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RELATIONSHIP BETWEEN SELECTED BODY COMPOSITION COMPONENTS AND SELF-EFFICACY AMONG 12-14-YEAR-OLD RURAL ADOLESCENTS IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

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ABSTRACT

Adolescence is a crucial developmental stage of growing and development. This stage is characterised by physiological and psychological changes, such as changes in body composition and self-efficacy. The aim of this study was to investigate the relationship between certain body composition components and self-efficacy among 12- to 14-year-old rural boys (n=49) and girls (n=43). The anthropometrical measurements included body mass, body stature, three skinfold sites, waist and hip circumferences and were used to determine Body Mass Index (BMI), fat percentages and waist-to-hip ratio (WHR). The Self-Efficacy Questionnaire for Children (SEQ-C) was used to measure general self-efficacy. Descriptive statistics and the Pearson product-moment practical correlation for analysis of data was performed. Only girls presented significantly high practical correlations between BMI and emotional self-efficacy (r=0.33, p=0.02), total self-efficacy and WHR (r=0.44, p=0.00), social self-efficacy and WHR (r=0.39, p=0.01), and emotional self-efficacy and WHR (r=0.33, p=0.02). The boys presented significant and positive practical correlations between social self-efficacy and body mass (r=0.31, p=0.02) and body stature (r=0.39, p=0.00). The findings seem to suggest that the practical correlations between body composition and self-efficacy could be specific to certain cultures and specific countries.

Keywords: Self-efficacy; Body composition; Rural children; Body Mass Index; Fat percentage; Waist-to-hip ratio.

INTRODUCTION

Adolescence is a crucial developmental stage that is generally acknowledged as a period of great emotional turmoil and confusion, as children make their transitions towards the development of their eventual adult selves (Savi-Çakar & Savi-Karayol, 2015). The World Health Organisation (WHO, 2013:2) describes adolescence as "the period of life beginning with puberty and ending with completed growth and physical maturity", which occurs between the ages of 12 and 21 years in females and between the ages of 13 and 22 years in males. During puberty, adolescents also undergo physiological changes as a result of hormonal instabilities, which are accompanied by changes in body composition (Benedet *et al.*, 2014; Silva *et al.*, 2014).

Body composition changes drastically in both males and females during their adolescent years. Both genders show significant increases in body mass during this time (Weber *et al*., 2013). The results of a study, which was conducted by Silva *et al*. (2014) among 12- to 16-year-old Portuguese adolescents, reported that the determining factors of the body composition of adolescents were gender-specific. Another study, which was conducted by Goon (2013), among 9- to13-year-old South African urban adolescents, found that all anthropometric body composition variables differed in both genders, except for fat-free mass (FFM).

According to some international studies, adolescent boys have higher values for stature ($p=0.002$) and body mass ($p<0.001$) compared to girls (Benedet *et al*., 2014; Bacopoulou *et al*., 2015). Armstrong *et al*. (2006) obtained similar results and found significant gender differences in stature and body mass among 6- to 13-year-old South African adolescents from five different provinces. Related results were reported by other South African researchers (Pienaar *et al*., 2015; Toriola *et al*., 2015). However, Goon (2013) found urban South African girls to be significantly ($p=0.001$) heavier than their male counterparts, although boys of the same ages were still taller ($p=0.001$) than girls.

Body mass index (BMI) is the most commonly used variable to estimate conditions of overweight and obesity in children and adolescents (Pérez *et al*., 2015). BMI correlated significantly ($r=0.60$, $p=0.001$) with body fat percentage (%) among rural adolescent girls in the North West Province of South Africa (Zeelie *et al.*, 2010). The results of some Portuguese and South African studies revealed similar findings, with girls having significantly higher mean values for BMI than boys (Coelho-e-Silva *et al*., 2013; Goon, 2013).

Excessive amounts of central or abdominal fat increase the risk of metabolic complications, such as dyslipidaemia, insulin resistance and cardiovascular ailments for adolescents (Rodríguez *et al*., 2004; Bacopoulou *et al*., 2015). Guidelines for predicting central obesity in adolescents include waist circumference (WC), waist-to-hip ratio (WHR) and waist-to-height ratio (WHtR) (Bacopoulou *et al*., 2015). Most of the available international and national literature confirms gender-specific differences in WHR among adolescents, with boys having greater waist and girls greater hip circumferences (Fredriks *et al*., 2005; Bacopoulou *et al*., 2015; Pienaar, 2015).

Body fatness (determined through anthropometric measurements) were significantly correlated with BMI ($p<0.01$) among South African urban adolescents in Pretoria (Goon, 2013). The estimated growth of the triceps, subscapular and calf skinfolds tend to be greater in girls than in boys, which contributes to the gender differences in terms of fat percentages with girls presenting higher fat percentages than boys, as highlighted by previous studies (Slaughter *et al*., 1988; Malina *et al*., 2004; Goon, 2013).

These physiological changes also influence psychological health of which one such component being self-efficacy (Jourden *et al*., 1991; Chen & Wang, 2012). Self-efficacy is described as the optimistic belief of one's possibilities through actions that are in accordance with a chosen goal, regardless of the obstacles one faces in achieving this goal or the belief that one is able to perform actions that will create certain results (Weinberg *et al*. 1979; Kołoło *et al*., 2012).

Among Polish adolescents, both measured body size and perceived body image were significant predictors of self-efficacy (Kołoło *et al*., 2012). Alzubaidi and Kazem (2013) found a positive and significant practical correlation between self-efficacy and real measured body size, using BMI (Maximova *et al*., 2015). A Canadian study revealed that most of the adolescents who displayed low self-efficacy were among those classified as either overweight

or obese adolescents (Maximova *et al*., 2015). Similar findings were obtained from studies that were conducted among Korean and Chinese adolescents (Shin & Shin, 2008).

Related studies from other countries came to different conclusions. The results of a study, which was conducted among 12- to 18-year-old adolescents in Tonga, Fiji, New Zealand and Australia, disclosed that Tongans and Fijians displayed low levels of body dissatisfaction, even though their BMI was higher than that of all of the other groups (McCabe *et al*., 2011). These conflicting results of studies done might suggest that self-efficacy and how adolescents interpret their body composition could be culturally specific. Hence, addressing overweight or obesity in specific populations might have to consider these cultural differences.

PURPOSE OF RESEARCH

Few studies in South Africa have investigated self-efficacy and real measures of body composition. Maximova *et al*. (2015) claimed that their study had been the first to associate accurately measured body size (certain body composition components) with respect to self-efficacy, however, it was conducted among urban adolescents. To date, no study could be found that investigated the relationship between selected body composition components and self-efficacy among rural 12-14-year-old adolescents in South Africa. This study might provide insight into the relationship between self-efficacy and body composition among rural adolescents, which could provide valuable information when addressing obesity and overweight among rural adolescents.

METHODOLOGY

Research design

The research design was cross-sectional. This study was a component of a larger study which was titled "Evaluation of the national school nutrition program and the Tiger Brands Foundation in-school breakfast program in the Lady Frere and Qumbu district of the Eastern Cape, South Africa" (Graham *et al*., 2015).

Population and sampling

The lists of all the schools in each district were obtained from the Eastern Cape Department of Basic Education. A criterion for inclusion of the schools was that they had to have a Quintile 1-3 classification protocol for schools. Quintile 1-3 schools are schools that represent poor to very poor economic sectors from the same geographical environment (Graham *et al*., 2015). Stratified random sampling was applied to ensure that there was an adequate representation of schools at the 95% confidence level with a 5% margin of error. A total of 41 schools was identified for the original research project, however, not all schools were primary schools. The target population comprised of all the 12- to 14-year-old boys (n=49) and girls (n=43) from the selected schools in the Lady Frere and Qumbu districts of the Eastern Cape.

Instruments and measurements

All anthropometric measurements were taken according to the International Society for the Advancement of Kinanthropometry (ISAK) protocol (Stewart *et al*., 2011). This protocol comprises basic measurements, namely body stature (St.) and body mass (BM) for body mass index (BMI), sum of three skinfolds (sum 3SKF), triceps, supraspinal and calf, for percentage

body fat (%BF) and the girths of waist and hip to calculate WHR. The participants wore minimal clothing and no shoes at the time at which they were measured. The skinfold calliper was calibrated every day before the commencement of measurements. Chronological age was calculated by subtracting the date of birth from the date of measurement and the chronological ages of the children were classified in one-year intervals. For example, 12-year-old boys and girls would be classified as being between 11.5 and 12.5 years of age.

All measurements were taken twice, and, in the event that the first two measurements differed by more than 0.5cm/kg for the body mass and stature, and 0.5mm for the skinfolds, a third measurement was taken. The first two measurements were averaged and recorded. In the event of a third measurement being taken, the median value was used. Percentage body fat was calculated from the age, race-and-gender-specific equations of Slaughter *et al*. (1988:715):

- Boys: % Body fat 0.735 (TSKF + CSKF) + 1. [TSKF=triceps skinfold thickness]
- Girls: % Body fat 0.610 (TSKF + CSKF) + 5.1 [CSKF=calf skinfold thickness]

According to Slaughter *et al*. (1988:715), classifications of percentage %BF for boys were: 2-5%=very low; 6–12%=low; 13–18%=optimal range; 19–25%=moderately high; 26–31%=high; ≥32%=very high. Classifications of %BF for girls were: 4–10%=very low; 11–15%=low; 15–24%=optimal range; 26–30%=moderately high; 31–35.5%=high; ≥35.5%=very high. The cut-off points used for WHR were WHR>0.90 for boys and WHR>0.85 for girls (Fredriks *et al*., 2005). The WHR was calculated by dividing the waist girth by the hip girth. The BMI was calculated by dividing body mass by stature (BMI=kg▪m^{-2}). In the case of boys, normal mass=17.5-21.22kg, overweight=21.22-26.02kg and obese=≥26.02kg. For girls, normal mass=16.7-21.56kg, overweight=21.56-26.43kg and obese=≥26.43kg (Cole *et al*., 2007:194).

Self-efficacy

The Self-Efficacy Questionnaire for Children (SEQ-C) that was developed by Muris (2001) was used to measure general self-efficacy. It is a psychosocial 24-item scale that is used to determine how respondents cope with everyday problems and adapt to stressful events in their lives. Self-efficacy is indicative of subsequent behaviour and can be used for clinical practice and psychological research. The SEQ-C includes three 8-item scales which measure academic self-efficacy (ASE), social self-efficacy (SSE) and emotional self-efficacy (ESE). The reliability of the scale is high, with a Cronbach's alpha score of 0.90 as a measure of internal consistency. A registered clinical psychologist confirmed the content, construct and face validity of the questionnaires for use with the selected sample. The questionnaire has been used in several studies of various populations.

The principal researcher was trained in the use of the SEQ-C. All questionnaires were completed on site in the presence of the researchers and none were taken home. The lead researcher met each adolescent individually in order to prevent any peer influences. Each question was asked and explained to the participants in isiXhosa and the principal researcher recorded the response. This enabled the lead researcher to ensure that the participants understood the questions and that the answers were a true reflection of the experience of the participants.

Analysis of data

Descriptive statistics were employed through the use of the SPSS software package (version 23, IBM). The mean, minimum and maximum values for all variables were calculated. The BMI values were classified according to Cole's international cut-off points for overweight and obesity relative to gender and age for the age range between 12 and 14 years (Cole *et al*., 2000; Cole *et al*., 2007). Using the Pearson product-moment practical correlation relationships between the BMI, percent fat and self-efficacy components were established. The practical correlation values were classified as low (r=0.1), medium (r=0.3) and high (r=0.5), in accordance with Cohen's effect size (Cohen, 1992). Alpha was set at $p<0.05$ for statistical significance, while Pearson product-moment practical correlation was used to indicate practical significance.

Ethical considerations

Ethical clearance was sought and obtained from the ethics committee of the University of Johannesburg for the original study (GEN001) and for the present study (VAN041SNKO01) clearance was obtained from the University of Fort Hare. Participants and their parents/legal guardians were required to complete consent forms that were brought back to the schools on the day of the assessment. Brief explanations of all the measurements were imparted to the adolescents on each day of measurement and the adolescents who participated in the study provided verbal consent. All data was collected according to the guidelines of the Declaration of Helsinki (WMA, 2013).

RESULTS

Descriptive characteristics of the anthropometric and body composition measures of the participants, categorised by gender, are presented in Table 1 for both genders of the 12- to 14-year-old rural adolescents. Girls had significantly higher values than boys for most anthropometric body composition measures, with the exception of stature, while boys (0.81±0.07) presented significantly (p=0.02) higher values for WHR than girls (0.77±0.09). Although a similar trend was observed with self-efficacy components, no significant differences were found. Girls scored higher than boys in SSE (30.30±4.05; 30.20±3.69), ESE (27.88±3.76; 26.46±5.26) and TSE (75.3±7.1; 74.8±7.2), while boys had higher mean values (33.14±3.31) for ASE than girls (32.18±3.55).

Table 2 presents the results for practical correlations of self-efficacy components with anthropometric measures and body composition for girls. Positive and significant practical correlations were found only between BMI and ESE (r=0.33, p=0.02), SSE and WHR (r=0.39, p=0.01), TSE and WHR (r=0.44, p=0.00), and ESE and WHR (r=0.33, p=0.02) for girls.

Table 3 presents the practical correlation between self-efficacy components with anthropometric measures and body composition. Although no significant relationship was found between body composition measures and variants of self-efficacy, a meduim positive and significant practical correlations were detected between SSE and BM (r=0.37, p=0.00) and between SSE and stature (r=0.44, p=0.00). In addition, BM (r=0.31, p=0.02) and stature (r=0.39, p=0.00) were found to have a relatively high and significant relationship with TSE.

Table 1. **ANTHROPOMETRIC MEASURES, BODY COMPOSITION AND SELF-EFFICACY SCORES FOR 12- TO 14-YEAR-OLDS**

Variables	Gender	Mean±SD	Minimum	Maximum	p--Value
Body mass (kg)	Boys	42.09±8.03	30.10	77.00	**0.00**†
	Girls	48.29±11.26	26.30	79.00	
Stature (cm)	Boys	152.12±8.45	133.50	182.00	0.71
	Girls	152.74±7.66	136.00	169.90	
BMI (kg/m^2)	Boys	18.07±2.03	13.23	23.50	**0.00**†
	Girls	20.55±3.99	12.96	33.83	
Calf SKF (mm)	Boys	10.00±4.00	4.00	23.00	**0.00**†
	Girls	15.40±7.50	4.00	36.00	
Triceps SKF (mm)	Boys	8.00±3.10	4.00	19.00	**0.00**†
	Girls	13.60±6.60	5.00	34.00	
Sum 3SKF (mm)	Boys	18.12±6.75	8.00	42.00	**0.00**†
	Girls	29.11±13.70	9.00	66.00	
Waist circumference (cm)	Boys	62.30±4.20	55.00	73.20	**0.01**†
	Girls	65.80±7.80	52.00	97.20	
Hip circumference (cm)	Boys	76.90±7.20	58.50	101.40	**0.00**†
	Girls	85.80±11.30	56.80	110.00	
Waist-to-hip ratio (WHR)	Boys	0.81±0.07	0.71	1.23	**0.02**†
	Girls	0.77±0.09	0.65	1.28	
Percent body fat (%)	Boys	15.06±5.52	7.61	31.87	**0.00**†
	Girls	22.86±8.35	10.59	45.36	
Academic SE (ASE)	Boys	33.14±3.31	26.00	38.00	0.18
	Girls	32.18±3.55	28.00	38.00	
Social SE (SSE)	Boys	30.20±3.69	21.00	38.00	0.90
	Girls	30.30±4.05	23.00	38.00	
Emotional SE(ESE)	Boys	26.46±5.26	15.00	36.00	0.13
	Girls	27.88±3.76	21.00	36.00	
Total SE (TSE)	Boys	74.8±7.20	60.00	91.70	0.76
	Girls	75.3±7.10	66.70	91.70	

BMI= Body Mass Index SKF=Skinfolds WHR=Waist-to-Hip ASE=Academic Self-Efficacy
SSE=Social Self-Efficacy ESA=Emotional Self-Efficacy TSE=Total Self-Efficacy
†Practical Significance=p≤0.05) Boys (n=49) and Girls (n=43)

Table 2. **PRACTICAL CORRELATIONS BETWEEN SELF-EFFICACY COMPONENTS AND ANTHROPOMETRIC MEASURES AND BODY COMPOSITION FOR GIRLS**

SE Variables		BM	Stature	BMI	Sum 3SKF	%BF	WHR
Academic SE	Corr.	-0.11	-0.24	-0.01	-0.11	-0.11	0.25
	Sign.	0.47	0.11	0.93	0.46	0.46	0.10
Social SE	Corr.	-0.02	-0.17	0.03	-0.07	-0.07	0.39
	Sign.	0.89	0.26	0.81	0.61	0.61	**0.01**†
Emotional SE	Corr.	0.20	-0.17	0.33	0.21	0.21	0.35
	Sign.	0.19	0.25	**0.02**†	0.16	0.16	**0.02**†
Total SE	Corr.	0.03	-0.25	0.15	0.01	0.01	0.44
	Sign.	0.83	0.09	0.31	0.94	0.94	**0.00**†

BM=Body Mass BMI=Body Mass Index SKF=Skinfolds %BF=Percent Body Fat WHR=Waist-to-Hip
SE=Self-Efficacy Corr.=Practical correlation †Practical significance=p≤0.05)

Table 3. **PRACTICAL CORRELATIONS OF SELF-EFFICACY COMPONENTS WITH ANTHROPOMETRIC MEASURES AND BODY COMPOSITION FOR BOYS**

SE Variables		BM	Stature	BMI	Sum 3SKF	%BF	WHR
Academic SE	Corr.	0.17	0.15	0.10	0.05	-0.11	-0.02
	Sign.	0.24	0.30	0.48	0.70	0.41	0.87
Social SE	Corr.	0.37	0.44	0.15	0.01	0.09	-0.15
	Sign.	**0.00**†	**0.00**†	0.28	0.94	0.51	0.29
Emotional SE	Corr.	0.14	0.24	-0.01	0.05	-0.15	-0.08
	Sign.	0.30	0.08	0.91	0.68	0.29	0.56
Total SE	Corr.	0.31	0.39	0.09	0.06	-0.09	-0.12
	Sign.	**0.02**†	**0.00**†	0.51	0.67	0.50	0.39

BM=Body Mass BMI=Body Mass Index SKF=Skinfolds %BF=Percent Body Fat WHR=Waist-to-Hip
SE=Self-Efficacy Corr.=Practical correlation †Practical Significance=p≤0.05)

DISCUSSION

Girls had significantly higher percentage body fat and sum of skinfolds scores than boys, which concur with the results from other studies (Monyeki *et al*., 1999; Monyeki, 2005; Goon *et al*., 2007; Monyeki *et al*., 2008; Goon, 2013).

The BMI mean values for both genders were classified in the "normal weight" category (Slaughter *et al*., 1988:715), with the girls presenting significantly higher BMI values than boys. Several international and national studies reported similar findings, with girls presenting higher BMI values than boys (Srdić *et al*., 2012; Coelho-e-Silva *et al*., 2013; Goon, 2013; Van Den Ende *et al*., 2014; Lundeen *et al*., 2016). Both genders presented with "below risk" levels

with regard to WHR, while the boys presented higher values compared to the girls, which is again in accordance with previous studies (Aeberli *et al*., 2011; Nawarycz *et al*., 2013; Ying-Xiu *et al*., 2013; Bacopoulou *et al*., 2015). Considering that in most rural African communities, children and adolescents are involved continually in daily physical tasks relating to their households, could possibly explain the results with regard to BMI and WHR of this sample (Toriola *et al*., 2012; Goon, 2013; Kimani-Murage, 2013).

Girls presented higher mean values for total self-efficacy (TSE) when compared to boys. This finding is inconsistent with those of previous studies where significant gender differences for self-efficacy components were found (Kiran-Esen, 2012; Kołoło *et al*., 2012; Alzubaidi & Kazem, 2013). The results of a study in Tonga, Fiji, New Zealand and Australia among 12- to 18-year-old adolescents showed that Tongans and Fijians had low levels of body dissatisfaction and correspondingly high levels of self-efficacy (McCabe *et al*., 2011).

These results are consistent with other studies, such as Duncan *et al*. (2004), where it was reported that boys had a better perceived body image when compared with their female counterparts. A similar study reported that one-third of the adolescent boys in a sample would have desired to be thinner, while more than a third desired to be larger than their present size (Paxton *et al*., 2010). However, such results could be aligned with the socio-cultural influences that place strong pressure on adolescent boys to achieve a more muscular body size (McCabe *et al*., 2011). In addition, the results of this study also show the self-efficacy of girls to be significantly influenced by WHR values, while stature and BW took precedence for boys. Similar results were found among 12- to 15-year-old American middle-class and upper middle-class adolescents (Vigfusdottir & Jones, 2016).

Being overweight or obese is often associated with health, wealth and attractiveness among many black South African cultures (Armstrong *et al*., 2011). As a result, the findings from previous studies have indicated that black South African women had a higher tolerance of a larger body size than their counterparts in the mixed ancestry and white racial groups (Puoane *et al*., 2005). Therefore, it may be concluded that in some instances, tolerance of large body size status among South African rural black women acts as a modifier of high self-efficacy and positive body image (Thompson & Keith, 2001; McCabe *et al*., 2011; Vigfusdottir & Jones, 2016). Black South African adolescents tend to be more satisfied with their body size and shape than their white counterparts, which are indicative of high self-efficacy (Puoane *et al*., 2005). Several studies have shown similar results (Davison & McCabe, 2006; Edwards & Franko, 2010; McCabe *et al*., 2011; Kierans & Swords, 2016).

Consequently, coping with everyday chores, such as fetching water, farming, herding and collecting firewood could offer a reasonable explanation for the normal BMI, %BF and the rarity of being overweight, which were found among the rural adolescents in this study (Monyeki *et al*., 1999; Schwartz & Brownell, 2004; Goon *et al*., 2007; Jacobs *et al*., 2010). These results can be attributed to cultural norms concerning the "ideal body", which are reinforced through immediate socialisation agents, such as members of families and peers, thereby creating an "appearance culture" in which personal interactions reciprocally influence each other (Edwards & Franko, 2010; Kierans & Swords, 2016; Vigfusdottir & Jones, 2016).

LIMITATIONS

This study was conducted within certain limitations. Firstly, the study sample is small and hence the findings of this study cannot be interpreted as a representation of all rural areas in South Africa. Sophisticated and preferred laboratory methods for determining body

composition, such as x-ray absorptiometry, underwater weighing, air displacement plethysmography, computed tomography, nuclear magnetic resonance and bioelectrical impedance analysis could not be used due to the study being conducted in rural settings. Instead, anthropometric measurements of stature, body mass, hip circumference, waist circumference and skinfold thickness were used to assess body composition for the school-going rural Eastern Cape adolescents in the research sample. No local and vernacular self-efficacy questionnaire for children and adolescents could be found. Hence, interpretation was needed that is a limitation in itself. It should also be noted that due to only primary school adolescents participating in this survey, the results cannot be generalised as it does not necessarily represent all Eastern Cape adolescents who reside in the Qumbu and Lady Frere districts.

Longitudinal investigations of these anthropometric traits are needed in order to understand the dynamics of the changes among participants from childhood until and beyond adolescence. Future anthropometric studies of the adolescents in this particular region should endeavour to include adolescents who are not attending school and those in other age groups. There are general referencing data for these measurements and other countries have developed their own as a result of genetic and environmental factors, which has not been the case in South Africa (Cole *et al*., 2000; Aeberli *et al*., 2011; Weber *et al*., 2013; Bacopoulou *et al*., 2015; Cole *et al*., 2015).

Cultural norms regarding the body are ever-present within many cultures and widely dispersed in their environments through the media (Schwartz & Brownell, 2004; Kierans & Swords, 2016). The report aligns these results with the socio-cultural influences that exert a great deal of pressure on male adolescents to achieve large muscular bodies (Davison & McCabe, 2006; McCabe *et al*., 2011). However, different results were obtained in a study conducted among American middle-class and upper middle-class 12- to 15-year-old adolescents where high body mass and fat to obese body shapes appeared to be socially undesirable for both adolescent boys and girls, and BMI contributed to the ability to predict levels of body dissatisfaction (Vigfusdottir & Jones, 2016).

CONCLUSION

In conclusion, there is an existing relationship between selected anthropometric measurements, body compositions and self-efficacy components among rural adolescents in the Eastern Cape. However, owing to cultural differences, high self-efficacy is observed with higher BMI in both genders. Although the study found a prevalence of wide hips among girls and a relatively high BMI for both genders, the self-efficacy of the adolescents in the research sample did not appear to be affected.

Recommendations for future research would include conducting a similar study, using a larger research sample drawn from a broader cross-section of people from the same socio-economic background as the participants who comprised the research sample for this study, in order to determine whether these results have been affected by socio-cultural influences or other factors.

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