Validation of a Self-Concept Scale for Individuals with Visual Impairment in Basic Schools in North Central Nigeria

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Abstract
The study focused on the validation of a Self-Concept Scale for Individuals with visual impairment in basic schools in North Central Nigeria. The study adopted an instrumentation and cross-sectional research design. The population for the study was comprised of 398 individuals with visual impairment in basic schools in North Central Nigeria. The instrument for data collection was the research's developed questionnaire titled "Self-Concept Scale for Individuals with Impairment". (SCSIVI). The instrument was validated by experts from the departments of English Language, Psychology, Research measured and evaluation and special needs education rehabilitation Kaiser-Meyer – Olkin's (KMO) measure of sampling adequacy and Barlett's test of sphericity was used to assess the suitability of data for factor analysis. Also, the principal component analysis (PCA) was conducted to confirm the appropriate number of factors to be extracted. Findings showed that the internal consistency reliability of SCSIVI was determined using Cronbach's Alpha. The coefficients of .876, .887 and .797 were obtained for physical self-concepts. Emotional self-concept and ideal self-concept respectively were concluded that the instrument SCSIVI was considered valid and it covers the relevant aspects of the construct being measured. The recommendation included among others to conduct longitudinal studies to examine changes in self-concept and identify potential predictors of self-concept development as it will provide valuable insight into the dynamic's nature of self-concept and its implications for the psychological well–being of individuals with visual impairment.

INTRODUCTION

Basic education, as defined by the International Standard Classification of Education (ISCED) standard, in UNESCO (2023) consists of primary education, which is the initial phase of basic education, and lower secondary school, which is the subsequent phase. This category encompasses a broad range of informal and non-formal activities, both public and private, that aim to address the fundamental learning requirements of individuals across all age groups. Furthermore, the UBE Act of 2004 outlines basic education to encompass early childhood care and developmental education, nine years of structured schooling (comprising six years of

primary education and three years of junior secondary schooling), adult literacy and informal education, skill development initiatives, and educational initiatives targeted at specific demographics such as nomadic and migrant populations, girls and women, almajirai, street children, and children with disabilities.

Impairment, also termed as dysfunction, damage, loss, breakage, destruction, deviation, malfunction, and malformation, represents a biological state indicating anatomic and physiologic deficiency or dysfunction in an individual (Ozoji, 2023). Visual impairment encompasses any form of visual decline, whether complete blindness or partial vision loss. The World Health Organization (WHO, Z022) defines vision impairment as an individual whose visual acuity cannot be rectified to a standard level. This characterization aligns closely with the description provided by the Individuals with Disabilities Education Act (IDEA, 2018), which identifies visual impairment as encompassing blindness as a vision impairment that, despite correction, hampers a child's educational performance, covering both partial sight and complete blindness. Swenor and Ehrlich (2021) examine visual impairment as a reduction in the eye's capacity to discern shapes and object details at a specified distance, delineating various severity-based categories such as low vision (visual acuity with optimal correction of 0.3), low vision (visual acuity with optimal correction of 0.1), blindness (visual acuity with optimal correction of 0.05), and blindness (visual acuity with optimal correction of 0.02).

Visual impairment refers to the restriction of actions and functions within the visual system. These limitations within the system do not imply that individuals with visual impairment lack value or importance in comparison to those with sight. Various factors can lead to visual impairment, manifesting in a range of disabilities including common issues like near-sightedness and far-sightedness, as well as more intricate conditions such as congenital cataracts and strabismus. Although the causes may differ, IDEA (2018) identifies certain indicators that may suggest an individual is experiencing visual impairment. These signs Cxole encompass irregular eye movements for example, eyes not moving in unison or appearing unfocused), peculiar habits (like covering one eye or frequently rubbing the eye), sitting unusually close to the television, or holding reading material close to the face. Such conditions have the potential to impact an individual's self-perception concerning their ability to lead a typical life within society.

Another parameter of interest is Self-Concept. Frager and Fadima elucidate that the self constitutes the paramount personality archetype and is also the most intricate to fathom. They denote it as the central archetype, denoting it as "the archetype of psychological order and the totality of personality." Thus, the self represents the amalgamation of the conscious and unconscious aspects that encompass the equilibrium and symmetry of the diverse conflicting elements of the psyche. It is a progression that commences in early childhood as individuals grapple with a myriad of encounters, duties, and scenarios. Nevertheless, this progression and maturation do not conclude in childhood but persist in evolving throughout life as individuals amass new competencies, encounters, and insights.

Self-concept has an important implication for positive existence and has a significant variable for achievement and positive development in the life of individuals with visual impairment and society in every sphere irrespective of being sighted or visually impaired. However, there is little study on the validation of self-concept scale for individuals with visual impairment particularly

in Basic schools in North Central Nigeria.

STATEMENT OF THE PROBLEM

Available statistics indicate that individuals experiencing visual impairment encounter challenges when participating in society in comparison to those who have their sight intact. This has led to a significant number of visually impaired individuals either leaving school prematurely, commencing their education at a later stage, or resorting to street begging due to their inability to independently care for themselves. Various factors have been identified as contributing to this behaviour by the sighted population, including self-efficacy, societal attitudes, teacher perceptions, parental sentiments, and parental motivation, among others. Numerous interventions have been implemented to tackle the obstacles faced by individuals with visual impairments, such as offering scholarships for their education, establishing specialized schools catering to their needs, training teachers interested in educating visually impaired students, providing resources like Braille materials for effective instruction, and creating supportive learning environments tailored to the needs of visually impaired individuals. The repercussions of failing to provide an accommodating learning environment and appropriate resources for effective education of visually impaired individuals are profound, as it hinders their educational advancement and ability to function competently in society like their sighted counterparts.

Consequently, there is a pressing need to develop a self-concept scale that can be utilized by both educators and students to enhance the self-perception of individuals with visual impairment, underscoring the importance of conducting a study on the creation and validation of such a scale specifically for individuals with visual impairments in basic educational institutions in north-central Nigeria. The researcher is not cognizant of any ongoing endeavours aimed at addressing the issue of self-concept among individuals with visual impairments through the formulation and validation of a scale, emphasizing the necessity of this study to bridge the existing gap in knowledge. The primary inquiry guiding this research is: "What are the psychometric properties of the self-concept scale that has been developed and validated for individuals with visual impairments?"

AIM AND OBJECTIVES OF THE STUDY

The study aims to develop and validate a self-concept scale for individuals with visual impairment in Basic Schools in North Central Nigeria. This study's objectives include to:
1. establish the content validity of SCSIVI for individuals with visual impairment.
2. estimate the reliability of the subscales of the SCSIVI.
3. find out the extent to which the subscales of the SCSIVI inter-correlate.

RESEARCH QUESTIONS

The following research questions were raised to guide the study:
1. What is the content validity of SCSIVI for individuals with visual impairment?
2. What is the reliability of the subscales of the SCSIVI?
3. To what extent do the subscales of the SCSIVI inter-correlate?

EMPIRICAL REVIEW

Ordaz-Villegas, Act-Tomasini, and Reyes (2014) carried out a study on the development of an academic self-concept for adolescents in Mexico. The purpose of the study was to construct and validate an academic self-concept scale with global dimensions, focused on teenage students. For

the development of the instrument, previously established categories were used in the literature as follows: general intellectual abilities, specific intellectual abilities, motivation, and creativity. Subsequently, using some open questions in the exploratory phase, one of the priori categories was ruled out and a new one emerged. Motivation was ruled out and perfectionism emerged; that is, the pilot instrument categories changed to the following: general intellectual abilities, specific intellectual abilities, creativity and perfectionism. In its first stage, an open questions survey was designed to be applied with the intent of knowing the academic activities inside and outside) the school. Afterwards, a closed-question survey was applied to a sample consisting of 347 students ranging from 14 to 18 years old from a public high school, east of Mexico City. After obtaining the internal consistency and item differentiation, a factorial analysis with orthogonal rotation was developed. The results grouped 16 items into 4 factors: self-regulating, general intellectual abilities, motivation and creativity. The scale shows 44.72% of a varying with a global Cronbach Alpha of .828. The study was on the academic achievement of sighted individuals only and not meeting the needs of individuals with visual impairment; again, this is a gap the present study intends to fill.

Afgani, (2018) conducted a study on the development of a self-concept instrument for pre-service mathematics teachers in Indonesia. The study aimed to develop a self-concept instrument for undergraduate students in mathematics education in Palembang, Indonesia. The type of this study was development research of non-test instruments in questionnaire form. A construct validity test of the instrument was performed using factor analysis, while the reliability test used Cronbach's Alpha. The instrument was tested by 65 undergraduate students of mathematics education at one of the Universities of Palembang, Indonesia. The instrument consisted of 43 items with 7 aspects of self-concept, which were: the individual concern, social identity, individual personality, view of the future, the influence of others who become role models, the influence of the environment inside or outside the classroom, and view of the mathematics. The result of the validity test showed there was one invalid item because the value of Pearson's v was 0.107 less than the critical value (0.244; a = 0.05). The item was included in the social identity aspect. After the invalid item was removed, the construct validity test with factor analysis generated only one factor. The Kaiser-Meyer-Olkin (KMO), coefficient was 0.845S and the reliability coefficient was 0.91. From the result, it was concluded that the self-concept instrument for undergraduate students of mathematics education in Palembang, Indonesia was valid and reliable with 42 items. However, there was a failure in meeting the needs of the individuals with visual impairment in the study.

Kirankumar, Rajesh, and Sathian (2016) carried out a study on the self-concept of students with visual impairment in rehabilitation to the socioeconomic status of the family. A descriptive survey was used for fact findings with adequate interpretation it clearly stated the characteristics of a particular situation or group or individuals. In the study, the investigators selected a random sampling procedure for the selection of a sample of students with visual impairments. The results revealed that the self-concept of children with visual impairment is at an average level. As per demographic comparison, gender is a significant factor in the development of the self-concept of visually impaired students and other factors like religion, locality, monthly income of father's and mother's occupation, age and number of siblings are not significant factors. The study was

carried out on the self-concept of students with visual impairment in rehabilitation to the socio-economic status of the family. The study failed to specify how to measure the self-concept of individuals with visual impairment. This is a gap that the present study.

Kolawole (2015) conducted a study in North Eastern Nigeria on the self-concept of senior secondary school students. The study developed and validated a scale for measuring the self-concept and attitude of senior school students in Nigeria. The scale was a self-descriptive or self-report type of scale which was developed to measure students' self-concept and attitude towards mathematics. The construction of the scale was done considering the generally accepted principles and procedures for scale development. At the initial stage of the development, a pool of three hundred (300) items was generated and after sorting them out and subjecting them to experts' judgment sixty (60) items emerged. The items were then administered to the sample students from the population. The students' response scores were then subjected to item-total correlation analysis, Kaiser-Meyer-Olkin (KMO), measure sampling adequacy and Barlett's test for cohesion of items. The items were also subjected to item total analysis. At the end of all these processes, forty-five (45) items finally emerged for the scale. The population of the study comprised all the public and private secondary school students in North Eastern Nigeria. Samples of nine hundred and sixty (960) students were obtained from thirty-two (32) secondary schools from four (4) of the (6) six states in the study area. Using a multistage sampling technique, factor analysis confirmed the validity of the scale which included the content and construct validity. The reliability of the scale was determined using Cronbach- alpha with a high coefficient of 0.937. The instruction used for the study was the developed and validated scale titled "Mathematics self-concept and attitude scale, (MSCAS)" designed in Likert type. The student's response scores were analyzed and the hypotheses were tested with a 0.05 level of significance. The result of the findings indicated that the instrument has psychometric properties: it is reliable, workable and is neither gender nor location-biased. It was therefore recommended that the instrument be used for secondary school students' mathematics self-concept and attitude in Nigeria. Though the study developed and validated a self-concept instrument to measure the self-concept attitudes of senior secondary school students in North Eastern Nigeria, the scale was for sighted individuals and not for individuals with visual impairment in basic schools. This is a gap the present study wants to fill.

Zakaria, (2017) researched the effect of inclusive education on the self-concept of students with special educational needs (SEN), in India. The researcher reported that inclusive education is platforms that provide opportunities for students with SEN to learn in a regular classroom with normal students. However, there are many challenges faced by students with SEN who learn in an inclusive setting, such as negative perception from the mainstream teachers and peers, being bullied and excluded by peers, facing academic issues because of following the regular curriculum like normal students and lacking support from parents. The problem that occurred has affected the self-concept of students with SEN. Therefore, a study was conducted to explore the impact of inclusive education towards the self-concept of students with SEN in terms of identifying the level of self-concept; exploring the differences of self-concept levels based on gender; and studying the relationship between the levels of self-concept with the period of learning in an inclusive setting. The respondents consisted of 52 students with SEN, aged

between 8 to 15 years old who learn in an inclusive setting from 10 schools in the district of Hulu Langat, Selangor. The study was conducted using a set of questionnaires that contained 80 items of the Piers-Harris children's self-concept scale that respondents had to answer. The findings showed that the level of self-concept among students with SEN is moderate. The study also found that the strongest self-concept domain among the students with SEN is happiness and satisfaction (HAP), and the weakest self-concept domain is popularity (POP). In addition, the results showed that there is no significant difference in the levels of self-concept based on gender and there is no significant relationship between the levels of self-concept with learning periods in inclusive education. The study was on the effect of inclusive education on the self-concept of students with special educational needs. This study failed to measure the self-concept of individuals with visual impairment. This is a gap the present study wishes to fill.

Datta and Talukda (2016) examined the impact of vision impairment on students self-concept. The study investigated the self-concept of students with vision who were placed in specialist and mainstream educational settings in South Australia. Self-concept was explored across six dimensions, namely physical, moral, personal, family, social and academic self-concept and the total self-concept. The Tennesse's Self-Concept Scale, second edition" was administered to 25 students aged between 15 and 25 years and they were included from all levels of vision impairment. The visual acuity of the participants ranged from 6/18 or less (low vision) to 3/60 and less (blindness). The majority of 10the students with vision impairment obtained low scores on all dimensions of self-concepts, namely physical, moral, personal, family and academic self-concepts. There were no significant differences between female and male students with vision impairment across the dimensions of self-concept and thus total self-concept. These findings have implications for teachers, special educators, policy-makers and a range of professionals in the education and special education sector in enabling a greater understanding of the self-concept accomplishment of students with vision impairment. However, this study has limited scope for generalization of the study's conclusion due to the study's small population sample size. The present research intends to fill this gap.

The research by Ahmed and Zadeh (2014) focused on gender discrimination in the psychological adjustment of adolescents with disabilities growing up in Pakistan. In light of the literature review, it was assumed that disabled male adolescents would show greater levels of psychological adjustment as compared to disabled female adolescents. The sample population consisted of a total of 100% of disabled adolescents experiencing visual auditory or physical disabilities. The hypothesis was strongly supported by the results (t (98) =2.276, p < .05 (.012) as disabled male adolescents were found to rank higher on levels of psychological adjustment as compared to disabled female adolescents. Gender discrimination hence emerges as a significant issue for disabled adolescents. The research carries implications for clinicians and educationists alike, as well as policymakers, especially about the development of male and female adolescents in the existing cultural Milieu in Pakistan. The researchers conducted a study of gender discrimination on students' self-concept using TSCS on disabled but were not specific on individuals with visual impairment. This present study wants to fill the gap.

Igbo, Onu and Obiyo (2015, researched to investigate the influence of gender stereotypes as a predictor of secondary school students' self-concept and academic achievement in Udi Hills. The

study was guided by four (4) purposes, four (4) research questions and four (4) hypotheses. The study adopted an ex post facto design. The research sample was drawn from eight (8) government/public senior secondary schools in the Udi education zone. Nine (9) schools were randomly selected from two hundred and twenty- seven (227) schools. A total of three hundred and forty-two (342) senior secondary 2 school (SS2) students made up the sample of the study. A twenty (20) item questionnaire was developed for the study: a stereotype self-concept questionnaire (SQ) was adopted from Marsh's self- Descriptive Questionnaire 2 (SDQ2), and a ten (10) item Students' Mathematics Achievement Test (SMAT) was developed by the researchers after reviewing the related literature. This was done with the help of experts in the area. The instruments were face and content validated and used for the collection of data. In analyzing the data, mean and standard deviation were used in answering the research questions while a t-test was used in testing the four (4) hypotheses. The findings of the study indicate that gender stereotype has a significant influence on students' self-concept and academic achievement in favour of male students. On the other hand, school location has a significant influence on the academic achievement of the students but has no significant influence on students' self-concept. The research was conducted to investigate the influence of gender stereotypes as a predictor of secondary school students' self-concept and academic achievement of sighted individuals and not measure the self-concept of individuals with visual impairment. This is a gap this present study wants to fill. Most of the study on the self-concept of individuals with visual impairment is restricted to academics and the classroom environment. There is little on the physiological and other needs such as leadership needs of the individual with visual needs. Again, most of the studies carried out either used the TSCS or the Rosenberg self-esteem scale which were developed for use for sighted individuals. The crux of this study is to develop and validate a scale that will be used for individuals with visual impairment, taking into consideration age, age of onset, and gender.

METHODOLOGY
The research design for this study was an instrumentation and cross-sectional survey. The choice of Instrumentation design is based on the fact that it was used in creating a self-concept scale for individuals with visual impairment in basic schools in north-central Nigeria. The population comprised all individuals with visual impairment in basic schools for visually impaired children in North Central Nigeria. The number of students with visual impairment is 398. The sample for the study was made up of all the 398 individuals with visual impairment in all the 13 special schools in North Central Nigeria. There are two reasons advanced for this decision. First, it's the fact that the study is a survey research design and requires a large number of individuals with visual impairment. Secondly, the population of visually impaired individuals is low and large data was required because the larger the data, the more reliable the result.
Since there are few schools of individuals with visual impairments in the study area, all the schools in the area were used as samples and all the individuals with visual impairments in the study area, were used as samples. This is because the number of individuals with visual impairments is not many; there was no need for sampling. One instrument named the Self Concept Scale for Individuals with Visual Impairment (SCSIVI) was developed for data

collection. The scale developed was called the Self Concept Scale for Individuals with Visual Impairment (SCSIVI). The instrument was divided into two sections A and B. Section A consisted of the biodata of the respondents such as school and gender while section B consisted of fifty items that measured the self-concept of individuals with visual impairments. The instrument was on a five-point scale of Always False, (AF), Mostly False, (MF), and Partly classification of the respondents into high/low self-concept individuals. This was achieved through the mean and standard deviation (SD) calculation. Respondents that show a mean of +1 and above mean that the individuals have a high/positive self-concept, while respondents with a mean of -1 and below mean a low/negative self-concept.

RESULTS

Research Question One

What is the content validity of SCSIVI for individuals with visual impairment?

The content validity of SCSIVI was established through experts' judgments in the areas of English Language, Psychology, Research, Measurement and Evaluation, and Special Education and Rehabilitation Science was sought using the experts' validation form from the Faculty of Education, University of Jos, Plateau State. The experts judged the relevance, clarity, simplicity and ambiguity of the SCSIVI items. Also, Kendall's Coefficient of 0.74 was obtained, which showed a strong agreement among experts on the validity of SCSIVI items in measuring the self-concept of Individuals with Visual Impairment (SCSIVI).

Research Question Two

What is the reliability of the subscales of the SCSIVI?

The reliability of the SCSIVI was determined using the test re-test method of stability. The coefficients of .876, .887 and .797 were obtained for Physical Self-Concept, Emotional Self-Concept- Concept and Ideal Self-Concept respectively. A general Coefficient of 0.85 was obtained, this is judged to be high and adequate (Ugodulunwa, 2020). The estimate further shows that the items in the SCSIVI were homogeneous and reliable.

Research Question Three

To what extent do the subscales of the SCSIVI inter-correlate?

TABLE 3: Inter-correlation among subscales of the SCSIVI scale

Subscales		Physical Self-Concept	Emotional Self-Concept	Ideal Self-Concept
Physical Concept	Self-	1		
Emotional Concept	Self-	-.160	1	
Ideal Concept	Self-	.364	.045	1

Table 3 shows the inter-correlation matrix of the subscales of the SCSIVI. The inter-correlation Coefficients between subscales range from -.160 to 0.364, the table shows a negative

and weak correlation between Physical Self-Concept and Emotional Self-Concept, (- 160), a positive but weak correlation between Physical Self-Concept and Ideal Self-Concept scales. The weak correlation may likely be because the items in the subscale are coming outside the three domains of the study and may be measuring a different domain not included in the study.

DISCUSSION OF FINDINGS

The content validity of the scale was established by subjecting the SCSIVI to the scrutiny of 4 experts in the following fields: one expert each in special needs education (VH), psychology, research, measurement and evaluation and English language to determine the extent to which the items of the SCSIVI covered the relevant aspects of the scale being developed. After the scrutiny of the experts, Kendall's coefficient of concordance was used to judge the agreement among the experts, Kendall's coefficient value of 0.74 was obtained, which showed that the agreement between experts in their judgment was strong, therefore, the instrument is considered valid.

The internal consistency/reliability of the SCSIVI was determined using Cronbach's Alpha method. The coefficients of .876, .887 and .797 were obtained for Physical Self-Concept, Emotional Self-Concept and Ideal Self-Concept respectively. A general Coefficient of 0.85 was obtained, this is judged to be high and adequate (Ugodulunwa, 2020). The estimate further shows that the items in the SCSIVI were homogeneous and reliable. The findings are similar to those of Kolawole and Kojigili (2015) and Afgani, (2018) who estimated the reliability of a self-concept scale using Cronbach-alpha and obtained high coefficients of 0.937 and .0.91 respectively

The findings on the intercorrelation between the subscales of the SCSIVI revealed that the inter-correlation Coefficients between subscales range from 0.08 to 0.815, the table shows a positive and weak correlation between Physical Self-Concept and Emotional Self-Concept, (.08), a positive but weak correlation between emotional and Ideal Self-Concept scales (.160). The weak correlation may likely be because the items in the subscale are coming outside the three domains of the study and may be measuring a different domain not included in the study. There is a positive strong correlation between Physical Self-Concept and Ideal Self-Concept scales. The strong correlation may likely be because the items in the subscale are coming within the two domains of the study and may be measuring the domain included in the study.

CONCLUSION

The content validity of the SCSIVI scale was established through expert scrutiny, which included experts from various relevant fields. The high Kendall coefficient of concordance (0.74) indicates strong agreement among the experts regarding the relevance of the scale items. Therefore, the instrument is considered valid; as it covers the relevant aspects of the constructs being measured. The internal consistency of the SCSIVI scale was assessed using Cronbach's Alpha method. The coefficients obtained for Physical Self-Concept (0.876), Emotional Self-Concept (0.887), and Ideal Self-Concept (0.797) indicate high reliability. The overall coefficient of 0.85 further confirms the instrument's reliability, suggesting that the items in the scale are homogeneous and consistent in measuring the intended constructs. The inter-correlation coefficients between subscales indicate relationships between different dimensions of self-concept. The negative and weak correlation between Physical Self-concept and Emotional self-concept (-0.160) suggests that these dimensions are relatively independent of each other. The positive but weak correlation between Physical Self-Concept and Ideal Self-Concept indicates

some overlap between perceptions of one's physical attributes and ideal self-image.

RECOMMENDATIONS:

1. Despite establishing content validity and internal consistency, further validation studies should be conducted to confirm the reliability and validity of the SCSIVI scale across different populations and contexts. This could involve administering the scale to larger and more diverse samples to ensure the stability of the findings.

2. Explore the dimensionality of self-concept further to understand the underlying structure and relationships between different dimensions. This could involve conducting factor analyses or structural equation modelling to identify latent factors and their interrelationships.

3. Conduct longitudinal studies to examine changes in self-concept over time and identify potential predictors or outcomes of self-concept development. This could provide valuable insights into the dynamic nature of self-concept and its implications for psychological well-being of individuals with visual impairment.

4. Validate the SCSIVI scale across different cultural contexts to ensure its applicability and relevance across diverse populations. This could involve translating the scale into different languages and adapting it to cultural norms and values.

5. Continuously refine and update the scale items based on feedback from experts and target populations. This could involve revising ambiguous or outdated items and incorporating new constructs or dimensions relevant to contemporary understandings of self-concept.

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