

TEST ANXIETY RESEARCH: STUDENTS WITH VISION IMPAIRMENTS AND STUDENTS WITH MILD INTELLECTUAL DISABILITIES

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There is an absence of research on test anxiety in students with disabilities although such testing is taken for granted among students without disabilities. This study investigated the test anxiety of the students in each of the two disability groups, those with vision impairments and those with intellectual disabilities who are placed in specialist and mainstream educational settings in South Australia. The Spielberger's Test Anxiety questionnaire which measures two components, worry and emotionality and the total test anxiety was administered to 25 students with vision impairments and 20 students with intellectual disabilities. The findings indicated that among both groups of students, most had high scores in worry, emotionality and total test anxiety. However, students with vision impairments had slightly higher physically fearful symptoms (emotionality) in comparison to cognitive fears (worry) in a testing situation, while exactly the reverse was found for students with intellectual disabilities. The Welch two independent sample t-tests revealed that while there were no significant differences between female and male students with vision impairments, in the Total Test Anxiety, Worry and Emotionality components, the exactly opposite was found for students with intellectual disabilities. The female students with intellectual disabilities were found to be significantly higher than their male counterparts in the Total Test Anxiety, Worry and Emotionality.

Introduction

Asonibare and Olayonu (1997) and Okwilagwe (2001) posited that due to an increase in high stakes testing in recent times, students performed more poorly in academics than what they did in the past. This in turn has led students to experience a considerable amount of stress and anxiety before any examination or tests, resulting in high test anxiety in otherwise capable students (Putwain, 2008). According to Neudirth, Jabs and Schmidtke (2009), in the modern day complex living, test anxiety has been recognised as an increasing problem among students which in turn impede the academic performance in potential students. This problem of anxiety before examinations and low academic achievement is even greater for students with disabilities (Hancock, 2001). Studies have demonstrated that students with disabilities experience greater problems in testing situations than students without disabilities (Bryan, Sonnefeld, & Grabowski, 1983; Heiman & Precel, 2003; Kovach, Wilgosh, & Stewin, 1998; Swanson & Howell, 1996). According to Swanson (2005), students with disabilities are likely to have basic psychological and/or neuropsychological impairments that inhibit their ability to perform well in certain academic areas. Eniola (2007) further emphasised the greater occurrence of low achievement among students with vision impairments due to a number of negative factors prevalent for this cohort of students. Eniola (2007) established a link between higher anxiety levels and vision impairment and purported that this high level of anxiety influenced the academic performance of these students in a negative way. Rees, Tee, Marella, Fenwick, Dirani and Lamoureux (2010) also substantiated that people with vision impairments in Melbourne, Australia experienced high depression and anxiety. Cooray and Bakala (2005) too indicated that people with disabilities, especially intellectual disabilities experienced high anxiety due to an inability to manage and cope with one's condition. When research has established that there is a strong connection between higher anxiety and disabilities, the test anxiety research in students with disabilities is still in its embryonic stage.

This research is aimed to study the nature of and report the prevalence of test anxiety in students with vision impairments and those with intellectual disabilities placed in specialist and mainstream

educational settings in South Australia. It further provides insights into whether there are gender differences in test anxiety in the two disability cohorts under investigation. This study is not aimed to compare the findings in relation to these two groups of students. The two disability groups have their own unique and different characteristics and, therefore, at no stage comparison of the findings between these two disability groups- vision impairment and intellectual disability is undertaken. However, the questionnaire responses for the two disability groups are reported separately with a view to informing professionals and adding to the body of knowledge on these areas in relation to either students with vision impairments or students with intellectual disabilities. The main research questions that emerge from the aims of the study in relation to students with vision impairments and those with intellectual disabilities are as follows:

- What are the scores of test anxiety and its components for the female and male students with vision impairments and those with intellectual disabilities in South Australia?
- Are there any significant differences in the scores of test anxiety and its components for students with vision impairments and those with intellectual disabilities with respect to gender?

Method

The Spielberger's Test Anxiety Questionnaire developed by Spielberger et al., (1980) was administered to students in the two disability areas to determine the scores of test anxiety and its components. The Welch independent t-tests were also employed to find out whether there were any significant differences across gender for the two disability cohorts in the scores of test anxiety and its components. According to Creswell (2008), survey designs are procedures in which the researcher administers a survey or questionnaire to a small group of people (called the sample) to identify trends in attitudes, perceptions, behaviours or characteristics of a large group of people (called the population). In this procedure, survey researchers gather numbered data using questionnaires and statistically analyse the data to explain certain trends about responses to questions and to test research questions (Creswell, 2008). They also interpret the meaning of the data by linking the results of the statistical test back to past research studies (Creswell, 2008).

Instrument

The Test Anxiety Inventory (TAI), developed by Spielberger et al. (1980), is the most widely used validated questionnaire for measuring test anxiety and has been employed in the majority of more latest research studies of student test anxiety (Bradley, McCraty, Atkinson, Arguelles, Rees & Tomasino, 2007; Datta, 2013). The TAI provides a global measure of test anxiety as well as a separate measurement of two theoretically relevant components defined as 'worry' and 'emotionality' (Spielberger et al., 1980). Spielberger et al. (1980) as cited in Datta (2013) defined worry as the psychological or cognitive concerns and anxiety about the consequences of failure in a testing situation and emotionality as the physical and bodily reactions experienced by students in a testing situation.

Students used a four-point scale to report how frequently they experienced specific symptoms of anxiety in test situations. The four choices are: (1) almost never, (2) sometimes, (3) often, and (4) almost always. The scoring weights for items 2 through 20 are 1 through 4 and for item 1 it is reverse scored i.e. 4 through 1 (Spielberger et al., 1980 as cited in Datta, 2013). A pilot was conducted on students with vision impairments and those with intellectual disabilities in South Australia prior to the major data collection to test the appropriateness and robustness of the survey questionnaire. The Cronbach Alpha results for Test Anxiety Global was 0.92, for Test Anxiety Worry was 0.87 and for Test Anxiety Emotional was 0.90 respectively (Bradley et al., 2007).

Participants

In this study, adolescent and adult students from all levels of vision impairments were included. The visual acuity of the participants ranged from 6/18 or less (low vision) to 3/60 and less (blindness) and all types of vision impairments (whether it was congenital or adventitious) were included. This study also included adolescent and adult students with only mild intellectual disabilities. Adolescent and adult students with moderate, severe and profound intellectual disabilities were excluded as it would be difficult for them to comprehend the items in the questionnaire and answer independently. These participants were selected by the Purposive Sampling method which is defined as *the researchers intentionally selecting individuals and sites to learn or understand the central phenomenon* (Creswell, 2003, p. 204). These participants were selected from the mainstream and specialist schools and Technical and Further Education (TAFE) Institutes owned and operated by the Government of South Australia. The

schools and TAFE Institutes were contacted by the researcher via telephone or e-mail. A letter outlining the research along with the Ethics Committee's approval documents were sent to the Principal. The names and the contact details of the students were accessed through school and institute records with prior permission obtained from the Principal. Some of the adult students with vision impairments and those with intellectual disabilities were contacted via organisations that provided support to people with vision impairments and to people with intellectual disabilities. Names and addresses were forwarded by the organisations when permission for participation in the study was provided by the participant.

A total of 25 students with vision impairments and 20 students with mild intellectual disabilities completed the Spielberger's Test Anxiety questionnaire. These two student samples were matched in terms of the following characteristics:

- Age - age range between 15 -18 years for the adolescent students and between 19-25 years for the adult students;
- Education level - Year 9-Year 12 for the adolescent students and full time vocational courses for the adult students;

Administration

Each individual student was provided with the Spielberger's Test Anxiety questionnaire. The administration setting was comfortable, well lighted, ventilated and free from noise and other distractions as possible. The questionnaire was administered to students with vision impairments and those with intellectual disabilities on a one-on-one basis. This process enabled the researcher to ensure that students answered all the items in the questionnaire.

Upon completion, questionnaires were collected by the researcher to maintain student confidentiality. The Information Sheet and the Spielberger's Test Anxiety questionnaire for the students with low vision was on the enlarged print format and for some blind students it was in the Braille format. The majority of the adult students with vision impairments could sign their name on the Consent Form. If not they made a cross and a witness signed to verify their consent. The questionnaires on the enlarged print format were prepared by the researcher herself and the questionnaires on the Braille format were prepared at the Braille Unit in the school for students with vision impairments where prior contact had been established by the researcher. The Information Sheet and Consent Form for the adult students with mild intellectual disabilities were provided in simple language and the research project was explained to them by the researcher in the presence of a witness. For students in the two disability groups, the items on the Spielberger's Test Anxiety questionnaire was read aloud by the researcher wherever they needed it as administration was on a one-on-one basis. Participation by students was purely voluntary and confidentiality was strictly maintained. This study was approved by the relevant Ethics Committee as well.

Results

Test Anxiety includes the total test anxiety, worry and emotionality scores of the students with vision impairments and those with intellectual disabilities. Based on the Test Anxiety Inventory developed by Spielberger et al. (1980) and according to Datta (2013, para 12), 'the two sub-scales- worry and emotionality and total test anxiety raw scores have been converted into T-scores for the analysis and interpretation. Conversion from raw scores to T-scores for two of the sub-scales-worry and emotionality and the total test anxiety have been provided in the Test Anxiety Inventory on the basis of four distinct sample references namely college undergraduates, college freshmen, community college and high school (Spielberger et al., 1980). The conversion tables for high school and community college were selected for this study. The college undergraduates and college freshmen reference scores were discarded because the samples used in this study did not fall under these categories. The adolescent and adult students who participated in this study were most closely related with the high school and community college cohorts respectively in the Test Anxiety Inventory. All adolescent students who participated in this study belonged to high school and all adult students who participated in this study were attending Technical and Further Education (TAFE) institutes which closely matched adult or community colleges'.

The results are reported here more generally to establish a holistic picture across the components of test anxiety for female and male students with vision impairments and those with intellectual disabilities. The scores (high/ moderate/ low) on the total test anxiety, worry and emotionality components for female and male students with vision impairments are presented in Table 1 below:

Table 1. Frequency of T-Scores Across Test Anxiety Components for Female and Male Students with Vision Impairments (N=25)

Components of test anxiety	Female (N=13)			Male (N=12)			Total (N=25)		
	High	Moderate	Low	High	Moderate	Low	High	Moderate	Low
Worry	77%	15.4%	7.7%	83%	-	17%	80%	7.7%	12.3%
Emotionality	92%	-	8%	83.3%	-	16.7%	87.7%	-	12.3%
Total test anxiety *	69%	23%	8%	66.7%	16.7%	16.7%	67.9%	19.8%	12.3%

*Total test anxiety for each student is not just the arithmetic total of worry and emotionality scores but an addition of scores obtained in another 4 items 'raw to T' scores

Table 1 indicates the overall pattern of responses across the different components of test anxiety for students with vision impairments. In the case of the male students, the highest frequency of high scores was in the emotionality and worry components respectively. In case of the female students, the highest frequency of high scores was in the emotionality followed by worry components. This shows that overall, (male and female students combined) the majority of the students with vision impairments experienced physical reactions (emotionality) together with cognitive fears (worry) when faced with a testing situation; however, physically fearful symptoms were slightly higher in comparison to cognitive fears in students with vision impairments.

The scores (high/ moderate/ low) on the total test anxiety worry and emotionality components for female and male students with intellectual disabilities are depicted in Table 2 below:

Table 2. Frequency of T-Scores Across Test Anxiety Components for Female and Male Students with Intellectual Disabilities (N=20)

Components of test anxiety	Female (N=10)			Male (N=10)			Total (N=20)		
	High	Moderate	Low	High	Moderate	Low	High	Moderate	Low
Worry	90%	10%	-	80%	10%	10%	85%	10%	5%
Emotionality	90%	10%	-	70%	20%	10%	80%	15%	5%
Total test anxiety *	80%	20%	-	40%	60%	-	60%	40%	-

*Total test anxiety for each student is not just the arithmetic total of worry and emotionality scores but an addition of scores obtained in another 4 items 'raw to T' scores

Table 2 presents the overall pattern of responses across the different components of test anxiety for students with intellectual disabilities. In the case of the male students, the highest frequency of high scores was in the worry followed by the emotionality component respectively. In the case of the female students, the highest frequency of high scores was in the worry and emotionality components. These findings reveal that overall, (male and female students combined) the majority of the students with intellectual disabilities experienced cognitive fears (worry) together with physical reactions (emotionality) in a testing situation or before submitting any assignment; however cognitive fears were slightly higher than bodily symptoms for students with intellectual disabilities.

In the sections that follow, the Welch two independent sample t-tests for the students with vision impairments and those with intellectual disabilities on the two components and Total Test Anxiety from the Spielberger's Test Anxiety Inventory are conducted. Since it is an exploratory data analysis, only t-test and not any higher statistical analysis was conducted.

Table 3 indicates that there were no significant differences between female and male students with vision impairments in the Total Test Anxiety, Worry and Emotionality ($p>0.05$).

Table 4 indicates that there were significant differences between female and male students with intellectual disabilities in the Total Test Anxiety, Worry and Emotionality ($p<0.05$). In the two components of test anxiety and Total Test Anxiety, the female students with intellectual disabilities were found to be significantly higher than the male students with intellectual disabilities.

Table 3. Overview of Mean (M), Standard Deviation (SD), T-Value and P-Value of Test Anxiety Across its Two Components and Total Test Anxiety for Students with Vision Impairments with Respect to Gender

Test Anxiety Components	Mean (M) and Standard Deviation (SD)		t-value	p-value
	Female (N=13)	Male (N=12)		
Total Test Anxiety	M = 66.92 SD = 12.11	M = 59.67 SD = 15.17	1.31	0.20NS
Worry	M = 26.08 SD = 5.01	M = 23.58 SD = 5.88	1.14	0.27NS
Emotionality	M = 27.38 SD = 4.91	M = 24.5 SD = 6.39	1.26	0.22NS

NS = Not Significant

Table 4. Overview of Mean (M), Standard Deviation (SD), T-Value and P-Value of Test Anxiety Across its Two Components and Total Test Anxiety for Students with Intellectual Disabilities with Respect to Gender

Test Anxiety Components	Mean (M) and Standard Deviation (SD)		t-value	p-value
	Female (N=13)	Male (N=12)		
Total Test Anxiety	M = 72.3 SD = 10.61	M = 59.7 SD = 8.21	2.97	0.009*
Worry	M = 29 SD = 3.92	M = 23.5 SD = 3.72	3.22	0.005*
Emotionality	M = 29.3 SD = 4.14	M = 24.2 SD = 3.55	2.96	0.009*

*Significant at .05 level

Table 4 indicates that there were significant differences between female and male students with intellectual disabilities in the Total Test Anxiety, Worry and Emotionality ($p < 0.05$). In the two components of test anxiety and Total Test Anxiety, the female students with intellectual disabilities were found to be significantly higher than the male students with intellectual disabilities.

Discussion

This section discusses the key statistical findings that emerged from the questionnaire data in relation to test anxiety in students with vision impairments and those with intellectual disabilities in South Australia. These findings can make a unique contribution to the field of special education as there are no previous studies investigating the test anxiety specifically in these two cohorts of disability, vision impairment and intellectual disabilities.

The majority of the students with vision impairments had high scores in total test anxiety, worry and emotionality components of Spielberger's Test Anxiety questionnaire. This is indicative that these students were anxious, fearful and nervous with the manifestation of higher amounts of physical reactions and cognitive concerns in a testing situation. There were no significant differences between female and male students in total test anxiety and in each of the components of test anxiety.

For students with intellectual disabilities, the majority had high scores in the total test anxiety, worry and emotionality. This implies that these students experienced high cognitive distress and physical discomfort in a testing situation. There were significant differences between the female and male students with intellectual disabilities in the total test anxiety and in the two components of test anxiety namely worry and emotionality; the female students were found to be significantly higher than the male students. This implies that female students with intellectual disabilities were more tense, nervous, anxious and apprehensive before submitting an assignment or performing in an examination in comparison to male students with intellectual disabilities. Female students with intellectual disabilities had greater negative cognitive concerns and physical discomfort in an evaluative situation in comparison to male students with intellectual disabilities. Other research studies found non-disabled female students also experienced higher levels of test anxiety symptoms than non-disabled male students (Cassady & Johnson, 2002; Chapell et al., 2005; Rezazadeh & Tavakoli, 2009; Seipp & Schwarzer, 1996; Trifoni & Shahini, 2011; Wren & Benson, 2004). The present study confirms that students with intellectual disabilities were no exception to the gender specific patterns of behaviour established by students without intellectual disabilities in relation to test anxiety research.

Conclusion

Findings from the research indicate that students with vision impairments experienced greater physical reactions (emotionality) in comparison to cognitive fears (worry). The reverse was established for students with intellectual disabilities. Both cohorts experienced higher amounts of anxiety before and during a testing situation. Therefore, it can be implied that students with vision impairments and those with intellectual disabilities require additional aid and support from teachers, support staff and the school Counsellor before appearing for any examination or test. Professional development for teachers which focuses on deepening their understanding about the condition of any students' disability, and increased awareness of the nature of vision impairment and/ or intellectual disability and the educational implications of these disabilities must be a priority for teachers, families, students with vision impairments and those with intellectual disabilities, as well as other non-disabled peers and society in general.

The present research study investigated the test anxiety in students with vision impairments and those with intellectual disabilities in South Australia. However, students with other kinds of disabilities (e.g. students with hearing impairments, learning disabilities, physical impairments, autism and attention deficit hyperactive disorder) commonly found in the classrooms in Australia were not included in the research. Similar facets should be studied for students with other disabilities as well.

Limitations

This study was limited by the size of the sample that was selected for this study which was restricted by access to an already small population. The data were collected in a State in Australia, which provided few subjects. The sensitivity of the area and the unwillingness of some parents to participate in the study, further limited access to subjects. Because of the low numbers of students with vision impairments and those with intellectual disabilities available for the study, findings were interpreted with care. This study was limited to an investigation of only two groups of students: those with vision impairments and those with intellectual disabilities. However, for the future lines of investigation, the other types of impairments should be studied.

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