

Statistics anxiety over a semester and decreases with experience

Kia Hong Chew^a and Denise Dillon^a

^aJames Cook Australia Institute of Higher Learning, 600 Upper Thomson Road, 574421,
Singapore

Abstract

The study explored the fluctuations of statistics anxiety over four time periods during a semester. Participants were 37 students enrolled in statistics modules. Results revealed significant reductions in anxiety for students who had completed at least one statistics course before. This underscores the need for control groups in future research.

Statistics anxiety over a semester and decreases with experience

Statistics anxiety (SA) refers to the feelings of anxiety experienced by individuals doing a statistics course (Cruise, Cash, & Bolton, 1985). SA has been conceptualized as consisting of six components: worth of statistics, interpretation anxiety, test and class anxiety, computation self-concept, fear of asking for help, and fear of statistics teachers (Cruise et al., 1985).

Despite the abundance of research on SA, little research has explored the fluctuations of SA over a semester. In addition, there is a lack of consistency with regards to the time period in which SA is being assessed. For example, Collins and Onwuegbuzie (2007) assessed SA on the first day of class while Onwuegbuzie (1999) assessed SA before the midterm examination of the course. Unfortunately, little is known about the preexisting level of SA at these different time periods.

The purpose of this study is to bridge these research gaps and to explore the fluctuations of SA. It is hypothesized that there will be a significant change in SA scores over four time periods of a semester.

Method

Participants were 37 students (65% females) enrolled in three statistics modules at the James Cook Australia Institute of Higher Learning, Singapore. The ages of the participants ranged from 18 to 50 years ($M=22.76$, $SD=6.65$). Participants were further divided into two groups: novices ($n=14$) and experienced ($n=23$). Participants in the experienced group had completed at least one statistics module before.

Participants were required to complete the Statistical Anxiety Rating Scale (STARS) (Cruise et al., 1985) at four different time periods: the first lecture (Time 1), before the midterm examinations/presentations (Time 2), after the midterm examinations/presentations

(Time 3), and the last lecture (Time 4). The STARS assesses the six components of SA and a high score on any subscale represents high anxiety on that component (Cruise et al., 1985).

Result

A series of one-way repeated measures ANOVA were conducted to compare the mean scores for each component of SA over the four time periods. No significant difference was found for the novices group.

Among the experienced group, a significant difference was found for worth of statistics [$F(3, 66)=3.47, p<.05$] with scores for Time 1 ($M=35.70, SD=13.78$) significantly higher than those for Time 4 ($M=31.09, SD=14.39$), computation self-concept [$F(3, 66)=2.98, p<.05$] with scores for Time 1 ($M=16.83, SD=6.95$) significant higher than those for Time 2 ($M=14.70, SD=6.96$), and fear of asking for help [$F(3, 66)=3.03, p<.05$] with scores for Time 1 ($M=8.61, SD=2.94$) significantly higher than those for Time 4 ($M=6.83, SD=2.64$).

Discussion

The results provided partial support for the hypothesis. Significant reductions in SA scores were found *only* for the experienced group. Nevertheless, it is noteworthy that this reduction occurred in the absence of any interventions. This underscores the need for a control group to serve as a baseline in research on SA intervention. Furthermore, instructors who plan to implement interventions in their statistics classes should also note that students experience different levels of SA at different time periods throughout a semester.

References

- Collins, K. M. T., & Onwuegbuzie, A. J. (2007). I cannot read my statistics textbook: The relationship between reading ability and statistics anxiety. *The Journal of Negro Education, 76*(2), 118-129.
- Cruise, R. J., Cash, R. W., & Bolton, D. L. (1985, August). *Development and validation of an instrument to measure statistical anxiety*. Paper presented at the annual meeting of the Statistical Education Section, Chicago, IL.
- Onwuegbuzie, A. J. (1999). Statistics anxiety among African American graduate students: An affective filter? *Journal of Black Psychology, 25*(2), 189-209.
doi:10.1177/0095798499025002004