

# Introductory research method (report)

Business



Approximately 80% of the students experience statistics anxiety (Onwuegbuzie & Wilson, 2003). This fact is the main reason why many students hesitate to enroll the statistics courses. Even after their enrollment most students with higher anxiety level delay completing their assignments for the longest possible time.

Thus, the purpose of this report is to state the results of the research made in evaluating the level of the Statistics Anxiety among different student groups. The participants of the research were 171 students enrolled in the course of statistics. The task of the research was also to study the prevalence of the Statistics Anxiety among the adult students, and to examine the relationship between academic procrastinations and six dimensions of the Statistics Anxiety (Baloglu & Zelhart, 2003). Onwuegbuzie, DaRos and Ryan (1997) declared that Statistics Anxiety is tenseness which is caused by encountering statistics in any form and at any level. Statistics Anxiety can be defined as situation-specific, which means its symptoms appear at a particular time and in a particular situation.

Specific situation is closely connected with learning or applying statistics in a formal setting (Zeidner, 1991). Many students experience high levels of Statistics Anxiety if the tasks set for them are connected with statistical ideas, problems or issues, instructional or evaluative situations (Walsh & Ugumba-Agwunobi, 2002). It is possible that Statistics Anxiety appears as a reaction to the complex range of emotional reactions which, when appearing in a mild form, might cause only a slight psychological discomfort. However, severe forms of Statistics Anxiety can result in rather negative outcomes, such as fear, nervousness, apprehension, worry and even panic

(Onwuegbuzie et al., 2000). The results of the research indicate that Statistics Anxiety is a multidimensional complex of psychological reactions.

Cruise et al. (1985) identified six components of Statistics Anxiety, which are: value of statistics, interpretation anxiety, test and class anxiety, computational self-concept, fear of asking for assistance and fear of statistics teachers. Statistic value can be defined as a student's perception of the relevance of statistics data. Interpretation anxiety is anxiety a student experiences when faced with making decisions based on the interpretation of the statistical data. Test and class anxiety can be associated with the anxiety a student experiences when taking an exam or a test, or assisting to a class. The computational self-concept involves anxiety caused by the attempts to solve mathematical problems, taking into account the student's opinion about his or her mathematical skills.

Fear of asking for assistance measures the anxiety experienced when asking other students or teachers to help a student who needs to understand the material covered in class or any other help which involves processing of statistical data. Fear of statistics teachers involves students' evaluation of their teachers of statistics. Statistics Anxiety is to be researched in the close connection to the mathematics self-concept, number of mathematics courses completed by a student, his academic majors and academic status, previous experience the student had with mathematics, the time that has passed since a student took his last mathematic course, mathematics ability, mathematics preparation, possibilities to use calculating devices, the style of learning, and the grade desired by this student (Bell, 2003; Brown, 2006; Vacha-Haase, Kogan & Thompson, 2000). Previous researches conducted in <https://assignbuster.com/introductory-research-method-report/>

this field revealed reverse dependence between Statistics Anxiety and the ability of students to accomplish statistics course successfully (Bodas & Ollendick, 2005; Lalonde & Gardner, 1993). Thus, the Statistics Anxiety has proved to be the best achievement predictor in the research methodology (Onwuegbuzie et al.

, 2000). A persistent interrelation between Statistics Anxiety and course achievement has been established. The research conducted by Onwuegbuzie (1998) showed that students with high level of Statistics Anxiety generally demonstrated lower level of the course performance in comparison with students who have low level of Statistics Anxiety. The conditions in which exams and tests are held (timed or untimed) also contribute to the level of Statistics Anxiety. The Statistics Anxiety primarily affects the ability of a student to understand completely the content of research articles, to analyze statistical data and to interpret them.

Delays in accomplishing academic assignments demonstrated by approximately 95% of college students can be defined as purposive and needless (Bodas & Ollendick, 2005). By means of the factor analysis, Embertson and Reise (2000) established that fear of failure and task aversiveness are the primary reasons for delay in accomplishing the tasks. The fear of failure involves items that can be related to the evaluation of anxiety and perfectionist standards and low self-confidence a particular student might have. According to Tremblay, Gardner and Heipel (2000), about 55% of all students enrolled in the statistics course would like to reduce time they spend on accomplishing tasks on statistics. However, the number of researches which have examined the prevalence of delays in

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accomplishing academic tasks among non-traditional (adult) students is limited. To examine this prevalence was the primary task of the present research.

Generally, the delays in accomplishing academic tasks include (but are not limited by) self-reported tendency to experience critical levels of Statistics Anxiety associated with such delays quite often. And since delays in accomplishing academic tasks proved to be related to the specific kinds of anxiety, such as test anxiety and social anxiety (Li, 2009), the hypothesis was made that delays in accomplishing academic tasks might be related to the Statistics Anxiety associated with the value of statistics, interpretation anxiety, anxiety experienced at classes and during testings, computational self-concept, fear of asking for assistance and fear of a teacher of statistics. Ferrari, Parker and Ware (1992, p. 496) stated that, “ understanding the conceptual “ make-up” of procrastinators from non-procrastinators on personality measures is needed”. Thus, the results of the present research might not only increase general understanding of the reasons for procrastination, but would enlarge understanding of the Statistics Anxiety as well.

This, in turn, might prove to be useful while developing the statistics teaching strategies which could significantly reduce the overall level of Statistics Anxiety among students. Method Participants Participants of the research were students enrolled in the statistics course. Both males and females (27% and 63% of the total participants number, respectively) took part in the research. At the same time, 82% of the participants were traditional students (aged under 24), and 18% – non-traditional students.

Their participation in the research was completely anonymous and voluntary. They gave their consent for their answers to be used for the present report.

The ages of the traditional students ranged from 17 to 24 years (median age of the group was 19 years); those of the non-traditional students ranged from 25 to 52 years (with median age of the group 38 years). The majority of students who took part in the research had previous mathematics experience. The T-test applied in the research revealed slightly higher levels of Statistics Anxiety among non-traditional (adult) students in comparison with traditional students. The overall characteristics of the students who took part in the research can be seen in the Table 1 below. Table 1.

**Participants of the research Design** The main task of the present research was to reveal differences in studying statistics between traditional (TS) and non-traditional students (NTS). The estimation of these differences was mainly based on examination of the Statistics Anxiety levels among TS and NTS. The research has been conducted without implementing any manipulations with independent variables. Thus, the design of the present research can be defined as non-experimental. As dependent variables can define data on the Statistics Anxiety level among TS and NTS. **Materials** The research was based on the results of the questionnaire processing.

The questionnaires were filled in by the students on the computers and contained 45 questions. Most of the questions suggested multiple choices. The research was based on examination of the Statistics Anxiety levels and attitude of the students to the studies of statistics. Each question was aimed at revealing these two aspects. All the questions with multiple choice

answers offered two options of positive estimation (“ Agree” and “ Strongly Agree”), one neutral (“ Neither Disagree nor Agree”), and two negative estimations (“ Disagree” and “ Strongly Disagree”).

**Procedure** The whole questionnaire was divided into several sub-sections. The first question was aimed at finding out what ideas students generally have about statistics. The next block of questions is concentrated on the student’s attitude to the statistics. The evaluation of the subject as a whole, self-estimation and estimation of the statistics teachers were also a subject to analyze. Students who participated in the research were given the task to self-estimate the levels of Statistics Anxiety experienced by them. **Results** The overall data on Statistics Anxiety, attitude to the learning statistics and computer self-efficacy among TS and NTS are presented in the table below (Table 2).

The participants were asked to express their agreement or disagreement with some statements concerning their Statistics Anxiety, value they would give to the learning statistics and their attitude to the teachers. The statements proposed were both positive and negative. The answers given by the participants were then summarized. Table 2. Statistics Anxiety, Attitude to the Learning Statistics, and Computer Self-Efficacy among TS and NTS The results of the independent t-test samples indicate higher level of Statistics Anxiety among NTS (M= 43.

50; SD= 11. 041) when compared to TS (M= 42. 73; SD= 10. 711). At the same time NTS generally show higher statistics values (M= 54.

13; SD= 9. 239) in comparison to TS (M= 49. 74; SD= 7. 044). The computer skills also proved to be better among TS (M= 81.

73; SD= 11. 430) than among NTS (M= 75. 93; SD= 17. 603). Discussion The purpose of the research was to examine the prevalence of delays in accomplishing tasks on statistics among adult students (NTS) which could be related to their attitude to the learning statistics, the level of computer self-efficacy and the ability to ask for assistance.

Also the present research was aimed at investigation of relationship between delays in task accomplishing and the levels of Statistics Anxiety. The idea to investigate the difference in the Statistics Anxiety levels between TS and NTS proved to be rather innovative. The findings of the research revealed that NTS face significantly more difficulties with learning statistics, though their evaluation of the importance of statistics is significantly higher than that of the TS. At the same time, the majority of students stated their willingness to reduce the delays in accomplishing academic tasks. Another aim of the research was to examine dependence between Statistics Anxiety and academic performance demonstrated by a student. It has been revealed that overall levels of the Statistics Anxiety decrease significantly over the course of semester while students generally become less anxious about learning statistics and more self-assured of their ability to learn.

Zanakis and Valenzi (1997) reported that students enrolled in a second statistics course reported decrease in Statistics Anxiety which was due to understanding statistics and seeking help. However, students enrolled in the second statistics course also reported the increasing lack of interest and



devaluation of the statistics worth perceived by them. The reported Statistics Anxiety levels also vary in dependence on the teaching styles different instructors use while teaching their subject. More research would be needed to determine the degree to which various aspects of Statistics Anxiety change over time. Because present research did not include a control group, it might be more important in the future to determine if changes in the Statistics Anxiety levels may be correlated with enrollment in a statistics course or the ability to cover the material.

Other variables, which could cause changes in the Statistics Anxiety levels, include students' previous experience with statistics, structure of the statistics course, teaching styles and career expectations of the students enrolled in the course. Several studies conducted reported negative relationship between Statistics Anxiety and overall course performance (Fitzgerald et al. 1996; Zanakis & Valenzi 1997; Zeidner 1991). Onwuegbuzie and Wilson (2003) stated a hypothesis that Statistics Anxiety may influence course performance by affecting the ability of students to receive, stay concentrated and train in using the terms, tasks and concepts presented in the class. However, certain grades of Statistics Anxiety might influence the overall performance positively if they contribute to the motivation for proper preparation. Scientific works have also investigated dependence between Statistics Anxiety and different inherent variables, including the achievement expected, perfectionism and tendency to delay the accomplishment of assignments (Baloglu & Zelhart 2003; Walsh & Ugumba-Agwunobi 2002).

It is also important to establish what role, if any, motivation for the achievement could play in the relationship between Statistics Anxiety and <https://assignbuster.com/introductory-research-method-report/>

course performance. The need for achievement has proved to be not duly related to the overall performance or levels of Statistics Anxiety. Taking into account the high overall levels of Statistics Anxiety among students, the research investigating relationship between anxiety levels and actual performance might be necessitated. Additional research aimed at optimization of the anxiety levels and minimizing the consequences of Statistics Anxiety, is also obviously warranted. The results of the present research generally mean that the uniform reduction of students' anxiety might be undesirable. Definite levels of Statistics Anxiety are quite acceptable.

Knowing that some anxiety might be acceptable and even more helpful would make students understand that anxiety itself is not purely negative and negative effects of the anxiety experienced by them can be reduced successfully. At the same time, Statistics Anxiety cannot be completely managed by students alone. Teachers may engage students in a variety of techniques which are meant to reduce Statistics Anxiety, such as using humor or providing short breaks during the class (Schlacht & Stuart, 1990). In general, teachers' availability for the students and motivation of the latter to ask them for help is in the greater part determined by six factors of the Statistics Anxiety described above. In cases when teachers communicate sympathy and understanding to their students, students are more likely to feel reciprocation of sympathy instead of fear. Bell (2003) writes that in suffering from anxiety part of the problem is that people in their predictions over-estimate the level of stress they expect to experience.

The task of a teacher, thus, is to recognize “ safety signals” communicated by a student in time and plan his or her class in a way that would allow avoiding an unpleasant experience. In case with NTS the primary task of an instructor might be to demonstrate the student his or her “ humanity” and understanding through such behavioral reactions as smiling, maintaining eye contact and being verbally expressive. These techniques may be perceived by students as “ safety signals” and be helpful in reducing fear of a statistics teacher and Statistics Anxiety in general.