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Gender differences in test anxiety and their impact on higher education students' academic achievement

María Isabel Núñez-Peña[a,b] *, Macarena Suárez-Pellicioni[c], Roser Bono[a,b]

[a]Department of Behavioral Sciences Methods, University of Barcelona, Spain
[b]Institute of Neurosciences, University of Barcelona, Spain
[c]Department of Communication Sciences and Disorders, University of Texas at Austin

Abstract

Test anxiety has detrimental effects on the academic performance of many university students. Moreover, female students usually report higher levels of test anxiety than do their male peers. The present study examined gender differences in test, trait, and math anxiety among university students, as well as differences in their academic achievement. Participants were 168 students from the University of Barcelona, all of whom completed measures of test anxiety, math anxiety, and trait anxiety. They were also asked about their expected level of anxiety when faced with four specific test situations: multiple-choice, open-question, oral presentation, and an exam involving calculations. At the end of the course in which they were enrolled, students were assessed through a multiple-choice and an open-question exam. Compared with their male counterparts, female students reported higher levels of test, math, and trait anxiety, as well as greater expected anxiety in three of the four test situations considered. However, females did not show lower academic achievement than male students in either the open-question or the multiple-choice exams. These results are discussed in terms of gender differences in socialization patterns and coping styles.

Keywords: Gender; Academic achievement; Higher education; Test anxiety; Trait anxiety; Math anxiety.

* Corresponding author. Tel.: +34-93-312-50-72; fax: +34-93-402-13-59.
 E-mail address: inunez@ub.edu

1. Introduction

Any attempt to understand students' academic development needs to consider the issue of test anxiety, which can be defined as a situation-specific trait characterized by the predisposition to react with elevated anxiety in a context where performance is assessed (Hodapp, Glanzmann, & Laux, 1995). According to Zeidner, test anxiety "is the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences of failure on an exam or similar evaluative situation" (Zeidner, 1998, p. 17). Students frequently report test anxiety and there is broad agreement in the empirical literature that it is associated with lower academic performance (Cassady & Johnson, 2002; Zeidner, 1998). The fact that this relationship has been observed even in large samples of undergraduate and graduate students (Kassim et al., 2008) highlights the serious problem that test anxiety constitutes for many college and university students.

Several explanations have been proposed to explain the relationship between test anxiety and academic achievement. Some authors suggest that test anxiety may consume cognitive resources (i.e., attention and working memory resources), thus preventing students from concentrating on the exam (Eysenck, 1992). More recent explanations (Linnenbrink, 2007) refer to the fact that anxiety may affect students' motivation and undermine their learning strategies (e.g., anxiety may reduce motivation to learn or impede the use of efficient learning strategies). Whatever the underlying cause, test anxiety may reduce students' academic achievement by interfering with their exam preparation, their performance while taking an exam, or both.

Some research on test anxiety has focused on gender differences, it being repeatedly found that female students experience higher levels of test anxiety than do males (Bandalos, Yates, & Thorndike-Christ, 1995). Less is known, however, about whether these differences between males' and females' reported levels of anxiety may impact on their academic achievement. Some years ago, the meta-analysis by Hembree (1988) revealed that the high level of test anxiety reported by females is not generally accompanied by lower performance scores. Since then, however, few studies have been conducted, especially as regards higher education students.

Given that test anxiety is a factor that may affect academic grades, and bearing in mind that female students usually report higher levels of test anxiety, this study had the following objectives: 1) To examine gender differences in trait, math, and test anxiety; 2) to study these differences in greater detail by analyzing male and female students' answers to each item of a test anxiety questionnaire, as well as their expected level of anxiety when faced with specific types of test situations (i.e., oral presentation, open-question exams, multiple-choice, or exams involving calculations); and 3) to explore gender differences in academic achievement by analyzing male and female students' grades in an open-question and a multiple-choice exam, as well as their number of hits, errors, and unanswered questions in the latter.

2. Methods

2.1. Participants

Participants were 168 psychology undergraduates from the University of Barcelona, all of whom were enrolled in a Research Designs course during the 2014-2015 academic year. The sample comprised 135 women (80.36%) with a mean age of 20.90 years (SD = 2.43, range = 19-30) and 33 men (19.64%) with a mean age of 21.20 years (SD = 2.78, range = 19-29).

2.2. Materials

Participants were administered the following scales and questionnaires:

- *Test Anxiety Questionnaire* (CAEX; Valero, 1999): This questionnaire (developed originally in Spain) measures test anxiety by describing 50 possible situations that might trigger test anxiety or physiological responses elicited by test-related situations. Respondents use a six-point Likert-type scale, ranging from 0 (Almost never) to 5 (Almost always), to indicate how often they experience each of the situations (frequency). For this study we selected 14 items from the full questionnaire, given that we were only interested in the cognitive aspects of test