The relationship among mathematics anxiety, parental support and peer support in undergraduate students

LEONG KA FAI
College of Education, University of Illinois at Urbana-Champaign
Department of Mathematics, Faculty of Science and Technology, University of Macau

INTRODUCTION
What is mathematics anxiety?
We encounter mathematics in our everyday life. Mathematics has already been one of the main subjects in primary and secondary school. However, there are certain people who are afraid of mathematics. Although speaking, mathematics anxiety means the fear of learning and doing mathematics. It is defined as "the feelings of tension and anxiety that interfere with the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and academic settings" (Richardson & Suinn, 1972). There is a strong relationship among mathematics anxiety, parents' and teacher's support and students' attitudes toward Mathematics, and low self-confidence.

The effect and causes of mathematics anxiety
Although the causation is still unknown, it is certain that highly mathematics anxious people tend to have low mathematics achievement (Ma, 1999); besides, in the 21st century, it is no doubt that science and technology, which strongly rely on Mathematics, given a critical role to our development. People with high mathematics anxiety, however, have tended to have low interest in enrolling mathematics-related courses (Mece, Wigfield, & Eccles, 1990) or pursuing scientific careers (Chipman, Krantz, & Silver, 1992). In order to solve the problem, it is necessary to found out the causes of mathematics anxiety; however, its causes vary. Study has shown that parents and teachers attitudes may have impact on students having mathematics anxiety (Gunderson, Ramirez, Levine, & Belloc, 2012); besides, school system and teaching techniques would cause mathematics anxiety as well. For instance, assigning the same work for everyone, insisting that there is only one correct way to complete a problem may cause mathematics anxiety to students (Oberlin, 1982).

Parents and peer
We all know that parents and peer are the significant influential group to our attitude formation, but what they differ is that parents tend to have strong impact on child and it fades when they grow up. Peer, however, have the strongest impact on adolescence and it remains when they are adult as well. Therefore, it is interesting to study how parents and peer support are related to mathematics anxiety.

AIM
Given the effect of mathematics anxiety and the role of parents and peer, therefore, this study aims to examine the relationship among mathematics anxiety, parental and peer support in undergraduate students. Researchers hopes to know how they are related and may have insight to mathematics anxiety.

METHOD
In the study, quantitative approach will be used. Students will need to complete the survey to access their level of mathematics anxiety, parental and peer support. Students will complete the survey in Google Form. They will first ask to complete the demographic information, then rates the level of math anxiety and parental and peer support.

The abbreviated math anxiety scale (AMAS)
The pioneering work of the construction of math anxiety scale, is from the 98-items rating scale (Richardson & Suinn, 1972). In this study, for the ease of administrative work, the abbreviated math anxiety scale, contains 9-items measure, will used to access the level of math anxiety since it provides strong consistency, reliability and validity to the original math anxiety scale (Hopko, Mahadevan, Barre, & Hunt, 2000).

Students will be asked to rate their feelings during different activities from the following statement.
1. Having to use the tables in the back of a math book.
2. Thinking about an upcoming math test 1 day before.
3. Watching a teacher work an algebraic equation on the blackboard.
4. Taking an examination in a math course.
5. Being given a homework assignment of many difficult problems that is due the next class meeting.
6. Listening to a lecture in math class.
7. Listening to another student explain a math formula.
8. Being given a "pop" quiz in math class.

Parental and peer support
Parental support will be measured to what extent the three aspects, financial resource, personal tutoring, and personal caring, helped them perform better in mathematics. And students will rate to what extent the peer support helped them perform better in mathematics as well. Besides, there are also 2 items about to what extent they needed the resource from their parents, to contribute the gap that they are lack of the resource, but also not sure how much the resource to help them perform better in mathematics.

RESULTS
In the study, 30 valid data were collected through the online google form. Students were asked to finish the survey via online. Correlation and Regression analysis among the variables were analyzed.

Correlations among predictors and mathematics anxiety
Pearson correlations were computed to examine the correlations of the predictors and target, and alpha level of .05 was used. In the correlation analysis, researcher found out that the lack of needed parental resources is moderately correlated to mathematics anxiety. Besides, the lack of needed parental and peer resources are strongly related to mathematics anxiety than parental and peer support, respectively. However, there is a weak and not significantly correlation among mathematics anxiety, parental and peer support.

Regressions predicting mathematics anxiety
Multiple regression analysis was used to examine the relationship between predictors and mathematics anxiety. The analysis showed that the lack of parental resources was the strongest predictors of mathematics anxiety, and the lack of peer resources was a strong predictor of mathematics anxiety as well, given that it is not significant at the alpha level .05.

CONCLUSIONS
From the interpretation of results, it is found out that the lack of parental support is moderately related and the strongest predictors to mathematics anxiety. The study suggests that college students, particularly Asian, who suffer from mathematics anxiety may need the support and resources from parents and peer. In the 21st centuries, mathematics is fundamental to everyone. The implication of this study is that university may promote programs to give sufficient resources from the peer, such as mathematics study group, senior volunteer service. From the parents’ perspective, they are suggested to give support, such as positive encouragement, hiring tutors to their children who are suffer from mathematics anxiety.

REFERENCE