SELF-EFFICACY AND SELF-CONCEPT AS CORRELATES OF MATHEMATICS PHOBIA AMONG VISUALLY IMPAIRED STUDENTS OF SPECIAL SCHOOLS IN RIVERS STATE

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Abstract

The study investigated self-efficacy and self-concepts as correlates of mathematics phobia among visually impaired students of special schools in Rivers State. Two research questions were answered while two null hypotheses were tested at 0.05 alpha level. The study adopted a correlational research design. The population of the study comprised all the visually impaired students from the 4 special schools in Rivers State, Nigeria. The sample size of 60 visually impaired students in the 4 special schools were drawn through purposive sampling technique. Three self designed instruments were used for data collection. Face, content and construct validities were ensured. The reliability coefficients of of Self-efficacy Scale, Self-concept Scale and Mathematics Phobia Scale are 0.77, 0.71 and 0.74 respectively. Linear regression was used to answer the research questions while t-test was used to test the null hypotheses at 0.05 alpha level. It was found that psychological variable of self-concept, self-efficacy jointly are significant predictors of Mathematics phobia among visually impaired. Self-efficacy independently is a significant predictor of mathematics phobia of visually impaired while self-concept is not. It was recommended that guidance counsellors should be proactive and also bring it to the understanding of the visually impaired that they are not totally handicapped and as such posses the efficacy to excel in school especially in mathematics. The school administrator through critical perspective talk should be able to encourage the students to totally eradicate the negative perception of their look and develop a strong confidence in their ability to achieve the goals and objectives of the school.

Keyword: Visually impaired, Self-efficacy, Self-concept and Mathematics Phobia

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Introduction

Physically challenged students are those students who have one form of deformity or the other. These deformities could be in form of deaf, dumb, visual impairment, imbecile, moron, mongol, lame, epileptic, etc, whatever the deformity may be, they are special students and as such should be given special and accelerated attention. For the sake of this study, the physically challenged that was used is the visually impaired. These are people who lack the ability to make good use of their two eyes in carrying out a task. Visual impairment is described as a damage to person's eye(s) or visual system, which in turn affects the person's ability to see clearly (Ayoku, 2006).They are found in special schools where they are given special attention. Abosi and Ozoji (1985) have argued that it is through the visual sense that large proportion of

human information process takes place. Adema (1989) and Ozoji (2008) highlighted some of the related characteristics of visually impaired students to include:

- Rubbing of the eyes
- Excessive blinking
- Bumping into objects
- Reversal and confusion of letters
- Worried by bright light
- Holding books either close to or far from the eye
- Cupping or covering of one eye when reading
- Side view effect
- Squinting or frowning while reading or working on the chalk board
- Constant headache, dizziness and itching
- Red or watery eyes
- Swollen eyes
- Difficulty with distant vision
- Poor spacing while writing

Wikipedia the free Encyclopedia (2016) stated that self efficacy is the extent or strength of one's belief in one's own ability to complete tasks and reach goals. If the students do not have strong belief in the task before them, whether self imposed or school imposed, they succeed in achieving little or nothing from such responsibility. Self efficacy cuts across every area of human activity. Self-efficacy influences one's reasoning ability, studying ability, organizational ability, intellect ability social ability and leadership ability. In the mix of difficulties, it is the person's self-efficacy that will give him/her the courage to think and reason. Bandura cited in American Psychological Association (2016) submitted that self efficacy refers to an individuals' belief in his or her capacity to execute behaviours necessary to produce specific academic achievement. In the same vein, APA (2016) has it that self-efficacy represents ability to manifest control over one's own motivation, behaviour, and social environment. It is always cognitive self determinism in nature and in concept.

Self-efficacy in the area of cognitive operation is controlled by ones motivation. Self-efficacy is one of the most enabling psychological models that helps one to develop positive psychology. Self-efficacy gives one self confidence in accomplishing a task. Bandura (1997) identified four sources of self-efficacy as they are summary put: mastery experiences; vicarious experiences; verbal persuasion, emotional and physiological states. Bandura (1997) also noted that self-efficacy is a judgement of one's ability to organize and execute given types of performances.

The phobic situation in some students is a matter of self-concept. The idea of self is an important academic watch word which has to be known before one gains admission into any level of learning. If one does not understand the self composition, he/she may not be able to cope with the arduous academic activities that may likely take place in the school settings hence exposing such one to phobia. James (1992) stressed that self constitutes the sum total of what the individual considers herself/himself to possess including his body, traits, characteristics, abilities, aspirations, family, work, friends and other social affiliations. Whenever somebody is talking about traits, characteristics, abilities, aspirations, family, work, friends and other social affiliations the person is laying emphasis on self. The self has a big role to play in determining students' confidence in mathematics.

Where the students have not been able to build their confidence in mathematics, there is the applicability of phobia in the study of that subject. Machargo (1991) asserted that self is that part of one's personality of which one is aware. One's personality is mostly a constituent of one's self. Woolfolk (1998)

stressed that self-concept is the composite of ideas, feelings and attitudes people have about themselves. Self-concept of an individual is with regard to academic aptitude and academic achievement (Marsh & Martin, 2011). Fadiman and Frager (2002) opined that physical self-concept is a person's perception of their physical self, including their physical appearance, typically not involving an evaluative component. Skidmor (2003) submitted that a person's self-concept is developed early in life and affects his functions in the environment.

Uguma and Akpama (2005) reported that self-concept is a perceived opinion of oneself. The concept of yourself must be based on what you yourself are made of and not another person's make up. Cherry (2015) saw self-concept as the image that we have of ourselves. Self concept must be the image or picture we figure out of ourselves. Before now, every individual can tell more about what he likes and dislike, in that respect, that individual has been able to dictate what he is best conformable.

> *Self-concept is a collection of beliefs about one's own nature, unique qualities, and typical behaviour. Your self-concept is your mental picture of yourself. It is a collection of self-perceptions. For example, a self-concept might include such beliefs as I am easygoing' or 'I am pretty' or 'I am hardworking (Weiten, Dunn, & Hammer in Cherry, 2015, p:1)*

Weiten, Dunn and hammer were able to put it that self concept is the nature, unique qualities, typical behaviour, and mental picture of oneself. These assertions go on to represent the fact that, one cannot have a self concept without prior knowledge of his nature, unique qualities, typical behaviour and mental picture of himself. Yet another definition of self concept is the one given by Crisp and Tuner as cited in Cherry (2015: 1) when they opined that:

> *The individual self consists of attributes and personality traits that differentiate us from other individuals (for example, introverted). The relational self is defined by our relationships with significant others (for example, 'sister'). Finally, the collective self reflects our membership in social groups (for example, 'British')*

The authors summarized self concept as the collective self reflections of our membership in social groups. Our self concept at times helps us to find membership in social groups. Mcleod (2008) defined self concept as a general term used to refer to how someone thinks about, evaluates or perceives himself. Some people's self concept comes from the type of family they come from some are as a result of that of perception or ability to do or excel in some sort of responsibility. Baumeister (1999) saw self concept as the individual's believe about himself or herself including the persons attribute and who and what the person is. Some peoples self concept is high whenever it is all about football because they know what they will be able to do with their talent in that arena while some are very confident of themselves in the area of academic because of how well they are performing in that area. Hereford (2016) reported that self-concept is the understanding and knowledge you have of your own existence and how you see yourself in relation to others and to your surroundings. The knowledge of self concept enables you to make a distinction between yourself and every other person in giving period of time. Hereford (2016, 10) outlined what constitutes a healthy self-concept to include:

- The ability to know yourself; to be able to assess your strengths, weaknesses, talents and potentials.
- The ability to be honest with yourself and be true to who you are and what you value.
- The ability to take responsibility for your choices and actions.
- The ability to love and accept yourself as you are, knowing that you can improve and develop any aspect of yourself that you choose.

Hereford (2016, 1) noted that when you possess a healthy self-concept, nothing can rattle you, or take you off your stride. You are confident, poised, and assured because you know you are equipped to handle whatever comes your way. In view of the definition above, the author stressed that self concept will enable one to be confident, poised and dogged to pursue any task to a successful finish. The view of yourself must be unchanging and will be able to see you through no matter how onerous and arduous the task before you seem to appear. A healthy self concept is always likely to be accompanied and shown by hard work, commitment and positive attitude. Akinade (2008) reported that self concept is the organized consistent conceptual gestalt composed of perceptions of the characteristics of the "I" or "Me" to others and various aspects of life, together with the values attached to this perception and view individual have about themselves. Rogers (1992) explains that self concept refers to the extent to which self knowledge is clearly and confidently defined, internally consistent, and temporally stable.

Drew and Watkins (2006) posited that self-concept is a psychological construct which refers to a cluster of ideas and attitudes an individual holds about himself/herself. Mwamwawenda (2008) regards self-concept as a person's way of preserving himself/herself and may be either positive or negative. According to Hamachek (2008), self-concept refers to the set of perceptions or reference points that the subject has about himself; the set of characteristics, attributes, qualities and deficiencies, capacities and limits, values and relationships that the subject knows to be descriptive of himself and which he perceives an data concerning his identity.

Shavelson, Hubner and Stanton (2006) define self-concept on the perceptive that each one has about himself, formed from experiences and relationships with the environment, where significant people play an important role. Morgan and burns cited in Gabnet, Cheboswony, Kodero and Misigo (2009) stated that one's self-concept is an indication of how you feel about yourself, and a self-view is important in determining how you learn and behave. According to them, success or failure in school work or life appears to depend as much on how a person feels about the qualities and attributes he or she possesses as on these qualities themselves.

Eccles (2006) posited that self-concept is a general view about oneself across various sets of specific domains and perceptions based on self-knowledge and evaluation of values formed through experiences in relation to one's environment. Self-concept includes sets of characteristics, attributes, qualities and deficiencies, capacities and limits, or values and relationships that the subject knows to be descriptive of him/herself and which he/she perceives as data concerning his/her identity. A positive self-concept can lead to a fulfilling adulthood. Many different conditions can affect how students develop their self-concept. Marsh (2006) found that a student's self-concept is partially dependent on his or her surroundings. If the average ability of classmates is high, equally able students most likely will have a more negative academic self-concept. However, if the average ability in a given student's class is low, then he or she is more likely to have a positive academic self-concept.

Statement of the Problem

The fear of Mathematics as reported by scholars has made some students to have a mind shift from their dream course to non equivalent courses. In the Nigeria setting for example, mathematics is very important that everyone must have at least a credit pass for promotion into a new class in every examination. Failures in mathematics can bring about drop out from school and most disastrous increase in mathematics phobia. It is still uncertain whether there is a link between self-efficacy and self-concept on mathematics phobia among visually impaired students in special schools in Rivers State. It is against this background that this present study wants to find out whether self-efficacy and self-concept are predictors of mathematics phobia among visually impaired students in special schools in Rivers State, Nigeria.

Aim and Objectives

The study aimed at investigating the extent psychological variables of self-efficacy and self-concept can predict mathematics phobia among visually impaired students in special schools in Rivers state, Nigeria.

i. Ascertain the extent self-efficacy predicts mathematics phobia among visually impaired students in special schools in Rivers State.
ii. Establish the extent self-concept predicts mathematics phobia among visually impaired students in special schools in Rivers State.

Research Questions

The following research questions were answered in this study.

i. To what extent does self-efficacy predict mathematics phobia among visually impaired students in special schools in Rivers State?
ii. To what extent does self-concept predict mathematics phobia among visually impaired students in special schools in Rivers State?

Hypotheses

The following null hypothesis were tested at 0.05 alpha level of significance.

i. Self-efficacy does not significantly predict mathematics phobia among visually impaired students in special schools in Rivers State.
ii. Self-concept does not significantly predict mathematics phobia among visually impaired students in special schools in Rivers State.

Methods

The study adopted a correctional research design. The population of the study comprised all the 60 visually impaired students in the 4 special schools in Rivers State, Nigeria. The sample size of the study was all the 60 visually impaired students in the 4 special schools in Rivers State, Nigeria. The purposive sampling technique was used to arrive at the sample size. The purposive sampling technique was suitable because these students' possess the attribute of being blind and are fewer in number.

Three self designed instruments were used for data collection. These instruments are titled "Self-efficacy Scale" (SS)", "Self Concept Scale" (SCS), and Mathematics Phobia Scale" (MPS). These instruments were structured after the modified Likert four points rating scale of Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1). Face and content validities were ensured. Internal consistency was established using Cronbach Alpha.

The reliability coefficient of Self-efficacy Scale, Self-concept Scale and Mathematics Phobia Scale are 0.77, 0.71 and 0.74 respectively. Linear regression was used to answer the research questions while t-test was used to test the null hypotheses at 0.05 alpha level.

Results

Research Question One: To what extent does self-efficacy predict mathematics phobia among visually impaired students in special schools in Port Harcourt Rivers State?

Table 1a: linear regression on the extent self-efficacy predicts mathematics phobia among visually impaired students

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.397[a]	.157	.142	4.51920

Table 1a revealed that the regression coefficient is computed at .397 while the regression squared value was calculated to be .157. It was found that self-efficacy contributes 0.7% of mathematics phobia.

Hypothesis One: Self-efficacy does not significantly predict mathematics phobia among visually impaired students in special schools in Rivers State.

Table 1b: t-test associated with linear regression on the prediction of self-efficacy on mathematics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	53.839	4.708		11.436	.000
	Selfefficacy	-1.030	.319	-.397	-3.233	.002

Table 1b revealed that self-efficacy have a beta value, t-value and significant value of -.397, -3.233 and .002 which is significant at 0.05 alpha level of significance. Therefore the null hypothesis is rejected. By implication, self-efficacy significantly predicts mathematics phobia among visually impaired students in special schools in Rivers State in the negative direction.

Research Question Two: To what extent does self-concept predict mathematics phobia among visually impaired students in special schools in Port Harcourt Rivers State?

Table 2a: linear regression on the extent self-concept predicts mathematics phobia among visually impaired students

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.189[a]	.036	.019	4.83409

Table 2a revealed that the regression coefficient is computed at .189 while the regression squared value was calculated to be .036. It was found that self-concept contributes 3.6% of mathematics phobia.

Hypothesis Two: Self-concept does not significantly predict mathematics phobia among visually impaired students in special schools in Rivers State.

Table 2b: t-test associated with linear regression on the prediction of self-concept on mathematics

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	30.299	5.895		5.139	.000
	Selfconcept	.547	.379	.189	1.440	.155

Table 2b revealed that self-concept have a beta value, t-value and significant value of .379, 1.44 and .155 which is not significant at 0.05 alpha level of significance. Therefore the null hypothesis is accepted. By implication, self-concept significantly does not predict mathematics phobia among visually impaired students in special schools in Rivers State.

Discussion of Findings

Self-efficacy and Mathematics Phobia

It was found that self-efficacy predicts 3.6% of mathematics phobia. The study showed that self-concept significantly does not predict mathematics phobia among visually impaired students in special schools in Rivers State. John (2016) using Pearson Product Moment correlation statistics found a negative relationship between self-efficacy and mathematics anxiety. James (1992) found that there is a negative

high relationship between mathematics tensions and self-efficacy. To Tarter and Fennema (1995) the enhancement of students cognitive skills through perspective talk in line with their self-efficacy is a strong desensitizer of mathematics phobia among students. This shows that teachers' activities in the classroom that are commensurate with the conceived ability level of the students are factors of mathematics phobia nullification.

Self-concept and Mathematics

It was found that self-efficacy predicts15.7% of mathematics phobia. It was found self-efficacy significantly predicts mathematics phobia among visually impaired students in special schools in Rivers State in the negative direction. The result of this study showed that students perception of themselves bring about success or failure. The result is not surprising in that self-concept is highly required for students to be able to accomplish a given task. This result is empirically supported by John (2016) when he investigated the relationship between self-concept and mathematics phobia. He found a very high negative relationship between self-concept and mathematics phobia among students. Timmerman, John (2016) found a significant positive correlation between math self-concept and math achievement in all four math domains (measurement, relations, numbers, and scale), as well as automatized math skills. Timmerman, John (2016) reported that regression analyses indicated that math self-concept was the only variable that accounted for a significant unique proportion of variance in math scores. Nwoke and Charles (2016) reported that when students' self-concept is lowered through abusive words from the mathematics teachers and other derogatory statements from peers, they tend to develop academic and mathematics phobia.

Conclusion

Based on the findings, it was concluded that Psychological variable of self-concept, self-efficacy jointly are significant predictors of Mathematics phobia among visually impaired. Self-efficacy independently is a significant predictor of mathematics phobia of visually impaired while self-concept is not.

Recommendations

Based on the conclusion of this study, the following recommendations were made:

i. The guidance counsellors should be proactive and also bring it to the understanding of the visually impaired that they are not totally handicapped and as such posses the efficacy to excel in school especially in mathematics.
ii. The school administrator through critical perspective talk should be able to encourage the students to totally eradicate the negative perception of their look and develop a strong confidence in their ability to achieve the goals and objectives of the school.

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