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Analysis of Research on Mathematics Anxiety in Selected Journals (2000 – 2013)

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Abstract

In this study, research on mathematics anxiety in selected journals published by the ULAKBIM Social Sciences Database between the years of 2000-2013 were analyzed with regard to various variables. Data was collected through document reviewing one of the qualitative research methods. The researches which used "mathematics anxiety" in their title searched and included to the study. The main purpose of the study is to illuminate most frequently used rating scales to measure mathematics anxiety, the frequency of the samples studied, the distribution of studies to the years and research methodologies. The investigation of the researches will set a light to researchers and educators.

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Keywords: Mathematics anxiety; rating scales; document reviewing.

1. Introduction

Mathematics is an important part of education in all over the world but also a discipline which makes anxiety in person at the same time. Circumferential, cognitive and personelity characteristics concerns related to mathematics anxiety are popular views for educational psychologists and mathematics educators over the years (Deniz & Uldas, 2008).It is thougt that mathematics anxiety plays a major role in students success or unsuccess at mathematics courses. When concern to mathematics interested in the course and success of the reduction is a condition likely to be observed (Yenilmez & Ozbey, 2006).

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Dreger and Aiken (1957) introduced mathematics anxiety as a new term to describe students' attitudinal difficulties with mathematics and defined it as the presence of a syndrome of emotional reactions to arithmetic and mathematics. More commonly used definition was made by Richardson and Suinn (1972). According to this definition math anxiety is a sense of tension and anxiety on the manipulation of numbers and solving mathematical problems. Mathematics anxiety is a condition that prevents participation and achievement in mathematics courses. So for success in mathematics, mathematics anxiety research is a subject to be studied.

Mathematics anxiety positively or negatively affects the mathematics achievement and takes an important place in the literature. A systematic analysis of the studies is crucial in order to be able to see the present situation and future trends generally in science and mathematics in particular. In this context, this study aims to analyze researches on mathematics anxiety in selected journals between 2000 and 2013. The analysis, addresses the following research questions:

1. What are the frequently used rating scales to measure mathematics anxiety between 2000 and 2013 from selected journals?
2. How is the frequency of the sampling type?
3. What are the research methodologies that have been used?
4. How is the frequency of research between 2000 and 2013 from these selected journals?

2. Method

In this study, research about mathematics anxiety in mathematics education between the years of 2000 and 2013 were analyzed in terms of their content with regard to various variables. For this purpose, research papers that are indexed by the ULAKBIM Social Sciences Database were collected.

Data was collected through document reviewing, one of qualitative research methods. Document reviewing includes examining written materials that bear information regarding the issue to be investigated (Yildirim & Simsek, 2005).

Researches that were included in this study were investigated with regard to different variables: Publication type, publication year, research methodology, sampling type and thesis's/dissertation's director's title. The collect of the researches indexed in the ULAKBIM Social Sciences Database was made through their abstracts. Because the database is active, list of studies fixed on 31.12.2013. The research articles, in the field of "Education and Teaching, included "Mathematics Anxiety" in their title take place in this study.

3. Results

The frequency of mathematics anxiety rating scales shows that mostly used scale is MARS with 9 studies. Other frequencies can be seen in Table 1.

Table 1. Frequency of mathematics anxiety rating scales

Rating scale	Frequency
Baloglu (2005)	2
Bindak (2005)	2
Fennema-Sherman (1976)	2
MARS (Richardson and Suinn, 1972)	9
MAQ (Wigfield and Meece, 1988)	2
RMARS (Alexander and Martray, 1989)	1
MANX (Erol, 1989)	1
MAS (Betz, 1978)	2
Total	21

Results about sampling type with respect to research methodology analyzed indicate that prospective teachers are

the sampling mostly preferred for the studies. As it is seen in Table 2 if university students considered with prospective teachers who are also at the same level, almost half of the studies has been carried out with university level students. Analysis of methodology shows that 33 studies have used quantitative research, 4 qualitative and 3 mixed.

Table 2. Frequency of sampling type with respect to methodology

Sampling type	Methodology			
	Quantitative	Qualitative	Mixed	Total
1-5 grade students	3	-	-	3
6-8 grade students	5	-	-	5
9-12 grade students	5	-	-	5
University students	6	-	1	7
Prospective teachers	10	-	2	12
Mixed	4	-	-	4
Other	-	4	-	4
Total	33	4	3	40

When looked number of studies according to the publication year, most of the studies on mathematics anxiety completed in the year of 2010 by 9, and 2013 follow up by 7 studies. As seen in Figure 1 the frequencies of studies in other years close to each other.

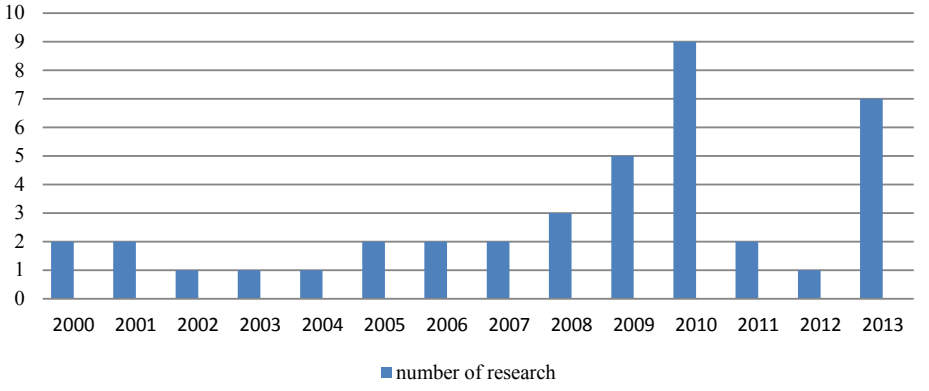


Figure 1. Number of research according to publication year.

After 2007 an overall increase in the number of publications is seen. Considering the place of math anxiety on math achievement the number of research seems less than expected. But the reason of this may be the selection of studies only including mathematics anxiety term in their title since this research focused on exclusively mathematics anxiety.

4. Conclusion

The present study examines the research articles between 2000-2013 ULAKBIM Social Sciences Database. The analysis shows that most of the studies about mathematics anxiety used quantitative research designs and less using mixed methods. Most of the researchers preferred the same rating scale MARS. The MARS is a 98-item, 5-point, Likert type instrument that assesses the levels of anxiety in situations involving numbers. Most of the other rating

scales are also adaptation of MARS. More mixed studies need to be done to determine the reasons of mathematics anxiety in depth. Nineteen of forty studies were conducted with university students. As Baloglu (2001) stated that although math anxiety started in grade school, most extensively stands out during university years. The review suggests that future studies should be done with 1-12 grade students and the number of studies should be increased, especially using qualitative methods.

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