Greener Journal of Educational Research

ISSN: 2276-7789

Does the physical Self-concept Make a Difference to Academic Achievement? Investigating the Role of Physical Self-concept on the Academic Achievement of Adolescent Learners in Zimbabwe Secondary Schools:

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Research Article

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ABSTRACT

The study was prompted by low academic achievement prevalent in most secondary schools. Literature has documented both human, school and material factors as responsible for the low performance, and also a positive and significant correlation between the physical self-concept and academic achievement. Attempts have been made to reverse the situation but performance has remained generally poor. The study set out to investigate whether the physical self-concept made a difference to learners' academic achievement. In particular the study also sought to find out if moderator variables such as gender, grade/form, school type and location, type of attendance and age accounted for any significant differences in physical self-concept and academic achievement. Results have shown no significant differences between gender and academic achievement of adolescent learners. However, school location and the type of attendance accounted for significant differences between the physical self-concept and academic achievement of adolescent learners. The study concluded that physical self-concept, school location and type of attendance matter in learners' academic achievement and that enhancing the learners' physical self-concepts would go some way in improving their performance. Differences were not consistent for all the moderator variables making it difficult to generalize their possible influence. Further research needs to be carried out with a bigger sample in different school locations.

Keywords: physical self-concept, difference, academic achievement, variables, adolescent.

INTRODUCTION

The proportion of successful 'O' level candidates who pass in five or more subjects in secondary schools has dropped significantly from 63 percent in 1980 to 19.5 percent in 2011 (Zimsec, 2012). The high failure rate is a concern for parents, educators, educationists and the learners. Low pass rates have been attributed to poor human and material resources. It is therefore, important that further research be undertaken to find out more on the issue of under-achievement and factors related to this.

There appears to be an increasing awareness that individual differences in Intelligence (IQ) alone can no longer account for all, or even the majority of differences in learners' scholastic achievement. For example, correlations between intelligence and academic achievement declined from $r=0.70$ in elementary school, to $r=0.50$ in secondary school. Furthermore, such results have led to the conclusion that non-ability factors such as personality, self-efficacy beliefs and motivational variables become more important in distinguishing between the better and worse learners. (Chamorro-Premuzic & Furnham, 2005,2006). Recent evidence supports the notion that personality traits were good predictors of academic achievement. (Ackerman et al., 2011; Chamorro-Premuzic and Furnham, 2009). Personality factor, *self-concept* and its relationship with academic achievement needed further investigation.

Self-concept and academic achievement

Self-concept is a person's self-perception gained through one's experience and interaction with the environment. It is subject to mediation by social and self-attributions. Self-concept can help to explain and predict behaviour. For example, when positive learners feel confident and perform better but when negative, they feel hesitant and uncertain resulting in poor performance (Jen and Chien, 2008; Marsh and Martin, 2011).

Self-concept was one of the causes of under-achievement by girls in Zimbabwe secondary schools (Gordon, 1995). Underestimation of the learners' performance had detrimental effects on the learners' self-concept of ability, motivation and test anxiety. (Urhahne et al., 2011). Researchers have concluded that self-concept, a personality variable, was a mediator, correlate and predictor of academic achievement (Pinxten et al., 2010; Marsh & O'Mara, 2008; Marsh et al., 2002).

Currently there is very little research on physical self-concept and academic achievement of *African* learners, and Zimbabwe in particular hence the need for further research into the physical self-concept and its mediation with variables: gender, age, form/grade, school type, school location, and type of attendance and their relationship with academic achievement.

Literature Review

Physical self-concept and academic achievement

Satisfaction with ones' body may lead to a positive self-concept thereby increasing one's confidence in life generally, and school work as well (Dembo, 1994; Mwamwenda, 1995). For example, Xhosa youngsters had better opinions of their personal appearance (Akande, 1999). Physically fit and beautiful people were generally considered as more desirable, intelligent and academically competent. Fitness training improved self-concept, and that learners who felt good physically scored higher on both self-concept and academic achievement (Mostert, 1995). A recent study concluded that *self-belief* appeared to make a difference to overall performance (Marsh et al., 2006).

However, there was no significant correlation, and sex-age differences between physical appearance and academic achievement among rural African adolescents. There was however, a significant and positive relationship between self-concept and academic achievement of boys and girls in all age groups as well as age differences in self-concept and specific subjects. (Mboya, 1998, 1999). Huitt (1998) reported a decline in self-concept with age from elementary to high school.

Research into age, self-concept and academic achievement has yielded inconclusive results. The apparently meagre research evidence available on this subject necessitated further research.

Physical Self-Concept and Academic Achievement

Having looked at the nature and structure of the self-concept, the following section examines the physical self-concepts and its relationship to academic achievement.

Physical self-concept

This is one of the non-academic dimensions of self-concept which relates the perceptions about the physical abilities, interest in sport, appearance, sex, age, height, body size, complexion, clothes, home, *et cetera* (Kobal Palcic and Musek, 1996:65; Huitt, 1998:2-3). According to Mwamwenda (1995:68) psychologists are more interested in the psychological effects or implications of the physical attributes, in particular, the way peers, members of the family and learners themselves view them affects the self-concept and subsequent behaviour. For example, if the attitude towards one's body is positive, a positive self-concept will develop, and if negative a negative self-concept will develop. In other words, the reactions to our physical attributes such as appearance, body size, maturity and activities dependent on physical skills will influence the self-concept (Dembo, 1994:461; Mwamwenda, 1995:68). Focus of this study will be on the maturity, gender, physical appearance and abilities and how they relate to academic achievement.

The idea of maturity, which is a function of one's age, will forthwith be considered in relation to self-concept and achievement.

Maturity

According to Mwamwenda (1995:69) the changes that occur during adolescence do not occur exactly at the same age for each adolescent. There are early, normal and late maturers whose stages of development have social, intellectual and psychological implications for adolescent boys and girls. These will be discussed in the sections that follow.

In an investigation of the relationship between age and self-concept, Wylie (in Mboya 1999:389) found no age-related influence on the overall self-concept between the ages of six and 50 years.

In related studies Mwamwenda (1995:69-70) as well as Biehler and Snowman (1997:101) describe the stage theories of development and the impact of early and late maturation on the self-concept. The results show that early maturing boys displayed more self-confidence and positive self-concepts and higher achievement than the normal and late maturing boys while early maturing girls tended to be withdrawn. Late maturing girls on the other hand appeared to be more confident and performed better in academic situations.

In a study of secondary and university learners in Nigeria, Ezeilo (in Mboya, 1999:389) reported an increase in self-concept with age. Research results on the relationship between age, self-concept and achievement have however, not been conclusive since some studies report a decline in the self-concept and others that the self-concept remains stable as the following examples will indicate.

Nicholls (in Dembo, 1994:159) reported of the decline in learners' self-concept of their academic abilities as they proceeded through school from elementary to high school. The results tend to agree with the theory that self-concept declines with age. Huitt (1998:24) cites an example of black children whose self-concept declined from 80% at the time of entry to the elementary school, to five percent at the time of entry to senior high school. This also confirms a report by Bell and Berube (in Huitt, 1998:24) which explains that as learners mature they begin to experience hostilities in the environment such that by early adolescence, many of them will believe that academic achievement will not improve their status or benefits. Consequently, they adapt to this perception by giving less time and energy to schoolwork. This phenomenon is called "failure avoidance behaviour". Harter (in Craven et al., 2000:60) attributes such behaviour to a decline in intrinsic motivation caused by an impersonal school environment which emphasises social comparison as opposed to mastery learning.

Mboya (1999:389) reports of the decline of perceptions of the self as pre-adolescent learners grow older while Engel et al., Osborne and Le Gette (in Mboya, 1999:389) report self-concept stability during this period. Research findings presented above show that the results on the relationship between the physical self-concept aspect of maturity and academic achievement are inconclusive. Mwamwenda (1995:70) attributes the variations to cultural differences. The next section looks at gender as a variable in the physical self-concept and achievement.

Gender, learner self-concept and achievement

According to Woolfolk, (1995:171) gender refers to judgements about masculinity and femininity while sex refers to the biological differences. Gender-role identity is part of our self-concept or beliefs about characteristics and behaviours associated with one's sex as opposed to the other. Consequently, people with a feminine identity would rate themselves high on characteristics associated with females and vice-versa. Generally a masculine identity has been associated with more positive self-concepts than the feminine identity (Woolfolk, 1995:171). Since research has found gender to be a significant variable in understanding students' motivation to learn, it is important that the relationship between gender, self-concept and achievement be explored further.

Generally, inconsistent research findings have been reported on the relationship between gender and academic achievement and ability (Hay *et al.*, 1998:461). On the one hand, there is a claim that girls in general achieve higher than boys. The examples that follow will illustrate this claim.

According to studies by Marsh et al. (in Mwamwenda, 1995:366) among secondary school boys and girls aged 18 years in the former Transkei, no significant difference in performance between boys and girls in single sex schools were found. In a related study Hay *et al.* (1998:462) found no major differences in the mathematics achievement in the early school years, though boys began to excel in mathematics reasoning and demonstrated higher achievement than girls through high school into adulthood. Girls were generally found to have similar literacy problems to those of boys though they tended to be more passive in the classroom and were often overlooked for remedial services (Corson in Hay *et al.*, 1998:462). The apparent lack of difference between the self-concepts of boys and girls and their academic performance was explained by the fact that both boys and girls were exposed to education, and that the expectations of educators and parents for both were the same. However, research results on gender and academic achievement have not always been consistent as the following examples will show.

Other studies have come up with different results for males and females. For example, Masqud and Omizo (in Mwamwenda, 1995:366) in a study of Mexican-American standard seven (Grade nine) learners, report higher

self-concepts and achievement for males than for females. Similar results were also reported in relation to specific self-concept domains. For example, Vrey (1996:53) found variations in performance in mathematics by gender in which girls tended to do better than boys. Boys however, tended to excel in mathematics reasoning and demonstrated higher achievement than girls towards the end of elementary to high school and adulthood. According to Marsh *et al.* (in Hay *et al.*, 1998:462) girls in Grade five achieved higher scores in mathematics and reading comprehension than boys while Ethington (in Hay *et al.*, 1998:462) also found gender differences in mathematics achievement for American eighth grade learners. These results were explained by learners' attitudes, which were said to have a positive causal influence on achievement. For example, a learner with a positive self-concept was likely to have a positive attitude towards a task (in this case, mathematics and reading) which would in turn lead to good performance (Wolf *et al.*, in Mwamwenda, 1995:367).

From these results it can be argued that there is no linear relationship between physical self-concept of male and female learners and their academic achievement. The next section looks at physical appearance and its relationship to academic achievement.

Physical appearance, learner self-concept and academic achievement

According to Gerdes and Moore (in Mostert, 1995:5) the self-concept is an inclusive term for various components of the self, one of these being the body image or physical appearance. At adolescence, the physical qualities of the individual can have a considerable effect on the development of a person's overall self-concept. In recent years, much emphasis has been placed on the physical appearance of both men and women in Western societies. Many people are concerned about their looks and the media has contributed to this state of affairs through advertisements to the effect that physically beautiful people are considered as more desirable (Mostert, 1995:1). Gerdes and Moore (1989:78) emphasise the point:

Physical appearance is emphasised daily through numerous advertisements... the excitement which surrounds beauty and body building competitions is further evidence of the value attached by society to physical beauty. Adolescents in particular are under the impression that good looking people are intelligent and competent among other qualities. This seems to raise their physical and academic self-concepts.

According to Dembo (1994:461-462) there appears to be a strong correlation between self-image and body size for both boys and girls. Having an acceptable body is regarded as an important factor in evaluating oneself positively. Furthermore, reactions to one's body can lead to either a positive or a negative self-concept, which in turn can influence learning and academic achievement. For example, learners who are either too small or too big for their age group tend to be ridiculed by their peers thereby causing them to feel inferior and socially unacceptable. This often impacts negatively on their self-concepts, learning and academic achievement (Mostert, 1995:11). Several researchers have confirmed the assumption that fitness training improves the self-concept to such an extent that learners who feel good about themselves scored high on self-concept tests and were also highest on academic achievement.

Similarly, a positive body image or physical appearance may increase a person's self-concept which may in turn lead a person to feel good about his/her body (Berscheid in Mostert, 1995:12). Women, particularly adolescents, are easily affected by the way they and others view their bodies because the physical appearance has a strong relationship with self-concept. This in turn influences other areas of a person's life such as academic achievement and socialisation (Mostert, 1995:12; Dembo, 1994:463).

However, research also appears to be inconclusive regarding this aspect. There was no significant correlation found between physical appearance and academic achievement in a study of 180 girls at two rural secondary schools though there was a significant correlation with social involvement and sports participation (Mboya, 1999:388). Corey and Corey (1990:146) sum up the importance of physical appearance when they say:
if you feel basically unattractive, unappealing or in some way physically inferior these self-concepts are likely to have a powerful effect on other areas of life.

According to Mostert (1995:3) physical appearance and physical self-concept in particular is a significant issue in the life of adolescents. Having looked at the physical appearance in general, the physical well-being will be examined for its relationship to self-concept and academic achievement.

Physical well-being, self-concept and achievement

There is a broad range of physical disabilities and health impairments which may affect the learners' educational performance. These include communication disorders, visual impairment, being hard of hearing and health impairment. The effect these have on academic achievement will be dealt with separately.

Communication disorders, self-concept and academic achievement

According to Dembo (1994:511) speech impairments such as stuttering or impaired articulation may handicap the learner's educational performance since these often lead to poor spelling and sentence construction. This may in turn affect academic performance in language and other verbal-academic subjects due to negative interpersonal relationships and possible development of a poor self-concept by speech-impaired learners. Extensive and frequent criticism and demands for better speech production from learners who stutter may influence their self-concepts negatively and also their academic achievement.

Visual impairment, self-concept and academic achievement

Learners who are blind or partially sighted will have problems with reading and this will hinder or reduce working rate and overall performance unless special arrangements are made for special devices such as braille reading material for the totally blind or enlarged print or glasses for the partially blind. However, if such learners are expected by their educators to do the same work and their level of performance is the same as their peers, their self-concepts may be positive. The same learners will however, perceive themselves as inferior, if they are expected to perform at a lower level. This may lower their self-concepts and academic achievement as well (Dembo, 1994:507).

Deaf and hard of hearing, self-concept and academic achievement

Hearing impairment affects communication and thus, social interaction since this involves communication of ideas between individuals. Failure to understand instruction may lead to inappropriate responses and academic failure. Failure by parents, educators and other professionals to understand and appreciate the hearing impaired, will influence their self-concepts negatively and lower academic achievement (Furth in Dembo, 1994:505).

Health impairment, self-concept and academic achievement

Learners with health problems may exhibit limited strength or alertness and may be absent from school frequently. Some of them suffer from self-pity and over-protection resulting in their exclusion from class activities. In addition they may fail to finish certain assignments on time and may be rejected by their peers. They are often made to feel worthless and incompetent hence some educators may expect them to do less work than the others. This negatively affects their self-concepts and academic achievement (Dembo, 1994:514).

Summary of physical self-concept and academic achievement

The research results on physical self-concept described above have shown that learners with physical disabilities tend to have more negative self-concepts than their non-handicapped peers because they believe that they do not have the ability to achieve. Thus these learners have low expectations for future achievement (Dembo, 1994:490). However, it has been observed that such learners have the potential to succeed hence educators need to be sensitive to negative perceptions by these learners as they help them to succeed.

RESEARCH DESIGN

The Research Problem

The current study was quantitative which sought to answer the following research problem: *Is there a significant difference between learner physical self-concept and academic achievement in Zimbabwean secondary schools?*

Research aims

In view of the afore-mentioned research problem, it was the aim of this study to investigate whether there was a significant difference between the learners' physical self-concept and academic achievement in Zimbabwean secondary schools. The question was investigated overall and in relation to moderator variables: gender, grade/form, school location (rural/urban), school type (Government A, B & C; non-government), type of attendance (boarder/day) and age. In order to appreciate and understand the research problem more, the following secondary aims were investigated: The research problem/hypotheses of the study are outlined as follows:

Research problem 1

Is there a significant difference between the academic achievement and the physical self-concepts of male and female learners?

H₀₁: There is no significant difference between the academic achievement and the physical self-concepts of male and female learners.

Research problem 2

Is there a significant difference between the academic achievement and the physical self-concepts of junior and middle learners?

H₀₂: There is no significant difference between the academic achievement and the physical self-concepts of junior and middle learners.

Research problem 3

Is there a significant difference between the academic achievement and the physical self-concept of urban and rural learners?

H₃: There is no significant difference between the academic achievement and the physical self-concepts of urban and rural learners.

Research problem 4

Is there a significant difference between the academic achievement and the physical self-concept of learners of different ages?

H₀₄: There is no significant difference between the academic achievement and the physical self-concepts of learners of different ages.

Research problem 5

Is there a significant difference between the academic achievement and the physical self-concept of learners of different school types?

H₀₅: There is no significant difference between the academic achievement and physical self-concepts of learners from different school types.

Research problem 6

Is there a significant difference between the academic achievement and the physical self-concepts of boarders and day scholars?

H₀₆: There is no significant difference between the academic achievement and the physical self-concepts of boarders and day scholars.

RESEARCH DESIGN AND METHOD

Structure of the Questionnaire

The questionnaire comprised six questions on biographical data (moderator variables), twenty-five for the physical self-concepts.

For easy response, there were six questions on the biographical data and moderator variables coded as follows; **gender**: male (1), female (2), **school location**: urban (1), rural (2); **school type**: government A, B, C and non-government; **type of attendance**: (boarder/day); **form/grade**: junior (1), middle (2); **age** (13 to over 16 years). For the rest of the questionnaire, responses on the five-point Likert scale applied: *Strongly Agree* (5), *Agree* (4), *Uncertain* (3) *Disagree* (2), *Strongly Disagree* (1). For questions stated in the negative, scoring was reversed such that *Strongly Agree* was scored as (1) to *Strongly Disagree* (5). The distribution and nature of the questions is presented below.

Secondly, questions on the *physical self-concept* (7-31) sought information on the respondents' physical abilities, activities, interests and appearance. There were 25 questions in all. Learners responded on a five-point Likert scale ranging from *Strongly Disagree* (1), *Disagree* (2), *Uncertain* (3), *Agree* (4) *Strongly Agree* (5).

For *physical ability*, learners were asked to rate their ability, interest in sports, games and physical activities. For example, "I am able to do physical work," "I am poor at sports". "I am often active in class."

For *physical appearance*, learners were asked to rate their attractiveness, how their appearance compared with that of others, how they thought they looked and how others thought they looked using the same scale as for physical appearance. For example, "I have an attractive face." "I would like to change some parts of my body." "I am happy with my body size."

Content and face validity

Content and face validity were addressed using the judgement of an established researcher who is knowledgeable on the whole issue of self-concept. Reliability of the questionnaire was determined by a Cronbach Alpha correlation coefficient. Cronbach Alpha is a measure of internal consistency (reliability) of what questions are meant to measure or describe, in this case self-concept domains. Coefficients ranged from 0.73 to 0.84 and were within the acceptable range of 0.65 to 0.90 for personality attributes such as *self-concept*. (McMillan and Schumacher, 1993:230).

Ethical issues

Permission to administer the questionnaire was sought from the Ministry of Education, Sport, Culture and Arts' Head Office, regional offices and heads of schools and parents. Individual participants were told that participation was optional. The purpose of the study was explained.

Procedure

Twenty above-and below average learners were selected at each school respectively. For mixed ability classes, the top twenty and bottom twenty were selected for the study. School records were used to identify the level of ability of the learners. Participants were given two sheets of paper, one containing the questions and the other, the answer sheet. Each participant was asked to indicate their response to each question by writing down a number in the box corresponding to the chosen response on the answer sheet B. Participants were asked to respond to self-concept questions expressing how they felt about themselves physically and their academic achievement in school as a whole. Participants were asked to answer every question as truthfully as possible. Instructions on how to complete the questionnaire were also read out to the participants to ensure that there was no misinterpretation of what they were expected to do. Questions raised were answered to clarify any concerns. All the questionnaires and answer sheets were collected at the end of the exercise. The questionnaire was self-administered and took between 5 to 10 minutes to complete. Participants were thanked for their co-operation and participation.

Reliability

An instrument such as a questionnaire is said to be reliable to the extent that, independent administrations of it or a comparable instrument consistently yields the same or similar results (de Vos *et al.*, 1998:86). Thus, the more reliable

the instruments and measurements, the more consistent and dependable will the results be. While several procedures exist for establishing reliability such as test-re-test, and the split-half methods, the split half is the most commonly used in educational research. The current study employed the Cronbach Alpha reliability coefficient, which is the most suitable where questionnaires are analysed using statistical software such as the SPSS, and also where the responses are not scored as either right or wrong, and there is a range of possible answers for each question. McMillan and Schumacher (1993:230), sum up the suitability of the Cronbach Alpha reliability coefficient as follows:

... It is used for items that are not scored right or wrong, appropriate for survey research and other questionnaires in which there is a range of possible answers for each item.

In the current study, the researcher attempted to increase reliability by having a large number of questions, in this case, 25 questions for physical self-concept dimension excluding those seeking biographical data. In addition, the researcher collected data from a heterogeneous group in terms of academic achievement. High and low academic performers formed the sample for this study, an arrangement which was intended to increase the reliability of the research findings.

The more heterogeneous a group is on the trait that is measured or the greater the range of scores, the higher the reliability (McMillan & Schumacher, 1993:230).

Furthermore, the researcher has already indicated that he used the tried and tested *Self-Description Questionnaire* scales whose reliability has been established. For example, measures of academic achievement have a high reliability of between 0.70 and .90, while personality has lower reliability of 0.65 and 0.90. Since the current study was on the personality attribute of self-concept, reliabilities of between 0.65 and 0.90 were acceptable. For the current study, reliability coefficient for the physical self-concept was 0.84. Concern for reliability was important in the current study because reliability was a necessary condition for validity. Consequently, without reliability there can be no valid results (McMillan and Schumacher, 1993:232).

Analysis of quantitative data

The statistical procedure chosen for any study depends on the research question, types of groups one is dealing with, the number of variables and the scale of measurement (Mertens, 1998:335-336). The data collected under the quantitative design was in quantity form. The Statistical Package for Social Scientists (SPSS) was used to analyse the data. The data collected guided the researcher on the form of statistical test(s) to be used.

In accordance with the stated aims, hypotheses and research questions of the current study, the following statistical analysis techniques were used. The mean and standard deviation of the physical self-concept domain were calculated.

For the purposes of describing the learners' physical self-concept, the following analyses were carried out: *Mean physical self-concept score*. The sum of scores of responses to the physical self-concept divided by the number of respondents questions.

In addition, a *t-test* was also computed to test for the existence of any significant difference between unrelated groups. They were males and females, urban and rural learners, junior and senior learners, boarders and day scholars in high and low performing schools in terms of their physical self-concept and academic achievement. Mertens (1998:333), clarifies the point when he says,

inferential statistical test such as the t-test are used when you have two groups to compare. If the groups are independent (different people in each group), the t-test for independent samples will be used while the t-test for correlated groups will be used for matched or similar groups.

In addition to the above statistical analyses, the *analysis of variance* (ANOVA) was also carried out in order to compare the learners' achievement and physical self-concept of the learners by age and school type. This was followed by the *Bonferroni post hoc* tests to determine the exact location of the differences. Mertens (1998:333) explains the point in the following words:

...if you have more than two groups to compare or when you have more than one independent variable, use the ANOVA for the analysis of data.

The following section presents the results of the study.

Research problem1

Is there a significant difference between the academic achievement and the physical self-concepts of males and females?

H_{08} There is no significant difference between the academic achievement and physical self-concepts of male and female learners.

A two-tailed *t*-test for unrelated groups was administered to determine the equality of average achievement means for male and female learners. The results are shown in **table 1**.

Table 1 Significance of differences of average achievements and physical self-concepts of males and females

Factors	N	Mean	t-value	Df	Significance
Achievement:					
Male	627	56.43	.096	1278	$p > 0.05$
Female	653	56.34			
Physical self-concept:					
Male	627	3.7284	1.285	1278	$p > 0.05$
Female	653	3.6936			

According to the results in **table 1**, there was no significant difference between the average academic achievement and the physical self-concept of male and female learners. Similar mean marks for males (56,43) and females (56,34) confirmed the result as well. The same trend was observed for the mean scores for the physical self-concept of male and female learners.

Research problem 2

Is there a significant difference between the academic achievement and the physical self-concepts of junior and senior learners?

H_{09} : There is no significant difference between the academic achievement and the physical self-concepts of junior and senior learners.

A two-tailed test was administered to test the hypothesis. **Table 2** illustrates the results.

Table 2 Significance of differences of average achievements and physical self-concepts of junior and middle learners

Factors	N	Mean	t-value	Df	Significance
Achievement:					
Junior	673	57.18	1.694	1279	$p > 0.05$
Middle	608	55.48			
Physical self-concept:					
Junior	673	3.7290	1.447	1279	$P > 0.05$
Middle	608	3.6898			

** = difference is significant at the 0.01 level ($p < 0.01$)

* = difference is significant at the 0.05 level ($p < 0.05$)

The results in **table 2** show that there were no significant differences between the average physical self-concepts of junior and middle learners. The null-hypotheses could not be rejected on the 5%-level of significance. Table 2 indicates that junior learners had consistently higher averages for both the academic achievement and physical self-concept scores than middle learners.

Research problem 3

Is there a significant difference between the academic achievement and the physical self-concepts of urban and rural learners?

H_{03} There is no significant difference between the academic achievement and the physical self-concepts of urban and rural learners.

A two-tailed *t*-test was used to analyse the responses from urban and rural learners. The results appear in **table 3**.

Table 3 Significance of differences of average academic achievements and physical self-concepts of urban and rural learners

Factors	N	Mean	t-value	Df	Significance
Achievement:					
Urban	738	56.40	-.106	1266	$p > 0.05$
Rural	530	56.51			
Physical self-concept:					
Urban	738	3.7880	6.601	1266	$P < 0.01$
Rural	530	3.6086			

According to **table 3** the physical self-concept of urban and rural learners differed significantly. The null-hypothesis was therefore rejected at the 1%-level of significance. Urban learners had better physical self-concepts than rural learners. Their average test scores were similar owing to the inclusion of selective and high performing schools in both urban and rural areas.

Research problem 4

Is there a significant difference between the academic achievement and the physical self-concepts of learners of different ages?

H_{04} There is no significant difference between the academic achievement and physical self-concepts of learners of different ages.

An analysis of variance (ANOVA) demonstrated a significant difference between the average achievements of learners of different ages. Table 4 illustrates the results.

Table 4 Significance of differences of average achievements and physical self-concepts of learners of different ages

Factors	N	Mean	t-value	Df	Significance
Achievement: 13	159	59.60	3.074	4	$p < 0.05$
14	332	57.87			
15	313	55.16			
16	298	55.60			
16+	179	54.13			
Physical self-concept: 13	159	3.7771	1.946	4	$p > 0.05$
14	332	3.7405			
15	313	3.7020			
16	298	3.6608			
16+	179	3.6624			

Table 4 shows no significant differences in the physical self-concepts and academic achievement of learners of different ages. The null-hypothesis was not rejected on the 5%-level of significance.

Research problem 5

Is there a significant difference between the academic achievement and the physical self-concepts of learners of different school types?

H_{05} There is no significant difference between the academic achievement and the physical self-concepts of learners of different school types.

An analysis of variance revealed significant differences between different school types. The results appear in **table 5**.

Table 5 Significance of differences of average achievements and self-concepts of learners of different school types

Factors	N	Mean	t-value	Df	Significance
Academic Achievement:					
Government A	302	52.15	31.814	3	p<0.01
Government B	258	54.90			
Government C	321	52.89			
Non-government	399	63.24			
Physical self-concept:					
Government A	302	3.7725	12.933	3	p<0.01
Government B	258	3.8354			
Government C	321	3.6506			
Non-government	399	3.6310			

The results in **table 5** demonstrate significant differences between the academic achievement and physical self-concepts of learners in different school types.

Post hoc Bonferroni tests revealed the following instances of significant differences:

- The physical self-concepts of learners in Government A with Government C and Non-government schools ($p<0.01$, $p<0.05$); and
- The physical self-concepts of learners in Government B with Government C and Non-government schools ($p<0.01$, $p<0.01$)

According to **table 5**, learners in Government B schools had the highest means for all the physical self-concepts and second highest academic achievement mean scores. Learners in Government C schools had the least means for academic achievement. Learners in non-government schools had the highest academic achievement mean but least for the physical self-concepts suggesting low level of physical competence or feeling of.

Research problem 6

Is there a significant difference between the academic achievement and the physical self-concepts of boarders and day scholars?

H_{06} : There is no significant difference between the academic achievement and the physical self-concepts of boarders and day scholars.

Results of a 2-tailed *t-test* of two groups- boarders and day scholars are shown in **table 6**.

Table 6: Significance of differences of average achievements and physical self-concepts boarders and day scholars

Factors	N	Mean	t-value	Df	Significance
Achievement:					
Boarder	314	65.01	10.102	1263	p<0.01
Day Scholar	951	53.70			
Physical self-concept:					
Boarder	314	3.6543	-2.453	1263	p<0.05
Day Scholar	951	3.7316	-2.390		

Table 6 shows that there was a significant difference in the academic achievement of boarders and day scholars ($p<0.01$) as well as physical self-concepts. The null-hypothesis was rejected on the 1%- and 5% level of significance

for academic achievement and physical self-concepts respectively. Boarders achieved significantly better academically while day scholars had significantly better physical self-concepts. This was to be expected since the boarding schools enrolled the brightest learners in the country. However, the lower mean physical self-concept may be due to greater concentration on academic work at the expense of sports.

Physical self-concepts, academic achievement and grade or form

Results showed no significant differences in the physical self-concepts and academic achievement of junior and middle learners overall. The results seemed to suggest that junior learners were more likely to perform better than middle learners. In other words, feelings of academic competence in general and in specific subjects or learning situations, satisfaction with school environment as a good learning place and emotional stability may act as sources of motivation for the learners. Similarity in mean scores was, however, difficult to explain. Since achievement measures used were from school records and not standardised external assessment, the usual weaknesses of educator made tests may have influenced the results. A similar study using standardised scores or grades could be the subject of another investigation.

Physical self-concepts, academic achievement of urban and rural learners

Results have shown significant differences between the physical self-concepts and academic achievement of urban and rural learners. The results were in agreement with earlier literature findings by Dembo (1994:461), Mwamwenda (1995:68), Hamachek (1995:420), Mboya (1996:388). Literature has already indicated that feeling good about one's body or physical attributes contributed towards a positive physical self-concept which in turn improved academic achievement.

There were no significant differences between the physical self-concept and average academic achievement of urban and rural learners. The results could be explained by the fact that the sample for the current study consisted of high achievers in selective non-government boarding and day schools located in rural and urban areas. Their inclusion may have narrowed or even removed the usual rural-urban differences in academic achievement. Because of this, the researcher would hesitate to conclude that school location did not make a difference to the academic achievement of learners. However, school location, urban or rural, accounted for significant differences in the physical self-concepts of the learners. The urban learners had higher mean scores for physical self-concepts. This showed that the two locations were capable of developing the learners' physical self-concepts differently.

Physical self-concepts, academic achievement of learners in different school types

The study revealed significant differences between the overall academic achievement of learners in different school types and also their physical self-concepts. Learners in non-government schools had the highest average test scores because they recruited high achievers from the whole country. They however, registered the lowest average physical self-concept scores. This might be due to the low emphasis on sporting activities, anxiety to succeed academically and feelings of inadequacy in these highly and academically competitive schools. On the other hand, learners in Government C schools performed the lowest academically, possibly because they recruited learners from the local area regardless of past performance or ability. They were however, better than non-government schools in the physical self-concepts. This might explain the differences in overall academic performance. However, Government B schools which registered the highest average scores for the physical self-concept domain appeared to offer the best environment for developing the learners' physical self-concepts. Average academic performance was lower probably because of the wide range of abilities of the learners they recruited. An earlier study had also shown significant differences in academic performance between government and non-government schools (Dambudzo, 1998:60). Literature and empirical evidence have shown that the school one attended, whether it was high or low achieving, played a significant role in shaping the learners' physical self-concepts and their academic achievement (Dembo, 1994:456).

The findings of the present study suggested that, the current practice by some parents to choose the schools or transfer their children from one school to another, "better" school was wise and likely to be beneficial to their children in terms of raising their physical self-concepts and academic achievement.

Physical self-concept, academic achievement and learners of different ages

The literature and empirical evidence have shown age accounted for no significant differences between the physical self-concept and academic achievement. Results supported earlier findings by Nicolls (in Dembo, 1994:159); Huit, (1998:24), but contradict Ezeilo (in Mboya, 1999:389) who, in a study in Nigeria reported an increase of physical self-concept with age.

Overall, the results of this study showed that age had no influence on the physical self-concept and academic achievement. Results contradicted (Mboya, 1999:388) who reported a significant relationship between age and scholastic achievement. Further research may be needed with a bigger sample.

Physical self-concept, academic achievement of boarders and day scholars

The study showed significant differences between the academic achievement and the physical self-concept of both day scholars and boarders. This implied that the type of attendance, as boarders or day scholar had some influence on shaping the physical self-concepts of the adolescent learners. Since mean marks were higher for boarders, it could be safely concluded that boarding schools offered better conditions for shaping the learners' physical self-concepts leading to better academic achievement. Regular meals at boarding schools may explain the superior position of boarders. The results supported earlier findings that the school attended shaped the physical self-concept domain and not the general self-concept (Dembo, 1994:456). Type of attendance as a boarder or day scholar had a significant impact on the physical self-concepts.

CONCLUSIONS FROM THE QUANTITATIVE STUDY

From the results it could be concluded school location in a rural or urban area, school type (government or non-government) and type of attendance as a boarder or day scholar made a difference learners' physical self-concepts and academic achievement in secondary schools. On the other hand gender, age and grade or form did not contribute to any differences in physical self-concepts and academic achievement. Further studies may be required with a larger sample in different schools to be more conclusive. Thus, given the *physical* self-concepts one might be able to predict the level of academic achievement of adolescent learners with a fair amount of confidence.

Physical self-concept and academic achievement

The study also revealed that the learners who felt good and confident about their general wellbeing, physical fitness, participation and competence in sports had positive physical self-concepts which raised their academic performance. Similarly, learners who were satisfied with their physical appearance or body image in general tended to feel more confident in whatever they did including schoolwork. Therefore, participation in school sporting activities might improve the learners' physical self-concepts and academic achievements through good physical and mental fitness, time management, self-discipline skills and the confidence they gained. Thus, there appeared to be academic gains from well organized sports, and participation in school sports involving all the learners. In addition, schools that had physical education programmes for all the learners stood to benefit from better overall pass rates and better results for individual learners.

RECOMMENDATIONS

Recommendations to improve academic achievement and physical self-concepts of secondary school learners

In the light of the research methodology used, the study's subsequent findings and conclusions, recommendations were made to improve the academic achievement and physical self-concepts of secondary school learners in Zimbabwe. The recommendations sought to complement existing strategies such as improving the supply of educators, textbooks and administrative capabilities. The information comprised practical considerations for educational practitioners and other stakeholders in education to enable them deal with the problem of underachievement of adolescent learners in secondary schools by paying attention to their self-concepts. The information might also be of some use to other researchers on physical self-concept and achievement in future.

Participation in physical activities

The study has demonstrated that the school location, school type and type of attendance as a boarder or day scholar made a difference to learners' physical self-concepts and academic achievement. Results seemed to suggest that participation and competence in physical activities improved self-confidence, physical and mental health, concentration and performance in school. The same applied to a satisfactory body image. In view of these findings, it

was recommended that participation in sports or physical education be made compulsory for every learner in every school.

RECOMMENDATIONS

In the light of the research methodology used, and the study's subsequent findings, recommendations were offered for further research on the subject of physical self-concept and academic achievement.

Recommendation 1

Researchers in the area of physical self-concept and academic achievement should also undertake longitudinal and intervention studies involving testing the learners in schools in order to determine causation. These included tracer studies for learners at different levels from Form one to Four and beyond. This would enable the generation of more information on age, physical self-concept and academic achievement.

Recommendation 2

Research by Mostert (1995:53) agrees with findings of the current study that there was no relationship between the physical self-concept of girls and their academic achievement. This could be explained by the apparent reluctance by girls to participate in physical activities such as sports or physical training. It is recommended that further studies involving learners actively involved in sports at school and those not involved be carried out for both males and females. Similarly, some investigation can be carried out with learners in schools where sports or physical training or education are compulsory for every learner in order to find out what difference that made to the physical self-concept and academic achievement.

Recommendation 3

Results of the current study have shown that there is no difference in the performance of learners in urban and rural areas overall. Further research needs to be carried out to find out the relationship between school location, physical self-concept and academic achievement in the rural and urban schools, excluding boarding schools among the rural areas. Studies to determine causation can also be carried out to find out how an urban or rural location influenced the physical self-concepts.

Recommendation 4

School type emerged as a strong variable accounting for differences in physical self-concept and academic achievement. More research needs to be carried out to determine causation so that specific advice can be offered to educators on how they can improve the physical self-concept and academic achievement in different school types. However, the practice of transferring children from one school to the other should be encouraged because the study has demonstrated that the schools were significantly different in terms of physical self-concepts and academic achievements of the learners.

Recommendation 5

Since this was the first exploratory multidimensional study on physical self-concept and academic achievement in Zimbabwe, replication studies can be carried out focusing on one of the following moderator variables: gender, form/grade, age, school type and location, and type of attendance for possible influence on physical self-concept and academic achievement.

Recommendation 6

Finally the investigation used school based test scores as measures of academic achievement and the scales used general measures of the physical self-concept. The use of standardised measures would have enhanced the reliability of the study making comparisons of achievement and conclusions more meaningful. In addition, using grades instead of the actual marks would have generated stronger correlations. Consequently, future research should address these methodological weaknesses. The following section presents the limitations to the current study. However, despite these weaknesses the statistical evidence gave an idea how possible influence of moderator variables on physical self-concepts and the academic achievement of adolescents in Zimbabwe secondary schools.

LIMITATIONS

Although the present study provides support to several theoretical propositions about the role of moderator variables on the physical self-concept and academic achievement, certain limitations should be noted.

First, randomisation was not used for this study as recommended in literature for rigour in sampling. Instead, the study used purposive sampling. This was preferred because of the varied nature of schools and school population in Zimbabwe, and the need to include both high and low achievers in the sample. However, despite the use of purposive sampling the level of significance reached for the results is strong enough to make the results reliable and make them a true reflection of the situation in Zimbabwe secondary schools. Schools provided participants in response to the researcher's specifications. The researcher believed the learners provided were a true representation of what he had specified.

Secondly, the scales used to measure the physical self-concepts consisted of global factors without going into the finer details of each. For example, for physical self-concept, no attempt was made to look at each part of the body from head to toe in order to find out how the learners felt about each one of them. Consequently, the respondents may have given what they felt generally instead of specific parts of the body and then getting the average score. Even without this detail, it was felt that the results arrived at were a reasonable reflection of what the learners felt about their physical attributes and abilities.

Thirdly, the sample comprised learners from urban and rural areas, Government (A, B & C), Non-government, boarding and day schools who were in Forms one to four. This is the general character of schools in Zimbabwe. Though the participants came from Harare and Mashonaland East alone, the results were likely to reflect the situation in Zimbabwe as a whole.

Fourthly, for achievement, school based test scores were used for the five compulsory subjects: English Language, mathematics, history, science and Shona/Ndebele. The average score for the five subjects was used as a measure of each learner's achievement. School based tests have been known to lack validity and reliability or representativeness due to scoring procedures and administration. Consequently, consistency could not be guaranteed from school to school, form to form and learner to learner.

Fifthly, the study was exploratory in nature, namely, to investigate the differences between physical self-concept and academic achievement among adolescent learners in secondary schools. The study did not seek to investigate causation. Therefore, in interpreting the results focus should be more on whether or not moderator variables investigated made a significant difference to the learners' physical self-concepts and academic achievement.

Despite the limitations outlined above, the outcomes of this study offer a reasonable basis to belief that physical self-concept does play a significant role in the academic achievement of adolescent learners in Zimbabwe secondary schools. As a multi-dimensional study of the physical self-concept, the study offered further opportunities for further exploratory and longitudinal studies on the nature of influence of the physical self-concept domain on academic achievement. In addition results of the study were likely to stimulate debate in schools and the communities on the role the physical self-concept on the achievement of the learners.

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