A STUDY OF MATH ANXIETY AND MATH FLUENCY AMONG FCSHD STUDENTS

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Introduction

- Every students has their **own perception** about math, some of them have **anxiety facing number and mathematical questions** (Pourmoslemi, Erfani & Firoozfar, 2013).
- Students have **bad experience** and they face difficulty in Mathematics (Schaus, 2011 as cited in Chinn, 2009; Hembree, 1990).
- Organisation for Economic Co-operation and Development (2015) found that Malaysian student's achievement in the **Program for International Student Assessment (PISA)** and the Trends in International Mathematics and Science Study (TIMSS) was **ranked Malaysia at 52nd** out of **76 countries**
- The aim for this study is to determine the relationship between **math anxiety and math fluency among FCSHD students**.

Problem Statements

- Math anxiety is one of the most critical problems for many students.
- Math anxiety will be affect student's attitude toward math. Some of them have problem with fluency in math language. Therefore students does not have ability to do well in math.
- Students will be avoid courses or careers that involve math because of anxiety toward math.
- This study investigate the difference of math anxiety level and math fluency based on gender, courses and background of study, and to investigate the relationship between math anxiety and math fluency.

Objectives

- To determine the difference of math anxiety level and math fluency based on **gender.**
- To determine the difference of level math anxiety and math fluency based on **course/program.**
- To determine the difference of level math anxiety and math fluency based on **academic background**
- To investigate the **relationship** between **math anxiety** and **math fluency**.
- To investigate the **relationship** between **components of anxiety** (math evaluation anxiety and learning math anxiety) and **components of fluency** (syntax, algebra manipulation, arithmetic, graphical representations, properties, and terminology).

Literature Reviews

Theory of cognition

- Students phobia with math because they have negative experience before this when learn math in class (McLeod, 2014).
- Math anxiety can affect cognitive processing by looking at the working memory's activity (Ashcraft, 2002). We can measure the individual anxiety when students solve mathematical problems (Ashcraft, 2002).

The Present Study

- Math anxiety happens when students feel tensed, fear and uncomfortable in perform math task (Ashcraft, 2002).
- Students don't understand math language, they cannot perform well in math (Cates & Rhymer, 2003).
- Fluency in math language is the ability to solve mathematical task quickly and accurately without error (Cates & Rhymer, 2003).
- Math performance is the level of achievement in mathematics (Ashcraft & Krause, 2007). Math anxiety can affect the math performance. When the level of anxiety is high, the math performance will be low.

Methodology

RESEARCH DESIGN

Correlation research for investigate the relationship between math anxiety and their fluency in math language among FCSHD students.

PARTICIPANTS

***Population*:** Students from Faculty of Cognitive Sciences and Human Development

Sample: 270 participants from Cognitive Science, Human Resource Development and Counseling (2nd and 3rd Year)

***Sampling Technique*:** Random sampling

RESEARCH INSTRUMENT

Questionnaires

- **Background of Respondents**
- **Revised Mathematics Anxiety Rating Scale** (RMARS, Plake & Parker, 1982)-consists of Mathematics evaluation anxiety and learning mathematics anxiety
- **Fluency Questionnaire** (Schaus, 2011) - consists of fluency components (syntax, algebra manipulation, arithmetic, graphical representations, properties, and terminology

DATA COLLECTION

Procedures:

- Ask permission for voluntary to answer the questionnaires.
- Researcher briefs the participants
- 30 minute for answer the questionnaires

DATA ANALYSIS

Statistical Package for the Social Science in Windows Version 22 (SPSS).

Techniques of descriptive and inferential statistics.

Validity test: KMO value for math evaluation anxiety are 0.900 while learning math anxiety are 0.907.

Reliability test : Cronbach's Alpha for math evaluation anxiety are 0.902 while learning math anxiety are 0.907

Normality test: Math evaluation anxiety are – 0.627 and kurtosis value are 0.282. While skewness value for learning math anxiety 0.192 and Kurtosis value are -0.333.

Results & Discussion

RH	Test	Value	Discussion
H_{o1}	Independent T-Test	Total mathematics anxiety; t (268) = -0.808, p = 0.420, Math evaluation anxiety; t (268) = -1.521, p = 0.129, Learning math anxiety; t (268) =-0.03, p = 0.997.	There is **no a significant difference** between level **math anxiety** and **gender.**
H_{o2}	Independent T-Test	mathematics fluency; t (268) = -1.592, p = 0.113.	There is **no a significant difference** between **math fluency** and **gender.**
H_{o3}	One-way ANOVA	Math evaluation anxiety; [F(2,257)=4.367, p=0.014]	There is a **significant difference** between **math evaluation anxiety** and **courses/program of study** Post Hoc test: HRD and Counselling students (p=0.01)
H_{o4}	One-way ANOVA	Mathematics fluency; [F(2,257)=0.656, p=0.520]	There is **no a significant difference** between **math fluency** and **course/program of study**.
H_{o5}	One-way ANOVA	Total mathematics anxiety; [F(2,266)=16.422, p=0.00] Math evaluation anxiety; [F(2,266)=11.197, p=0.00] Learning math anxiety; [F(2,266)=14.977, p=0.00]	There is **significant difference** between **level math anxiety** and **academic background**. Post Hoc test for total mathematics anxiety: science & art (p=0.00) both(science and art) & art (p=0.006)
H_{o6}	One-way ANOVA	Mathematics fluency; [F(2,266)=28.921, p=0.00]	There is **significant difference** between **math fluency** and **academic background.** Post Hoc test for total mathematics fluency: science & art science (p=0.00) & both(science and art) (p=0.00)
H_{o7}	Pearson Correlation	r(268)=-0.297, p<0.00	There is **significant difference** between **math anxiety** and **math fluency**. There is a **negative relationship** between **math anxiety and math fluency.**

Conclusion

- There is a **significant difference** between **math evaluation anxiety** and **courses/program of study**
- There is a **significant difference** between **level math anxiety** and math fluency toward **academic background.**
- There is a **negative relationship** between **math anxiety** and **math fluency.**

References

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