level of prospective teachers was moderate, and the average score they achieved from three dimensions of the concern checklist (task-centered anxiety, student-centered anxiety and self-centered anxiety) did not significantly differ by variables including gender, school year and type of high school they graduated from.

Key words: Professional anxiety, anxiety, mathematics teacher candidate, education, teacher.

INTRODUCTION

The only need of a society is a successful and innovative education system to have the knowledge and experience necessitated by the time, to reach the level of modern civilizations, to live the knowledge era and become a knowledge society. The most important element of this educational system is teachers. A teacher, who is in the center of the education system, is supposed to be an individual who has positive behavior in regard to his/her profession and who does not have a concern or negative attitudes about his/her profession besides being qualified, sociable and having the knowledge required by his/her profession, ability, sympathy and tendency to be reflective (Akgün and Özgür, 2014).

Anxiety is described as subjective feelings associated

with worries, nervousness, and tension (Spielberger, 1976, p.5). Anxiety is defined as a feeling that sometimes stimulates human in their daily life to courage towards creative and constructive behaviors, and sometimes hinders such behaviors and creates disturbance. According to learning-approach theories, anxiety is a feeling that is acquired through conditioning, and a type of impulse. It is the severity and duration, not the source, of the feeling and the importance of the hazard that determine if the anxiety is normal or pathological (Başarır, 1990). Anxiety is generally defined as an emotion that is caused by feelings adversely affecting an individual (Varol, 1990). According to Işık (1996), anxiety is a probability of a hazard resulting from inner and outer

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world, or a feeling of an individual that is felt for any situation that is perceived and interpreted as hazardous. Another definition is that “anxiety” is unpleasant emotional and observable reactions such as sadness, perception and stress created by distressful conditions (Özgüven, 1999, 339).

Anxiety is a complex psychology term including many variables. Simply put, anxiety is the feeling of worries along with increased vigilance, increased sympathetic nervous system, and difficulty in concentrating (Kelly, 2002). Anxiety is described to include one or most of the excitements such as sadness, distress, fear, sense of failure, helplessness, not knowing the result and being judged and as an adaptive mood against hazards (Cüceloğlu, 2006).

In general, people express the anxiety with emotions including pessimism about future, failure, concern, despair and confusion. It is very normal to have ups and downs throughout our lives. These are only transient. From the perspective of sciences, anxiety appears to motivate an individual, though it is not over-anxiety. What is important is to find our deficiencies and a way to remedy them, and not to allow anxiety to grow too much to impair an individual (Develi, 2006, 20).

Fuller (1969) assembles the anxiety of teacher candidates about their task in three groups as the anxiety which is self-centered, task-centered and student-centered (Taşğın, 2006). The focus of self-centered anxiety is the teacher candidates themselves. Teacher candidates who have self-centered anxiety always worry about whether they can do this successfully or not and for this reason they are always under intense stress. When the task of teacher is taken into account, the anxiety of teacher candidates about their success in their task centres on these questions: ‘What is the profession of teaching for? How will I do the task every day? What will the head master of the school and my colleagues think about me when my classroom is noisy?’ The focus of task-centered anxiety consists of the candidates’ teaching task. Teacher candidates who have task-centered anxiety are anxious about being effective instructors; therefore, they start to search new teaching methods and materials that can be used in their teaching branch. When the task of teacher is taken into consideration, in terms of task-centered anxiety the candidates try to find answers to these questions: ‘How should education and teaching in different classes be? How can I follow and reach new materials, techniques and ideas for my teaching? Who can help me the best in order to be successful in my task?’ The focus of student-centered anxiety is the students. Teacher candidates who have student-centered anxiety are more student centered in their ideas about teaching. They start to wonder about and search for how they can cover each student’s

mental, emotional and requirements (Saban et al., 2004; cited in Çubukçu and Dönmez, 2011).

In our country, students take a variety of examinations from the primary school to university in order to be placed in an educational institution. Their concern about placement in any associate degree programs and undergraduate programs never ends, and concern about the completion of education and the future remains. In our day, prospective teachers mostly concern about whether they would be appointed. Final year undergraduate students experience one critic turning point after graduation as to taking a step into the business life or into being unemployed. Selection of a job, plans for assuming a role in the real life, experienced friendship, fear for not finding a job, and various responsibilities are some factors that result in anxiety in an individual (Tümerdem, 2007).

Improvements and changes in the education system as well as adverse incidents in the education system can lead to occurrence of occupational anxiety in prospective teachers. It is very important to be familiar with occupational anxiety of prospective teachers and perform studies in this respect for a good quality of education and educating qualified teachers. In this sense, developed countries have made progress through restructuring activities and research initiated to educate teachers, and a new perspective has been introduced to education of teachers. Studies performed under such perspective have attracted attention on the importance to conduct studies with prospective teachers as well as teachers (Çakmak, 1999).

In the literature studies performed to detect occupational anxiety of prospective teachers, there are a variety of students in this domain. A study by Bozdam (2008) investigated that the overall anxiety level was moderate, and occupational anxiety was not influenced by gender and place where they were raised. A study by Dursun and Karagün (2012) showed that students did not significantly differ in financial status, academic average, type of high school graduated from and gender for their socio-demographic characteristics, task-centered, student-centered and self-centered anxiety.

Research performed by Aslan (2009) identified that constant level of anxiety was not influenced by gender, age, major, type of school, seniority, duration of employment, level to follow publications, and graduation. Ünalı and Alaz (2008) investigated anxiety level of prospective teachers studying in geography teaching and found that the anxiety level of women was higher than that of men taking psychiatric samples in studies on the relationship between the anxiety and gender, and that no difference existed in genders between student groups. The findings obtained from the study by Çubukçu and Dönmez (2011) showed that prospective teachers

expressed their task-oriented concern was the highest and their self-oriented concern was minimum in anxiety sub-dimension.

The study performed by Varol (1990) identified that the anxiety level was influenced by variables including gender, success, friendship relations, program they want to be placed, parent's profession, parent's attitude and financial status. In the study conducted by Tekneci (2010), they suggested that state and continuous anxiety level of prospective teachers studying in teacher of mentally handicapped did not differ by classroom variable. A study performed by Yıldırım (2011) concluded that second-class prospective teachers had a higher level of occupational anxiety than that of forth-class prospective teachers.

In the review of research performed, there are many studies conducted to investigate anxiety level of prospective teachers in teaching profession by different variables. As demonstrated in such studies, it is highly important for prospective teachers not to have any concerns about their profession in order to achieve in teaching profession. However, only few studies were performed with prospective teachers receiving education in teaching Mathematics for primary schools. This makes further important to conduct a study on occupational anxiety of Mathematics teaching candidates. Therefore, this study was performed for the purpose of examining anxiety of students studying primary school Mathematics teaching by different variables.

Objective of the research

The objective of this research was to examine anxiety level of prospective teachers studying in primary school mathematics teaching by variables including gender, type of high school graduated from and school year. For this purpose, the answers to these questions are searched:

1. Does anxiety of prospective teachers for teaching profession significantly differ by gender variable?
2. Does anxiety of prospective teachers for teaching profession significantly differ by class level?.
3. Does anxiety of prospective teachers for teaching profession significantly differ by the type of high school graduated from?

METHODS

Research model and research group

This is a descriptive research based on general screening to examine the occupational anxiety of students receiving education in teaching mathematics for primary schools for several variables. The screening model is appropriate for studies aiming to describe a past

or present case as it was or is (Karasar, 1999). The research sample included a total of 132 students of first, second, third and fourth year studying in Mathematics Teaching for Primary Schools at Siirt University, Faculty of Education in the spring term of 2104-2105 academic year. A number of demographics of these students are presented in Table 1.

In Table 1, of students, 64.4% (N=85) were females, and 35.6% (N=47) were males; 20.5% (N=25) were at first class, 32.6% (N=43) were second class, 29.5% (N=39) were third class and 17.4% (N=23) were fourth class students; 55% (N=73) were common high school graduates, 36.4% (N=48) were Anatolian high school graduates, and 8.3% (N=56) were Anatolian teacher high school graduates.

Data collection tools

The research data were collected by the "Teacher Concern Checklist" adapted by Şaban et al. (2004) from Borich (1996) and the personal information form developed by the researcher. The information form included questions for gender of students, class level, and type of high school graduated from. Teacher Concern Checklist contains 45 articles and three sections as "self-centered anxiety" (SCA), "task- centered anxiety", (TCA) and "student-centered anxiety" (StCA) based on Five Point Likert scale. The students were instructed to check one of the following options "1= I do not get anxious", "2= I get anxious a little", "3= I get anxious partly", "4= I get anxious fairly" and "5= I get anxious very much" to indicate their concern for items on the checklist. The number of articles and the articles contained in each section are as follows: task-centered anxiety: 1, 3, 6, 7, 10, 11, 12, 6, 21, 25, 27, 31, 33, 40, 42; student- centered anxiety: 5, 15, 17, 19, 22, 23 29, 34, 36, 37, 38, 39, 41, 43, 45; self-centered anxiety ; 2, 4, 8, 9, 13, 14, 18, 20, 24, 26, 28, 30, 32, 35, 44 (Şaban et al., 2004, 200). Each section of the checklist contains 15 items. The lowest score to have from each section is 15 and the highest score to have is 75. The higher the prospective teacher obtains from each section, the higher the prospective teacher has concerns about occupational anxiety represented by that section (Dilmaç, 2010:49-65). Cronbach Alpha coefficient of internal consistence to determine reliability of checklist was calculated as .85 for task- centered anxiety, .91 for student- centered anxiety.91 and .92 for self-centered anxiety.

Data analysis

SPSS17.0 packet program was used to statistically analyze data obtained for the research. Anxiety of students was analyzed for variables including "gender, class level, and type of high school graduated from". For data analysis, the unrelated sample t-test was used to compare two variables, and one-way variance analysis (ANOVA) was used to compare three or more variables. .05 was considered significant for statistical analysis.

FINDINGS AND INTERPRETATION

This section presents findings in tables for occupational anxiety of mathematics teaching candidates. It was analyzed and interpreted in sub-sections based on research questions. Table 2 presents average scores of concern type of students for teaching profession. In Table

Table 1. Frequency and percentage distribution for demographics of students.

Variables	Gender/Class/Type of H. Sch.	N	%	Total	
				N	%
Gender	Female	85	64,4	132	100
	Male	47	35,6		
Class	1. Class	27	20,5	132	100
	2. Class	43	32,6		
	3. Class	39	29,5		
	4. Class	23	17,4		
Type of H. School Graduated	Common H. School	73	55,3	132	100
	Anatolian H. School	48	36,4		
	Anatolian Teacher H. School	11	8,3		

Table 2. Average scores of students for concern type on "Teacher Concern Checklist".

Concern type	N	\bar{x}	S	Min	Max
Task- centered anxiety (TCA)	132	37,393	10,051	15,00	75,00
Student-centered anxiety (StCA)	132	34,712	11,181	15,00	75,00
Self- centered anxiety (SCA)	132	33,848	11,618	15,00	75,00

2, average scores of prospective teachers for task-oriented concerns were (\bar{x} =37,393), average scores for student-oriented concerns were (\bar{x} = 34,712), and average scores for self-oriented concerns were (\bar{x} = 33,848).

Based on these findings, the highest concern of prospective teachers was task-oriented concerns. The lowest score of prospective teachers to get from teacher concern checklist was 15.00, and the highest score was 75.00.

Does anxiety of prospective teachers for teaching profession significantly differ by gender variable?

In Table 3 for total occupational anxiety of prospective teachers by gender variable, average scores of female students for occupational anxiety (\bar{x} = 109,941) were higher than the average scores of male students for occupational anxiety (\bar{x} =101.255); however this difference was not significant as indicated by the statistical analysis (p =.314, p >.05). Based on the results, gender variable appears not to have a significant influence on the occupational anxiety of students. In examination of subtypes of occupational anxiety by gender variable, the average scores of female students for task- centered anxiety (\bar{x} = 38.035) were higher than

those of male students (\bar{x} =36.234); however this difference was not statistically significant (p =.326; p >.05). In the average scores for student- centered anxiety, average scores of female students for concern (\bar{x} =34.893) were a little higher than those of male students (\bar{x} =34.612); however this difference was not significant (p =.890; p >.05). In average scores for self- centered anxiety, concern scores of female students (\bar{x} = 34.574) were higher than those of male students (\bar{x} =32.553); however this difference was not statistically significant (p =.351; p >.05).

Does anxiety of prospective teachers for teaching profession significantly differ by class level?

In Table 4, total average scores of students for occupational anxiety were not statistically significant by class (p =.795; p >.05). In subtypes of anxiety, scores for task- centered anxiety were (\bar{x} = 37.593) for the first class (\bar{x} = 37.465), for the second class (\bar{x} = 36.846), for the third class and (\bar{x} = 37,956) for the fourth class. Student- centered anxiety score was (\bar{x} = 37.444) for the first class, (\bar{x} = 34.348) for the second class, (\bar{x} = 32.846) for the third class, and (\bar{x} = 35.348) for the fourth class. Self-centered anxiety score was (\bar{x} = 32.407) for

Table 3. T-test results for occupational anxiety of prospective teachers according to gender variable.

Anxiety type by gender	N	\bar{x}	S	t	p
TCA					
Female	85	38,035	9,928	,986	,326
Male	47	36,234	10,274		
StCA					
Female	85	34,893	9,994	,138	,890
Male	47	34,612	11,842		
SCA					
Female	85	34,574	12,053	,936	,351
Male	47	32,553	10,796		
Total					
Female	85	109,941	30,855	1,012	,314
Male	47	101,255	31,032		

TCA: Task- centered anxiety; StCA: Student- centered anxiety; SCA: Self- centered anxiety.

Table 4. Arithmetic average and standard deviation for occupational anxiety of prospective teachers by class variable.

Anxiety type class	N	\bar{x}	S	F	P
TCA					
1.Class	27	37,593	10,860		
2.Class	43	37,465	10,233	,065	,978
3.Class	39	36,846	9,091		
4.Class	23	37,956	10,889		
StCA					
1.Class	27	37,444	11,856		
2.Class	43	34,348	12,322	,938	,424
3.Class	39	32,846	9,326		
4.Class	23	35,348	11,051		
SCA					
1.Class	27	32,407	13,920		
2.Class	43	33,348	8,648	,226	,878
3.Class	39	34,410	10,949		
4.Class	23	34,511	12,296		
Total					
1.Class	27	100,666	38,448		
2.Class	43	106,695	28,036	,342	,795
3.Class	39	103,589	27,035		
4.Class	23	107,837	31,148		

TCA: Task- centered anxiety; StCA: Student- centered anxiety; SCA: Self- centered anxiety.

Table 5. Arithmetic average and standard deviation for occupational anxiety of prospective teachers by high school graduated from.

Anxiety Type	Type of H. School	N	\bar{x}	S	F	p
TCA	Common H. School	73	37,561	9,972	,198	,820
	Anatolian H. School	48	38,818	10,361		
	Anatolian Teacher H.	11	36,812	10,274		
StCA	Common H. School	73	34,671	10,139	,207	,813
	Anatolian H. School	48	36,727	12,042		
	Anatolian Teacher H.	11	34,312	12,608		
SCA	Common H. School	73	33,849	10,628	1,022	,363
	Anatolian H. School	48	38,363	13,544		
	Anatolian Teacher H.	11	32,812	12,581		
Total	Common H. School	73	106,849	28,279	,353	,703
	Anatolian H. School	48	104,818	46,058		
	Anatolian Teaching H.	11	102,000	31,208		

TCA: Task- centered anxiety; StCA: Student- centered anxiety; SCA: Self- centered anxiety.

the first class, ($\bar{x} = 33.348$) for the second class, ($\bar{x} = 34.410$) for the third class, and ($\bar{x} = 34.511$) for the fourth class. In significance level for class level variable and subtypes of occupational anxiety, the difference in average scores of task- centered anxiety ($p=.978;p>.05$), student-centered anxiety ($p=.424;p>.05$) and self-centered anxiety ($p=.878;p>.05$) was not statistically significant.

Does anxiety of prospective teachers for teaching profession significantly differ by the type of high school they graduated from?

As presented in Table 5, total average scores of students for occupational anxiety did not significantly differ by the type of high school graduated from ($p=.703;p>.05$). In subtypes of anxiety, task- centered anxiety scores were ($\bar{x} = 37.561$) for common high school, ($\bar{x} = 38.818$) for Anatolian high school and ($\bar{x} = 36.812$) for Anatolian Teaching high school. Student- centered anxiety scores were ($\bar{x} = 34.671$) for common high school, ($\bar{x} = 36.727$) for Anatolian high school, and ($\bar{x} = 34.312$) for Anatolian Teaching high school. Self- centered anxiety scores were ($\bar{x} = 33.849$) for common high school, ($\bar{x} = 38.363$) for Anatolian high school, and ($\bar{x} = 32.812$) for Anatolian Teaching high school. In significance level according to the type of high school graduated from and subtypes of occupational anxiety, the difference in average scores for task- centered anxiety ($p=.820, p>.05$), student- centered anxiety ($p=.813, p>.05$) and self- centered anxiety ($p=.363, p>.05$) was not statistically significant.

RESULTS AND DISCUSSION

This section compares the findings from this study performed to identify occupational anxiety of prospective teachers receiving education in mathematics teaching for primary schools with findings from other studies.

Average scores of task- centered anxiety level of prospective teachers were 37.393, average scores of student- centered anxiety level were 34.712, and average scores of self-centered anxiety level were 33.848 (Table 2). Based on these findings, occupational anxiety level of prospective teachers was moderate, and task- centered anxiety was higher than other types of anxiety. This finding is consistent with the finding from the research by Şaban et al. (2004).

This research investigated whether average scores of prospective teachers for occupational anxiety significantly differed by gender variable and found that total of average scores of female students for occupational anxiety ($\bar{x}= 109.941$) were higher than total of average scores of male students for occupational anxiety ($\bar{x} =101.255$); however this difference was not statistically significant as shown by the analysis ($p=.314,p>.05$). The anxiety scores for task- centered anxiety, student-centered anxiety scores and self- centered anxiety scores, which are sub-dimensions of teacher concern checklist, did not significantly differ by gender variable; however average occupational scores of female students were higher than those of men. This finding suggests that gender variable did not have a significant influence on the anxiety of students for teaching profession. This finding is also consistent with studies performed by Cooper and Robinson (1991), Saban et al. (2004), Taşğın (2006),

Tümerdem (2007), Ünalı and Alaz (2008), Akgün et al. (2007), Dilmaç (2010), and Dursun and Karagün (2012). But, results from a number of studies conflict with results of our research (Bozdam 2008; Temiz, 2011; Yıldırım, 2011; Atmaca, 2013). Because women and men go through different socialization processes and have different opportunities for experience, and because reaction of immediate environment to their job differentiates by gender, they see themselves inadequate in different fields (Kuzgun, 2003, s.54).

No statistically significant differences were found in occupational anxiety level of prospective teachers by class. Similarly, Tekneci (2010) found that state and continuous anxiety level of prospective teachers did not significantly differ by class. However, in evaluation of both total scores of anxiety and sub-dimensions of anxiety – task- centered anxiety and self- centered anxiety – occupational anxiety scores of fourth-class prospective teachers were higher than those of students of other class. A study performed by Şaban et al. (2004) on occupational anxiety of prospective teachers suggested that task- centered anxiety of prospective teachers in the fourth class was higher. This finding is partially consistent with our finding. In general, absence of significant differences in occupational anxiety scores of prospective teachers suggests that prospective teachers gain insight about duties and responsibilities for teaching profession as a result of knowledge, skill and experience they gain throughout their education, but they are concerned about whether they could achieve in teaching profession prior to appointment process (Taşğın, 2006; 679-686).

This research evaluated whether average scores of prospective teachers for occupational anxiety level statistically significantly differed by the type of high school graduated from; occupational anxiety level of prospective teachers did not significantly differ by the type of high school they graduated from, and the average scores for task- centered anxiety, student- centered anxiety and self- centered anxiety level did not significantly differ. Although there were no significant differences in occupational anxiety level of prospective teachers, based on average scores, task- centered anxiety, student- centered anxiety and self- centered anxiety level of Anatolian teaching high school graduates was lower than that of common high school and Anatolian high school graduates (Table 5). This might be because students who graduated from Anatolian Teaching High School chose a teaching high school at early age and complete their education in such schools, and knowledge, skill and positive attitude towards teaching occupation they gain throughout the period of education. In similar studies, Saracaloğlu et al. (2009), Dursun and Karagün (2012) identified no significant differences between the type of high school graduated from and the occupational anxiety

level. This result is similar to the results of our research. However, results of a number of studies are not similar to the results of our research (Özsarı, 2008; Dilmaç, 2010).

As a result, in evaluation of research findings, task- centered anxiety, student- centered anxiety and self- centered anxiety level of prospective teachers was moderate and did not significantly differ by gender, class level and type of high school graduated from. However, it is necessary for education institutions educating teachers to form their educational program to satisfy future expectation of students, and students who are prospective teachers of the future should have positive attitude towards teaching profession in order to perform their profession successfully and passionately, which could be possible experiencing no occupational anxiety. This would give positive results for the future of teaching profession.

Conflict of Interests

The author has not declared any conflict of interests.

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