Emotional Self-Regulation as a Predictor of Self-Esteem and Academic Self-Efficacy of Children With Visual Impairment

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Abstract

Background/Objective: Research on the predictive capacity of emotional self-regulation on self-esteem and academic self-efficacy among children with visual impairment is limited. The present study investigated the predictive capacity of emotional self-regulation on self-esteem and academic self-efficacy among children with visual impairment in South-east Nigeria.

Method: A predictive correlational research design was adopted for the study. The participants were 186 students with visual impairment in public schools in the study area. The data was obtained using the Emotional Regulation Questionnaire (ERQ), Rosenberg Self-Esteem Scale (RSES), and Academic Self-Efficacy Scale (ASES). We applied multiple stepwise linear regression analysis for data analysis.

Results: Results show that ERQ reappraisal and ERQ suppression are independent predictors of RSES. The ESRQ combined scores significantly predicted RSES. The standardized β coefficient for the predictive capacity of the ERQ on RSES was -.464 (p=.000). The ERQ total score in collaboration with gender also predicted RSES. The ERQ reappraisal alone was a significant predictor of ASES, but ERQ suppression alone was not. The ERQ combined score did not significantly predict ASES. The standardized β coefficient for the predictive capacity of the ERQ total score on ASES was -.108 (p=.164). The ERQ total score together with age significantly predicted ASES. But ERQ total score with parent's educational background did not significantly predict ASES.

Conclusion: Emotional self-regulation reappraisal and Emotional Self-regulation suppression as independent predictors consequently interact to lower the self-esteem and self-efficacy of children with visual impairment. It is pertinent to focus on and teach emotional self-regulation of students with visual impairment so as to boost their self-esteem and academic self-efficacy. This will help to reduce low self-esteem among the students with visual impairment and will also help to eliminate the negative emotional thoughts concomitant with disability.

Keywords: predictive capacity, emotional self-regulation, self-esteem, academic self-efficacy, visual impairment

1. Introduction

Studies suggest that a child's emotional and behavioural regulation in preschool could predict a child's social and academic competence in kindergarten (Bulotsky-Shearer, Dominguez, Bell, Rouse, & Fantuzo, 2010). Most of the studies on the relationships among emotional self-regulation and children/adolescent's behavioural characteristics have focused mainly on sighted individuals (Meyer, Smeets, Giesbrecht, & Merckebach, 2012; Bebko, Franconeri, Ochsner, & Chiao, 2014) and very few studies have ascertained if emotional self-regulation will predict the self-esteem and academic self-efficacy beliefs of persons with visual impairment in primary and secondary schools.

The birth of a child with visual impairment or the loss of vision at any point in time is usually marked by psychological and emotional grief. The grief may not just be as a result of a loss of vision but due to other factors relating to societal perceptions and expectations, people's attitudes towards them and their experiences with peers and members of the immediate environment. People with visual impairment may become at risk of suffering from social isolation, lower self-esteem, diminished emotional security, depression, low morale, dejection and low level

of social interaction. For instance, research reveals that children with visual impairment may have more trouble building their self-esteem as they learn that they do things a bit differently from other people. Some of them become dependent, passive, lacking in initiative and exhibit undue anxiety. Studies indicate that most children develop emotional regulation in the preschool years when they begin to develop language that allows them to label and express their own emotions as well as the emotions of others. Interventions have been found to be most successful before age seven, although children are still able to develop new skills after this time as well (Macklem, 2010).

Though studies on emotional regulation have provided some valuable information on quality of life, emotion regulation strategies, and heart rate variability (HRV) among people without intellectual disabilities (Geisler, Vennewald, Kubiak, & Weber, 2010), there is paucity of research on emotional self-regulation as predictor of visually impaired children's self-esteem and academic self-efficacy. Considering the Nigerian cultural environment characterized by a negative attitude towards children with visual impairment which places them at risk for low self-esteem and learning problems, there is the need to ascertain the predictive capacity of emotional self-regulation on their self-esteem and academic self-efficacy belief. Carrying out this study is a right issue for children with visual impairment which aligns with the Federal Republic of Nigeria (FRN) (2004:1) clear statement in the National Policy on Education that "every Nigerian child shall have a right to equal educational opportunities irrespective of any real or imagined disabilities each according to his or her ability". This study provides useful information that will enhance the educational/learning opportunities of primary and secondary school pupils with visual impairment. High self-esteem and academic self-efficacy belief have been found to positively correlate with academic achievement. This study has implications for guidance counsellor and special needs educators in providing educational services to children with special needs in school.

Self-regulation is the process applied by individuals to activate and manage their thoughts, behaviours and emotions in order to meet set goals (Zimmermann & Schunk, 2011). Sonnentag and Barnett (2011) refer to emotional self-regulation as the complex process of initiating, inhibiting and modulating the conscious aspects of emotion to effectively achieve one's goals. The two major aspects of emotional self-regulation strategies that have been often explored are cognitive reappraisal and expressive suppression. Cognitive reappraisal refers to a change of thoughts about a situation or circumstance whilst expressive suppression relates to inhibition or suppression of emotional behaviour (Webb, Miles, & Sheeran, 2012). Both are aimed at regulating behaviour. Inability to regulate emotions results in tantrums, impulsive behaviours, inattention, hyperactivity, inability to learn (Shanker, 2010), and emotionally driven conduct problems such as reactive aggression (Frick & Morris, 2004; Marsee & Frick, 2007). It also results in psychological disorders such as anxiety disorders, major depressive disorder, and borderline personality disorder (Amstadter, 2008; Davidson, Putnam, & Larson, 2000; Gross & Munoz, 1995). Conversely, effective emotion regulation techniques can significantly enhance attention, memory recall, comprehension, reasoning ability, creativity, and task performance in adults and children (McCraty, 2009; 2005). Research shows that there is a dynamic and bi-directional interaction between social-emotional development and academic achievement. Also, improving the social-emotional competencies of children with healthy social development positively impacts on their interpersonal and academic skills (Roe, 2008).

Valiente, Lemery-Chalfant, and Swansos (2010) ascertained the relationship between effortful control, emotionality and academic achievement using 300 children in kindergarten classes. The result showed that students' anger, sadness and shyness were negatively related to achievement, and self-control was positively related to achievements, particularly to those who showed lower levels of negative emotions. Meule, Fath, Real, Sutterlin, Vogele, and Kubler (2013) assessed the relationship between quality of life, emotion regulation strategies and Heart Rate Variability (HRV) in a sample of individuals with intellectual disabilities and concomitant impaired vision. The result showed positive relationships between HRV, emotion regulation, and quality of life.

Some studies which focused on the relationship between emotional self-control in form of effortful control and behaviours have shown contradictory findings. For instance, Murray and Kochanska (2002) found that preschoolers with high effortful control had higher mother-reported internalizing problems. On the other hand, Garnefski, Kraaij, and van Etten (2005) found no relationship between internalizing problems and emotion regulation capabilities. In addition, De Castro, Merk, Koops and Veermande (2005) found that reactive and proactive aggressions were similarly negatively related to effortful control. Most of the studies have been conducted among normal developing children. There is a scarcity of research studies that established the relationship among emotional self-regulation, self-esteem and academic self-efficacy belief in students with visual impairment. The present study investigated the predictive capacity of emotional self-regulation on self-esteem and academic self-efficacy among children with visual impairment in South-east Nigeria

2. Method

Following approval by the ethical committee at the authors' institution, a predictive correlational research design was used to investigate the predictive capacity of emotional self- regulation on self-esteem and academic self-efficacy of children with visual impairment. The State Education Boards, parents of the students, the head teachers of the schools and the students used for the study completed the consent forms. The State Universal Education Board in the following states in the area of the study such as Ebonyi, Anambra, Enugu, Abia and the five schools for the visually impaired in south-East Nigeria were contacted. The study was conducted in all the primary and secondary schools in Enugu, Anambra, Abia and Ebonyi States in South-East Nigeria. The entire population (N=168) of the children with visual impairment in primary school classes five and six and those in the secondary schools in South-East Nigeria were used for the study as the number was adequately manageable by the researchers, therefore, there was no sampling. Participants' mean age was 14.57±.302. The researchers read out the statements/questions of the instruments to the students and also checked the responses they selected.

The participating students completed the Emotional Regulation Questionnaire (ERQ) (John & Gross, 2003), Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965), and Academic Self-Efficacy Scale (ASES) (Morgan & Jinks, 1999).

The ERQ measures individuals' control or regulation of their emotions. It has ten items with two subscales: cognitive reappraisal and expressive suppression. Six out of the ten items (1, 3, 5, 7, 8 and 10) constitute cognitive reappraisal emotional regulation while four of the items (2, 4, 6 and 9) relates to expressive suppression. Example of items in expressive suppression is: "I keep my emotions to myself." Whilst an example of items in cognitive reappraisal is, "When I want to feel less negative emotion (such as sadness or anger), I change what I am thinking about. The instrument is structured on a four-point Likert scale ranging from strongly disagree (1 point) to strongly agree (4 points). Alpha reliabilities average of .79 was recorded for reappraisal and .73 for Suppression. Test-retest reliability across 3 months was .69 for both scales (Gross & John, 2003). For this study, Cronbach' alpha reliability estimate was 0.82 for both scales.

The RSES is a ten-item scale which is structured on four-point Likert-type response options of Strongly Agree (4 points) to Strongly Disagree (1 Point). Five of the items were positively skewed while five were negatively skewed. The negatively skewed items were reverse-scored. It is used to determine the general feeling one has about oneself. The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem. The scale generally has high reliability: test-retest correlations that are typically in the range of .82 - .88, and Cronbach's alpha for various samples are in the range of .77-.88 (Blascovich & Tomaka, 1993; Rosenberg, 1986). For this study, a Cronbach alpha reliability estimate was 0.84.

The ASES was used to determine the academic self-efficacy of the participants. It is a 30-item questionnaire with four response options of Really Agree (1point) to Really Disagree (4 points). Examples of items include, I could get the best grades in class if I tried enough; Sometimes I think an assignment is easy when the other kids in the class think it is hard. Higher scores indicate a higher level of academic self-efficacy. For this study, Cronbach' alpha reliability estimate was 0.85.

The data from the study were analyzed using the IBM SPSS, version 22. Continuous variables were reported as mean and standard deviation. We conducted multiple stepwise linear regression analysis to ascertain if emotional self-regulation (measured via ESRQ) is a predictor of self-esteem (measured via RSES) and academic self-efficacy (measured via ASES) of students with visual impairment. In the current study, $p \leq .05$ was considered significant.

3. Results

Table 1 shows the means, standard deviations and statistical significancevalues of ERQ, RSES, and ASES across students' demographic characteristics which include age, gender, type of visual impairment (VI), time of onset of VI, family type, parent's educational background, and family size.

Table 1. Means, standard deviations and F-tests of ERQ, RSES, and ASES across students' demographic characteristics

Characteristics		n	ERQ reappraisal M±SD	ERQ suppression M±SD	ERQ total score M±SD	RSES M±SD	ASES M±SD
Age (range)	8–12years	82	19.84±4.99	12.48±3.30	32.32±8.19	28.77±3.77	87.33±7.69
	13–18years	86	18.60±4.45	11.22±3.11	29.83±4.46	29.38±2.92	89.37±6.51
	F-test statistic	–	*F*(1,167)=2.802, *p*=.096	*F*(1,167)=6.570, *p*=.011	*F*(1,167)=4.244, *p*=.041	*F*(1,167)=1.030, *p*=.312	*F*(1,167)=3.929, *p*=.049
Gender	Male	50	19.36±4.97	11.74±3.51	31.10±8.37	28.30±3.60	89.34±6.82
	Female	118	19.14±4.68	11.87±3.16	31.02±7.73	29.42±3.21	87.97±7.29
	F-test statistic	–	*F*(1,167)=.013, *p*=.911	*F*(1,167)=.234, *p*=.629	*F*(1,167)=.017, *p*=.896	*F*(1,167)=3.530, *p*=.062	*F*(1,167)=1.765, *p*=.186
Type of Visual Impairment(VI)	Low Vision	155	19.17±4.77	11.79±3.25	30.90±7.91	29.14±3.39	88.26±7.23
	Blindness	13	20.31±4.57	12.38±3.45	32.69±7.91	28.38±2.98	89.77±6.42
	F-test statistic	–	*F*(1,167)=.792, *p*=.375	*F*(1,167)=.543, *p*=.462	*F*(1,167)=.704, *p*=.403	*F*(1,167)=.371, *p*=.543	*F*(1,167)=.326, *p*=.569
Time of Onset of VI	Congenital	58	19.00±4.69	11.55±3.20	30.55±7.79	29.76±3.06	89.12±6.53
	Adventitious	110	19.32±4.79	11.98±3.29	31.30±7.98	28.73±3.47	87.98±7.47
	F-test statistic	–	*F*(1,167)=.273, *p*=.602	*F*(1,167)=.547, *p*=.461	*F*(1,167)=.383, *p*=.537	*F*(1,167)=8.450, *p*=.004	*F*(1,167)=.316, *p*=.575
Family Type	Nuclear	108	18.84±4.92	11.65±3.33	30.49±8.15	29.19±3.20	87.64±7.57
	Extended	31	21.08±4.11	13.15±3.21	34.23±7.21	28.23±3.39	88.38±5.56
	Fragmented	16	21.00±3.97	13.00±2.89	34.00±6.70	28.88±4.21	90.75±5.19
	Reconstituted	13	18.77±4.55	11.32±3.07	30.09±7.50	29.16±3.53	89.71±6.94
	F-test statistic	–	*F*(1,167)=1.546, *p*=.205	*F*(1,167)=1.498, *p*=.217	*F*(1,167)=1.559, *p*=.202	*F*(1,167)=.263, *p*=.852	*F*(1,167)=1.110, *p*=.347
Parent's Educational Background	Primary School Graduate	93	18.41±4.81	11.28±3.22	29.69±8.01	29.28±3.25	88.06±7.32
	Secondary School Graduate	18	20.11±5.09	12.11±3.92	32.22±8.93	28.17±3.15	90.17±4.66
	Postsecondary School Graduate	57	20.23±4.19	12.65±2.95	32.88±7.03	29.05±3.61	88.32±7.56
	F-test statistic	–	*F*(2,167)=2.726, *p*=.068	*F*(2,167)=3.224, *p*=.042	*F*(2,167)=2.974, *p*=.054	*F*(2,167)=.284, *p*=.753	*F*(2,167)=.530, *p*=.590
Family Size	Small	108	19.72±5.10	12.24±3.59	31.96±8.61	28.24±3.36	87.72±6.72
	Moderate	25	19.83±4.67	12.31±3.32	32.14±7.89	28.54±3.72	89.23±6.99
	Large	35	18.89±4.70	11.58±3.16	30.47±7.75	29.45±3.21	88.25±7.35
	F-test statistic	–	*F*(2,167)=.439, *p*=.646	*F*(2,167)=.747, *p*=.475	*F*(2,167)=.568, *p*=.568	*F*(2,167)=.678, *p*=.509	*F*(2,167)=.303, *p*=.739

Table 2. Means and standard deviations for ERQ, RSES and ASES

	Mean ± SD	Skewness	Kurtosis
ERQ total score	31.04±7.90	−.537	−1.011
ERQ reappraisal	19.21±4.75	−.702	−.899
ERQ suppression	11.83±3.26	−.239	−1.113
RSES	29.08±3.36	−.796	.375
ASES	88.38±7.16	−.631	−.481

ERQ=Emotional Regulation Questionnaire; RSES=Rosenberg Self-Esteem Scale; ASES=Academic Self-Efficacy Scale.

In the current study, the students had a mean score of 19.21±4.75 (ERQ reappraisal), 11.83±3.26 (ERQ suppression), 31.04±7.90 (total ERQ), 29.08±3.36 (RSES), and 88.38±7.16 (ASES). (see Table 2).

Table 3. Results of Multiple Stepwise Linear Regression Analysis between ERQ, RSES, and ASES

Dependent variables	Step	Predictor variables	B	Standardizedρ	ρ	95% CI for B	R^2	F	ρ
RSES	1	Constant	35.214	–	.000	33.364, 37.065	.215	45.535	.000
		ERQ total score	−.198	−.464	.000	−.255,−.140			
	2	Constant	33.33		.000	30.847, 35.821	.238	25.272	.000
		ERQ total score	−.197	−.463	.000	−.254, −.140			
		Gender	1.099	.150	.029	.115, 2.083			
ASES	1	Constant	85.339	–	.000	80.916, 89.762	.012	1.955	.164
		ERQ	.098	.108	.164	−.040, .236			
	2	Constant	77.115	–	.000	70.548, 83.681	.072	6.386	.002
		ERQ total score	.130	.144	.060	−.005, .266			
		Age	.572	.248	.001	.227, .917			
	3	Constant	85.378	–	.000	80.850, 89.907	.012	.975	.379
		ERQ total score	.099	.109	.168	−.042, .240			
		Parent' educational background	−.035	−.007	.933	−.841, .772			

ERQ=Emotion Regulation Questionnaire; RSES=Rosenberg Self-Esteem Scale; ASES=Academic Self-Efficacy Scale, VI=Visual Impairment.

Table 3 shows that we carried out a multiple stepwise linear regression analysis to determine if ERQ is a predictor of RSES and ASES among students with visual impairment. We included only students' demographic characteristics which had a significant correlation with RSES and ASES respectively in the regression equation as in Hiçdurmaz, İnci, and Karahan (2017). Other demographic characteristics were excluded in the regression equation since they showed a nonsignificant association with ERQ, RSES, and ASES scores respectively.

The results of our study indicated that when the ERQ scales were considered separately, we found that ERQ reappraisal was a significant predictor of RSES ($R^2 = .214$, $F = 45.305$, $p = .000$, $\rho = −.463$, $p = .000$), and ERQ

suppression was also a significant predictor of RSES (R^2 = .203, F = 42.162, p = .000, ρ = –.450, p = .000). Overall, the ERQ combined scores significantly predicted RSES (R^2 = .215, F = 45.535, p = .000). The standardized ρcoefficient for the predictive capacity of the ERQ on RSES was –.464 (p = .000). ERQ total score together with gender also predicted RSES (R^2 = .238, F = 25.272, p = .000).

To find out if ERQ predicts academic self-efficacy, the ERQ scales were first considered separately, and we found that ERQ reappraisal alone was a significant predictor of ASES (R^2 = .026, F = 4.452, p = .036, ρ = .162, p = .000), but ERQ suppression alone was not a significant predictor of ASES (R^2 = .001, F = .113, p = .738, ρ = .026, p = .000) . Also, our regression results showed that the ERQ combined score did not significantly predict ASES (R^2 = .012, F = 1.955, p = .164). The standardized ρcoefficient for the predictive capacity of the ERQ total score on ASES was –.108 (p = .164). The ERQ total score together with age significantly predicted ASES (R^2 = .072, F = 6.386, p = .002). But, ERQ total score together with parent's educational background did not significantly predict ASES (R^2 = .012, F = .975, p = .379).

4. Discussion

The results of our study indicate that ERQ reappraisal and ERQ suppression independently predicted RSES. ERQ combined score also significantly predicted RSES. Visual impairment has been associated with low self-esteem, however, this finding has added to the growing body of knowledge by showing the relevance of emotional regulation on the self-esteem and academic self-efficacy of students with visual impairment.

This result further showed that an increase in the ability to self regulate emotions results in increased self-esteem. This finding is expected as individuals who use cognitive reappraisal which is an integral part of emotional self-regulation engage in cognitive reframing, reinterpreting situations and circumstances in order to decrease their negative emotional reactions and reduce their negative emotional response such as low self-esteem while expressive suppression enables individuals to subdue emotional expression without reducing emotional experience (Gross & Thompson, 2007). Other relevant research studies have shown that individuals who self regulate their emotions through cognitive reappraisal tend to experience less depression, anxiety (Gross, Richards, & John, 2006) reduced negative effect and increase positive effect (Augustine & Hemenover, 2009) and have long term effect on individuals' wellbeing and interpersonal functioning (John & Gross, 2004). This finding on emotional self-regulation is important since it has shown that improvement in self-regulation will handle the self-esteem of individuals with visual impairment. Hence, teachers, parents, social workers, guidance counsellors and rehabilitation staff should make an effort to help students with visual impairment to develop emotional self-regulation strategies that will improve their self-esteem. The findings of this study are consistent with the literature which indicates that inability to self-regulate emotions by individuals with visual impairment is a good explanation for their psychological problems as well as their low self-esteem (Eniola, 2007). Similarly, another important study has also shown that inability to self regulate emotions leads to impulsive and aggressive behaviour, difficulty in paying attention and learning, procrastination, which could affect academic self-efficacy (Schore, 2003).

In this study we also found that the ERQ combined score significantly predicted ASES, however, ERQ reappraisal alone was a significant predictor of ASES whereas ERQ suppression alone was not a significant predictor of ASES. In order words, the academic self-efficacy of the students is dependent on the extent the students use either emotional cognitive reappraisal or emotional suppression. One risk factor following visual impairment is their academic self-efficacy beliefs and those with positive academic self-efficacy beliefs tend to perform better academically (Bandura, Babaraneli, Caprara, & Pastorelli, 1996) and are more resilient in accomplishing tasks (Pajares & Schumk, 2001). The finding of this study agrees with previous studies which show that child's emotional and behavioural regulation in preschool could be a predictor of a child's academic competence (Bulotsky-Shearer, Dominguez, Bell, Rouse, & Fantuzo, 2010). This study has extended this finding to students with visual impairment. This finding is in line with the assertion of Lipsett (2011) that emotional regulation can affect a child's ability to learn new material, persevere to complete tasks, and take tests. In the same vein, Woolfolk (2013) noted that emotional competencies and self-regulation are critical for academic and personal development. Positive academic self-efficacy beliefs have been associated with high academic achievement Pajares & Miller, 1997) and since emotional self-regulation predicts academic self-efficacy intervention programs that will increase their emotional self-regulation will be appropriate as it will have an effect on their academic achievement.

4.1 Limitations of the Study

The instruments could have been brailed for the students to read independently, however, some of the students cannot read Braille. They could also have used screen readers but the facilities were not available in schools. Another limitation of this study is the use of self-report measures in generating data used for the study. Self-report

measures which were used to assess self-regulation, self-esteem and academic self-efficacy and such self-reports are prone to bias due to social desirability, however, such self-reports are imminent especially when an attempt is made to ascertain an individual's innate tendencies.

4.2 Implications of the Study

Several studies have shown that students with visual impairment scored lower on their self-esteem in comparison with their counterparts without visual impairment (Lopez-Justicia, Pichardo, Amezcua, & Fernandez, 2001; Soulis, & Christodoulou, 2010; Soulis, Andreou, & Xristodoulou, 2012) and based on the present investigation which found that emotional self-regulation significantly predicted self-esteem of students with visual impairment, the finding has implication for the education of students with visual impairment. To make them acquire good self-esteem and academic self-efficacy beliefs, they need to be exposed to cognitive reappraisal strategies. It will also be proper to have a good understanding of the psychological and emotional grief they go through so that they will be well trained to regulate their emotions. It will help to improve their self-esteem and academic self-efficacy and consequently enhance their psychological wellbeing as well as their academic achievement. Training students with visual impairment on emotional self-regulation strategies would likely improve their self-esteem. It is, therefore, imperative for the special educators, rehabilitation officers, caregivers, parents and significant others who are involved in the provision of education to persons with visual impairment to train the students to acquire emotional self-regulatory strategies early in life as research has shown that it could be acquired early in life. This will also help to boost their confidence.

5. Conclusion

Emotional self-regulation components - reappraisal and suppression are independent predictors of self-esteem level of children with visual impairment. Emotional self-regulation combined scores significantly predicted the self-esteem of these children in South-East Nigeria. Emotional self-regulation total score together with gender also predicted self-esteem level of children with visual impairment. However, the reappraisal component of emotional self-regulation alone was a significant predictor of academic self-efficacy beliefs of children with visual impairment, but suppression component alone was not. Emotional self-regulation combined score did not significantly predict academic self-efficacy beliefs of these children with visual impairment in South-East Nigeria. Emotional self-regulation total score together with age significantly predicted academic self-efficacy beliefs. But, emotional self-regulation total score together with parent's educational background did not significantly predict academic self-efficacy beliefs. Studies are required to further validate these findings among students with vision loss.

6. Recommendations

It is pertinent to focus on and teach emotional self-regulation of students with visual impairment so as to boost their self-esteem and academic self-efficacy. This will help to reduce low self-esteem among the students with visual impairment and will also help to eliminate the negative emotional thoughts concomitant with disability. Reappraisal training could neutralize or reduce any differences in regulation success. A longitudinal study would also be appropriate so as to further understand the relationship among the variables this study investigated. Further studies may improve on the method of administering the instruments by making the students use alternative means of answering the research measures through the use of computer and screen reading software.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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