A STUDY OF MATH ANXIETY AND MATH FLUENCY AMONG FCSHD STUDENTS

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Introduction
- Every student 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 (Schau, 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 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

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

Research Instrument
- Questionnaires
- Revised Mathematics Anxiety Rating Scale (RMARS, Flake & Parker, 1982)-consists of Mathematics evaluation anxiety and learning mathematics anxiety
- Fluency Questionnaire (Schau, 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 - 0.627 and kurtosis value are 0.282. While skewness value for learning math anxiety 0.192 and Kurtosis value are -0.333.

Data Collection

Results & Discussion

RH Test Value Discussion
Hₐ₁ 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.

Hₐ₂ Independent T-Test Mathematics fluency; t (268) = 0.592, p = 0.513. There is no a significant difference between math fluency and gender.

Hₐ₃ One-way ANOVA Mathematics 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 for HDR and Counselling students (p=0.01)

Hₐ₄ 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.

Hₐ₅ One-way ANOVA Total mathematics anxiety; F(2,266)=16.422, p=0.000. Math evaluation anxiety; F(2,266)=11.197, p=0.000. Learning math anxiety; F(2,266)=14.977, p=0.000. 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)

Hₐ₆ One-way ANOVA Mathematics fluency; F(2,266)=28.921, p=0.000. 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)

Hₐ₇ Pearson Correlation r(268)=0.297, p=0.000. There is a 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