



Exploring the roles of self-concept and gender on cognitive skills of special needs children in Enugu state

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ARTICLE INFO

Keywords:

Cognitive Skills

Gender

Self-Concept

Special Needs Children

ABSTRACT

This study investigated the roles of self-concept and gender on cognitive skills of special needs children in Enugu State. 84 participants (38 males and 46 females) with speech and sound impairment of Special Education Centre Ogbete, Enugu, state took part in the study, with their age range of 8-18 years (mean age = 13.88 years). Piers-Harris Children's Self-Concept Scale and Letter Digit Substitution Test were used for data collection. Hierarchical multiple regression results showed that self-concept did not significantly predict cognitive skills and gender was not a significant predictor of cognitive skills among children with special needs. The findings are not consistent with previous studies done with non-disabled participants, suggesting that the social psychological dynamics of non-disabled population differ from that of the disabled. It was concluded that males and females with disability should be given equal chance on tasks that require cognitive skills as those with higher cognitive achievement among them tend to be more conscious about their disability which negatively affects their self-concept. Suggestions were outlined to guide future studies in this population with a view to advancing the state of current knowledge in this area.

Introduction

Special needs is a catch-all phrase which can refer to any or all forms of disabilities. Disability refers to the limitation in performing certain tasks that society expects of an individual. Disability permeates every society, and has done so through the ages (Lambo, 1981; World Report on Disability, 2011). The disabled in today's world include persons with intellectual, developmental, sensory, physical or other dysfunctions, which may be acquired, congenital, or even hereditary (Dell Orto & Power, 2007). In the absence of effective education or rehabilitation, such disabilities have the potential to impede a person's full participation in the society and the performance of social roles. The designation "children with special needs" is for children who may have challenges which are more severe than the typical child, and could possibly last a lifetime. These children usually need extra support, and additional services. They often have distinct goals, and will need added guidance and help meeting academic, social, emotional, and sometimes medical milestones. Persons with special needs may further need lifetime guidance and support while dealing with everyday issues such as housing, employment, social involvement, and finances. For children with special needs, early intervention is an important step towards helping the child fulfil his or her full academic, emotional, and social potential. Early intervention refers to a process during which the developmental abilities of the child are evaluated. If necessary, a program is developed that contain services (individualized on the basis of the child's specific needs) that will help to further enhance the child's developmen-

tal skills and encourage developmental growth (Special Needs Planning, 2019).

Today, across Nigeria, special schools are being established to help these set of people manage their lives and become useful. Most of these special schools in Nigeria have greater number children with speech and sound impairment as their students. This work focused on this population for (in order to make way for increased government attention towards this population. Special needs schools in Nigeria majorly focus more on teaching these kids handworks. In order to increase the participation and self-dependence of students in special education environments, constant evaluation of the effectiveness, influences and benefits of educational practices is needed. One area that this study focuses on is on how to improve their cognitive skills by examining factors that may influence the development of these skills.

Cognitive skills are mental abilities such as memory, executive function, processing speed and perception that a person uses in everyday life, as well as specific demand tasks (Murman, 2015). The most basic of these abilities combine to form a larger perceptual umbrella relating to different social, affective, verbal and spatial information. Memory, which is one of the primary core of cognitive abilities can be broken down into short-term memory, working memory and long-term memory. There are also other abilities relating to perceptual information such as mental rotation, spatial visualization ability, verbal fluency and reading comprehension. Other larger perceptual umbrellas include social cognition, empathy, spatial perception and verbal abilities. Improvement on the cognitive

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skills of these children will lead to better comprehension, improvement in problem solving, improved long term learning, love of learning, and will as such equip them to be more self-dependent.

One of the factors examined in this study that can influence cognitive skills is self-concept. Self-concept refers to the perception of oneself involving one's attitudes, feelings, and knowledge about one's skills, abilities, appearance, and social acceptability (Byrne, 1984). Terms like self-concept, self-perceptions, self-esteem, self-image, self-evaluations, self-understanding, self-worth, and self-regard have been used in the literature to refer to an individual's cognition and feelings about the self (e.g., Bear & Minke, 1996; Damon & Hart, 1986; Grolnick & Ryan, 1990; Morvitz & Motta, 1992; Stone & May, 2002). These terms can be and are often used interchangeably, since they overlap, but still referring to and describing different aspects of the more general self-concept (Byrne, 1996).

Burns (1982) discussed the importance of self-concept in explaining behaviour. First, self-concept maintains the inner consistency of behaviour. Psychologically strong motivation for continuity drives a person to act according to manners which he thinks are consistent with how he/she sees himself. Second, it determines and shapes the personal interpretations of experience. Individuals give meanings to all experiences and experiences are usually interpreted in ways which are consistent with personal views. Third, self-concept provides a set of expectations, which determine how an individual is going to act. Therefore, Burns (1982) argued that the way self-concept directs expectancies and behaviours may lead to a self-fulfilling prophecy.

People have reacted in different ways to disabling conditions; and such reactions include: shame, prejudice, fear and exclusion from family or community life (Livneh, 2012). In a developing country like Nigeria, it is evident that persons with disabilities constitute one of the poorest, socially excluded and marginalized groups within the society (Lang & Uph, 2008). Nigerians with disabilities continue to face social stigma, exploitation, and discrimination (Nigerian Institute of Legal Studies, 2010). Typically, families of children with special needs are on a lifetime journey that is both emotionally and financially challenging. Families of children with special needs may experience a myriad of emotions upon diagnosis, including anger, grief, loss, and denial. In fact, in most communities, children with disabilities are perceived as a financial burden because they are unable to contribute to the family economy like their peers without disabilities, some of whom assist their parents by going out to the streets to sell various food items, clothing, and general merchandise (Ebigbo & Ebigbo, 1992). These experiences that children with special needs have through their interactions with people impact their self-concept (Dermitzaki & Efkliides, 2000).

Fischer's (1980) propositions in his skill theory suggests that self-concept influences cognitive skills development. Skills develop through levels of increasing complexity, differentiation, and integration, within a dynamic system that includes self, other, and environment. The theory

integrates ideas from these various approaches to produce a tool for explaining and predicting the development of behaviour and thought (Fischer, 1980; Fischer & van Geert, 2014). Self-esteem and self-efficacy have been shown to correlate with better performance in academic achievement and some cognitive tasks (see Collins, 1984; Maddux, Norton, & Stoltenberg, 1986; Multon, Brown, & Lent, 1991; Hackett 1985; Hackett & Betz, 1989; Pajares & Miller, 1994). Hence, it is possible that self-concept may predict cognitive skills of children with special needs which is the first aim of the present study.

There are established gender differences in cognitive abilities. Gender differences in cognitive skills are widely studied in the current scientific literature. Biological and genetic differences in combination with environment and culture have resulted in the cognitive differences among men and women. Among differences of diverse mental and cognitive abilities, the largest or most well-known are those relating to spatial abilities, social cognition and verbal skills and abilities (Bennett, 2005; Upadhayay & Guragain, 2014). Whereas the environment of the special needs population is qualitatively different, and environment is a chief factor that account for cognitive differences (Rushton & Jensen, 2005). There are well-established gender differences in cognition although not with the same population as this current study (e.g., Camarata & Woodcock, 2006; Majeres, 2007; Sheppard & Vernon, 2008; Wechsler, 1997). Sumskiene, Jankauskaite and Grigaite (2016) pointed out that women with disability suffer double discrimination as they have to deal with being a woman and also being disabled. Their study identifies the uniqueness of this population and establishes gender differences among them in visual scanning, mental flexibility, sustained attention, psychomotor speed, and speed of information processing abilities. Studies on gender differences on cognitive abilities seemed to not have been with special needs population. Hence the second aim of this study is to determine whether gender significantly predicts cognitive skills among children with special needs. The hypotheses tested were: (1) Self-concept of children with special needs will significantly predict their performance in cognitive task. (2) Gender will be a significant predictor of cognitive skills among children with special needs.

Method

Participants

Eighty-four participants (38 males and 46 females) that have speech and sound impairment in Special Education Centre, Ogbete, Enugu, in Enugu state participated in this study. Their age ranged from 8 to 18 years (mean age = 13.88 years). They were drawn from various classes on the basis of convenience which was after securing the informed consent of their parents/wards and the school authority.

Instruments

Two instruments were employed in the course of the study. They are: The Piers-Harris Children's Self-Concept Scale – Second Edition and Letter Digit Substitution Test.

The Piers-Harris Children's Self-Concept Scale

The Piers-Harris Children's Self-Concept Scale – Second Edition (Piers-Harris 2) is a 60-item self-report questionnaire (subtitled “The Way I Feel About Myself”) designed to assess self-concept in children between the ages of 7 and 18 years. The Piers-Harris Children's Self-Concept Scale – Second Edition was developed by Piers, Herzberg and Harris (Piers, 2002). The scale yields a general measure of the respondent's overall self-concept (Total-TOT). The authors indicated that the Piers-Harris 2 is appropriate for use in research, educational and clinical settings. Administration of the Piers-Harris 2 is usually completed in 10-15 minutes and is administered in two formats, paper and pencil or computer. It can be administered individually or to small group of students who should have at least a second-grade reading level.

It is required that the respondent should respond by circling “Yes” or “No.” Raw scores are converted to standardized t-scores (mean = 50, standard deviation = 10) and percentile ranks. T-Score ranges for the TOT scale are: <29T is very low, 30T-39T is low, 40T-44T is low average, 45T-55T average, 56T-59T- is high average, 60T-69T is high and > 70T is very high.

The present researcher conducted a pilot study to validate the Piers-Harris Children's Self-Concept Scale – Second Edition (Piers-Harris 2) for the present study on a sample of 42 speech and sound special needs students drawn from Centre for Academic and Vocational Training of Special Needs Children (CAVTSN), Nsukka (19 males, 23 females; Mean age = 14, SD = 2.79). The items yielded acceptable internal consistency reliability, Cronbach's alpha of .74.

Letter Digit Substitution Test (Wechsler intelligence scale)

The Letter Digit Substitution Test (LDST) was developed by Van der Elst et al. (2006) from Digit Symbol Substitution Test (DSST), one of the subsets of the Wechsler intelligence scale. Substitution tests are essentially speed--dependent tasks that require the subject to match particular signs – symbols, digits, or letters – to other signs within a specified time period. The LDST has the advantage of using letters and digits, signs that are already well known to those taking the test. Thus, there is no question of a need to learn new symbols while being tested. Such learning ability is definitely not the only aptitude studied for in the trial (Van der Elst et al., 2006). Thus, subjects only have to learn the letter-digit association, whereas in other substitution tests subjects also have to learn abstract symbols. This makes performance relatively more dependent on memory and complex visual processes than it is in the LDST. Thus, the rationale behind the LDST's development was to provide a more specific measure of information processing speed. For this reason, the LDST was used instead of the DSST. Substitution tasks involve visual scanning, mental flexibility, sustained attention, psychomotor speed, and speed of information processing (Van der Elst et al., 2006). The LDST requires that the participant fill in a series of digits correctly coded within 60 seconds. In this test the higher the score the better the person's performance.

Procedure

The researchers approached the school authority with a letter of introduction obtained from the Department of Psychology, University of Nigeria, Nsukka and obtained permission from the school's management to allow students participate in the study. The headmistress after studying the instruments for the study and asking relevant questions regarding the purpose of the study and its requirement referred the researcher to an instructor in the school who is conversant with sign language for assistance in administering the tests. The children were given sign instructions by the instructor on how to complete the Piers-Harris 2. The Piers-Harris 2 measure was group-administered in a classroom by the instructor who read the items through signs and was also on ground to observe the children's understanding of the instrument and provide assistance when necessary. Demographic variables such as age, gender, and ethnicity were obtained as well.

In administering the LDST, the researchers gave the instructor a sheet the contained instructions as follows:

1) Place the task sheet before the participant and point to the task.

Script: “Look at these boxes across the top of the page. On the top of each box is a letter from one through nine. On the bottom part of each box there is a number. Each number is paired with a letter.”

Point to the rows of boxes.

Script: “Down here are boxes with letters on the top, but the bottom part is blank. What I want you to do is to put the correct number in each box like this.”

Fill in the first three sample boxes.

Script: “Now I want you to fill in all boxes up to this line.”

Point to the line separating the samples from the test proper.

2) Let the participant attempt the sample.

If the participant has difficulty completing the ten sample items or does not understand the task, help them complete the sample items.

If the participant still has difficulty or does not understand the task, discontinue the task, and indicate on the form that the participant was unable to complete the sample.

3) After the demonstration and practice is complete, point to the first box following the sample items and say:

Script: “When I tell you to begin, start here and fill in the boxes in these four rows. Do them in order and don't skip any. Please try to work as quickly as possible. Let's begin.”

4) If the participant stops filling in the boxes before the 60 seconds have passed, give them standard encouragement.

Script: “Can you go further?”

5) If the participant begins to erase filled boxes, tell the participant not to waste time erasing.

6) Stop the participant after 60 seconds. . (Note: do not tell them

what the time limit is) Say:

Script: "That's good. That completes this set of tasks."

The instructor followed the instructions and used signs to explain to the children when necessary. The children were tested individually for the LDST and the number of correct responses was recorded as an individual's score. When the children had completed the measure (approximately 2 hours 20 minutes later), they were given a light refreshment in appreciation.

Design/Statistics

The study adopted a cross-sectional survey design in which all variable were studied at a single point in time as there was a limited time for the project. Hierarchical multiple regression was used to test the hypotheses. The choice of hierarchical multiple regression was because regressions play a major role in demonstrating the variance in an outcome explained on account of one or more predictors.

Results

The correlations of the demographic variables and study variables are shown in Table 1, while findings of the regression analysis are in Table 2.

In Table 1, older age was associated with being male ($r = -.46, p < .001$), and being in higher class ($r = .42, p < .001$), as well as having higher self-concept ($r = .23, p < .05$). Female gender was associated with being in lower grade ($r = -.55, p < .001$), but not with self-concept ($r = -.16$) and cognitive skills ($r = -.10$). Grade was not significantly related to cognitive test performance ($r = .12$). Self-concept did not correlate significantly with performance on the cognitive skills test among the students ($r = .14$).

($R^2\Delta = .01$), and the model was not significant, $F(1, 81) = .35, p = .497$. The overall contribution of self-concept and gender in explaining the variance in cognitive skills was 3% ($R^2 = .03$).

Discussion

The aim of this study was to investigate the contributions of self-concept and gender in cognitive skills among children with special needs. The first hypothesis stated that self-concept of children with special need will significantly predict their performance in cognitive task. The findings showed that self-concept was not a significant predictor of individual's visual scanning, mental flexibility, sustained attention, psychomotor speed, and speed of information processing abilities. This does not support the findings of other researchers (e.g., Bryne, 1996; Donohue, 2008; Saltal et al., 2018). According to Coopersmith (1967), individuals with higher positive self-concept levels are more efficient, happy, successful and confident in their interactions with the environment. Children having a positive self-concept indicate that they have positive perceptions and opinions of themselves and positive emotions. It is obvious that children with positive perceptions of, opinions and emotions about themselves exhibit positive behaviours (Baran, 1989). Existing literature reveals that there are lots of research studies suggesting that there is a linear relationship between development of problem-solving skills and accepting oneself or self-confidence (Bingham, 2004; Hamarta, 2009; Temel, 2008). On the one hand, children with higher levels of positive self-concept are active, curious researches and stubborn individuals. They are eager to interact, do research and ask questions. On the other hand, children with lower self-concept levels are reserved, indecisive and aggressive.

Such children rarely behave assertively; they need to be

Table 1: Correlations of demographic variables, self -concept and cognitive skills

Variables	1	2	3	4
1 Age	-			
2 Gender	-.46***	-		
3 Grade	.42***	-.55***	-	
4 Self-concept	.23*	-.16	.20	-
5 Cognitive skills	-.06	-.10	.12	.14

Note *** $p < .001$; ** $p < .01$; * $p < .05$; Gender (0 = male; 1 = females).

Results of the hierarchical multiple regression for the test of the hypotheses is shown in Table 2. Self-concept was included in the Step 1 of the regression analysis. It did not significantly predict cognitive skills, $\beta = .14, t(83) = 1.30$. The contribution of self-concept in explaining the variance in cognitive skills was 2% ($R^2 = .02$), and the model was not significant, $F(1, 82) = 1.68, p = .198$

In step 2, gender was included in the regression analysis. It was not found to be a significant predictor of cognitive skills, $\beta = -.08, t(83) = -.68$. The contribution of gender in explaining the variance in cognitive skills was 1%

managed by others and rarely exhibit natural behaviour. Such children hardly communicate and they mostly react to obstructions by either behaving highly aggressively or withdrawing themselves from the relationship (Cevher & Buluş, 2007). In their study Happner et al., (1993) found that individuals who view themselves as efficient problem solvers or who are confident with their problem-solving skills have higher levels of self-concept and can more easily focus on problems.

In the present study, it was found that self-concept was not a significant predictor of cognitive skills. It should be noted that most of the previous studies reviewed earlier which showed

Table 2: Hierarchical multiple regression predicting cognitive skills by self-gend

Predictors	Step 1			Step 2		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Self-concept	.21	.14	1.30	.19	.13	1.17
Gender				-1.14	-.08	-.68
R^2	.03			.03		
ΔR^2	.02			.01		
<i>F</i>	1.68 (1, 82)			1.07 (2, 81)		
ΔF	1.68 (1, 82)			.46 (1, 81)		

ΔR^2 = Change in R^2 ; ΔF = Change in F

a significant relationship between self-concept and cognitive skills were done with people who do not have special needs whereas the present study is with children with special needs. It could be that among the population with special needs, those with higher cognitive attainment are more conscious of their disability which may affect their self-concept negatively, lowering it and bringing their score to a point closer to that of those with lower cognitive achievements. If this is true, then what the results reveals is that in the world of the disabled, those with high cognitive achievements may also suffer psychologically as much as those without high cognitive achievements.

The second hypothesis which stated that gender will be a significant predictor of cognitive skills among children with special needs was rejected. The finding showed that gender was not a predictor of cognitive skills. This is a different result from the findings of other researchers (e.g., Ahrenfeldt et al., 2019; Garcia et al., 2019; Jäncke, 2018; Reilly et al., 2019). The population of the present study is qualitatively different from those of the other studies on the basis of disability.

Results of this study provide several implications for psychologists and other professionals who work with special needs children while conducting researches or carrying out interventions. Researchers and professionals should be very careful on making assumptions about those with special needs based on evidences from researches carried out on non-disabled populations. Knowledge of socio-psychological dynamics as it applies to the non-disabled should not be generalized carelessly on the disabled. Research should focus on understanding their own dynamics which would reveal the kind of intervention they need. Secondly, males and females with disability should be given equal chance on tasks that require cognitive skills as results from this present study showed that there was no significant different between the performance of both genders on the cognitive task. The study also suggests that those with higher cognitive achievement among the children with special needs tend to be more conscious about their disability which negatively affects their self-concept. Intervention should therefore focus on how to help these individuals feel more positive about them.

The study has some limitations. The first limitation of this study was the sample size used. Eighty-four (84) speech and sound impaired children participated in the study. This is because the instrument used required some level of literacy of which is difficult to get among the population of study given the time frame and the available resources. Secondly, the study adopted a cross-sectional survey design and the results of this study were

limited to the time frame in which the data was collected. A cross-sectional design yields correlational rather than casual evidence. Also, the study was intended to include children with other forms of disability such as Down syndrome, autism and so on but the researcher found it difficult to obtain responses from children with such forms of disability and was only able to obtain responses from children who have speech and sound impairment. Furthermore, the study did not look into different dimensions of self-concept. Thus, drawing inferences based on the present results should be done with caution.

In line with the limitations outlined in the study, future researchers are encouraged to use larger sample size while conducting similar studies to establish well-grounded generalizations. Future researchers should also find a means of assessing those who are not currently enrolled in schools. Secondly, future researchers can analyze the relationship between the variables by conducting a longitudinal study. Researchers should devote more resources in conducting a study using similar construct by so doing they could extend research to other geographical location for pattern analysis and interpretation as this will unravel the networks leading to acquiring cognitive skills. Furthermore, other variables that could contribute to cognitive skills should be controlled and the target variables only should be held. Thirdly, future researchers should look into different dimensions of self-concept.

Conclusion

This study investigated the roles of self-concept and gender on cognitive skills of children with special needs in Enugu state. Findings of the present study showed that self-concept and gender are non-predictors of cognitive skills among special needs children. The two hypotheses formulated were confirmed. However, the result suggests that sociopsychological dynamics of the disabled differ from that of the non-disabled population. This is expected to affect the design of researches and interventions geared towards those with special needs in the future.

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