



## Social Cognitive Skills and Delinquent Behavior Modification among Students in Secondary Schools in Kenya

Tom K.O. Onyango<sup>1</sup>, Peter J.O. Aloka<sup>2</sup>

<sup>1</sup> School of Education, Rongo University, Kenya

<sup>2</sup> Wits School of Education, University of Witwatersrand, South Africa

**ABSTRACT:** The study investigated the relationship between social cognitive skills and delinquent behavior modification among students in secondary schools in Kenya. The Correlational Research design within the Positivist paradigm was adopted. The accessible population comprised of 3,740 students who had undergone counselling in 26 secondary schools in Rongo sub-county of Kenya. A sample size of 374 counselled students was obtained using both stratified and simple random sampling techniques. The Brief Self-Control Scale, Behavioral Inhibition Scale, Vicarious Experience Scale, Challenging Behaviour Attributions Scale and Behavior Modification Scale were used to collect data. Cronbach's alpha coefficient was used to investigate the internal consistency of the questionnaires all the sub-scales had internal consistency of 0.701 and 0.759. Pearson Product Moment Correlation Coefficient and regression analysis were used to analyze data. The model was statistically significant [ $F(4, 339) = 16.928$ , Adjusted  $R^2 = .157$ ,  $sig. < .05$ ], implying it was adequate enough to predict the dependent variable. However, this finding indicates that only 15.7% of the variability in behaviour modification among the secondary school students is explained by social cognitive skills. The school counsellors should use person centered counselling techniques to enhance social cognitive skills among students.

**KEY WORDS:** Behavior modification, Delinquency, Students, Social cognitive skills, Kenya

### INTRODUCTION

Social cognition is being researched in many fields including psychology, medicine, business and education. Social cognition refers to the mental operations that underlie social interactions including the perception and interpretation of the intentions, dispositions, and behaviors of others, and the generation of a response to these behaviors (Green, Penn, Bentall, Carpenter, Gaebel, Gur & Heinsen, 2008). Social cognition refers to a set of neurocognitive processes underlying the individuals' ability to "make sense of others' behavior" as a crucial prerequisite of social interaction (Frith & Frith, 2007). Green *et al.*, (2008) reiterate that social cognitive processes in humans describe the ways individuals draw inferences about other people's beliefs and the ways they weigh social situational factors in making these inferences. social cognitive skills are necessary skills for successful social functioning of any given individual. Components of social cognitive skills include Self-control, vicarious experience, attributions and inhibition.

Self-control is defined as the ability to delay immediate gratification of a smaller reward for a larger reward later in time (Kirby & Herrnstein, 1995). Self-control is also defined as the mechanism that allows for inhibiting or overriding impulses coming from the hot system, allowing precedence of the cold system (Gillebaart & De Ridder, 2017). Bandura in Otengei, Kasekende, and Ntayi, (2017), define vicarious experience as what takes place when people observe the actions of others and then evaluate themselves. Bartsch *et al.* (2012) also define vicarious experience as the observation of others (models) succeeding or failing. Rosenbaum, Schuck, Costello, Hawkins, and Ring (2005) classifies vicarious experience as either negative or positive. Attribution deals with how the social perceiver uses information to arrive at causal explanations for events, and it examines what information is gathered and how it is combined to form a causal judgment (Fiske & Taylor, 1991). Attribution can be dispositional attribution one which assigns the cause of behavior to some internal characteristic of a person, rather than to outside forces, or situational in nature which assigns the cause of behavior to some situation or event outside a person's control rather than to some internal characteristic (Heider, 1958). Finally, inhibitory control involves the ability to inhibit automatic but incorrect responses or to resist interference from distracting stimuli, to reduce a non-target's impact on ongoing information processing (Diamond, 2013).



Juvenile delinquency is a global problem and it is increasingly becoming confusing and more complex issue globally (Poduthase, 2012). Hoge (2001) define juvenile delinquency as an action that violates an ordinance in which that action is performed. Delinquent behavior is one of the most distressful problems for adolescents' learners and it encompasses an enormous range of behaviours which are subject to legislation differing from one jurisdiction to another (Young, Greer & Church, 2017). The acts of delinquent acts include theft, serious interpersonal violence, alcohol consumption, aggressive tendencies, stealing, yelling and sexual behaviour among adolescents (Young, Greer & Church, 2017). Elliott, Huizinga and Menard (2012), reiterate that delinquent activities include refusal to adhere to the parental demands, alcohol use, drug addiction, stealing, property destruction, theft and rape. Behavior modification is a psychotherapeutic intervention primarily used to eliminate or reduce maladaptive behavior in children or adults (Scott & Cogburn, 2019).

Adolescence is a time of profound psychological and social transformation. During adolescence, the social world and the peer interactions it enables become increasingly important. The adolescents spend more time with peers than with their family and form more complex peer relationships (Lam, McHale & Crouter, 2014). Odigie (2013) asserts that during this period, parents and their adolescent children experience a transition in their relationship, from one in which parents have unquestioned authority to one in which the adolescent is granted reasonable independence or autonomy to make important decisions. Dumonthei, Apperly and Blakemore (2010) add that cognitive abilities such as self-referential processing, executive control, mentalising, improve across adolescence, enabling young people to better understand other people's minds and take others' perspectives. Adolescence is also a period of heightened vulnerability to mental health problems, with most of adults who have ever had a mental health condition reporting that they first experienced symptoms before the age of 24 years. There is evidence that problems with peer relationships, peer rejection, bullying, and loneliness are risk factors for the development of affective conditions such as depression in adolescence (Arseneault, 2018). Odigie (2013) further notes that the adolescent period is marked with great emotional stress, when they detach emotionally from their parents and seek to make their own choices about their activities, diet and time schedule. There is increased sociability with peers and risk taking behaviour as the adolescents strive towards acquiring necessary skills for survival in adulthood. In Kenya, Aloka (2020) report that delinquent behaviors among students in secondary schools continue to rise every year. Aloka (2020) reiterate that the Kenyan Ministry of Education has mandated schools to address the delinquent behaviours by various modification techniques.

## LITERATURE REVIEW

The study was guided by the Social Cognitive Theory which proposes a model of causation involving triadic reciprocal determinism. In this model of reciprocal causation, behavior, cognition and other personal factors, and environmental influences all operate as interacting determinants that influence each other bi-directionally (Bandura, 1989). In Social Cognitive Theory, people function as contributors to their own motivation, behavior, and development within a network of reciprocally interacting influences (Bandura, 1989). Previous studies on social cognitive skills and behavior modification exists. On the aspect of social control, and behavior modification, Judistira and Wijaya (2018) showed that when both of the self-control and self-adjustment analyzed together, only self-control could predict academic achievement ( $\beta = 0.182$ ;  $F = 6.620$ ;  $df = 1$ ;  $p < 0.05$ ). In Nigeria, Nwagu, Enebechi and Odo, (2018) revealed that significant differences occurred in the students' level of self-control in learning for healthy living when the students were classified based on their courses of study. Similarly, Oliva *et al* (2019) showed that low scores in self-control were significantly associated with greater substance consumption, more anxiety-depression symptoms and higher scores on the Internet addiction. Powers, Moshontz and Hoyle (2020) found that greater self-control did predict lower third-year anxiety, even after accounting for anxiety levels upon entering school. Ahmad *et al* (2012) study indicated that the self-control training procedure was significantly effective in improving the social skills of students with ADHD. Hagger, Gucciardi and Hamilton (2019) indicated significant negative relations between of implicit self-control and impulsive drinking and alcohol consumption. On the contrary, Staubitz, Lloyd and Reed (2019) indicated that self-control training alone did not improve self-control.

A study by Ashuri *et al* (2018) showed that the observation mechanism contributes to reward envy that leads to a high level of self-disclosure behavior. Similarly, Farzad *et al* (2010) revealed that observation of model with verbal teaching improves learning of the



handstand skill, while observation without verbal description has no effect on learning the skills. In addition, Otengei, Kasekende and Ntayi (2017) suggest vicarious experience as an alternative route to stimulating a particular form of career motivation (career identity). Masashi (2016) also showed that effects of direct and vicarious experiences on children's willingness to conserve biodiversity were mediated by their affective attitudes. On the attributions and behavior modification, Gilbert and Warburton (2013) confirmed that attributions to abstinence were significantly higher for increased negative experiences. Nikbin and Hyun (2017) indicate that both dimensions of casual attribution influenced pre-recovery emotions and negative behavioural intentions. Korn et al (2016) study predicts that participants change their evaluations of the actors' credibility toward the positive after receiving positive performance feedback and toward the negative after negative performance feedback. Simms (2014) revealed that teachers' causal attributions of student problem behavior are predictive of teachers' intervention preferences.

Bartsch, Kothe, Allom, Mullanand and Houben (2016) reported that participants in the inhibition condition did not have lower levels of alcohol consumption, nor improved response inhibition after the intervention, compared to participants in the active control condition. Similarly, Walker, Henderson, Degnan, Penela and Fox, (2014) showed that behavioral inhibition was positively associated with displayed social withdrawal and negatively associated with assertive behavior. A published meta-analysis demonstrated small but significant effects of Inhibitory control training on both food ( $d = 0.37$ ) and alcohol consumption ( $d = 0.43$ ) in the laboratory (Allom, Mullan, & Hagger, 2015). Jones, et al (2016) reported that the magnitude of the effect of Inhibition control training on behaviour was predicted by the proportion of successful inhibitions. Houben (2011) add that, the inhibition manipulation decreased food consumption in participants with low levels of inhibitory control to the same level of food intake as that of participants with high levels of inhibitory control. Guerrieri, Nederkoorn, Schrooten, Martijn, and Jansen (2009) demonstrated decreased food intake following a manipulation that primed inhibitory control compared to a manipulation that primed impulsive behavior. Finally, Vanessa, Barbara, and Martin (2016) meta-analysis of 19 studies indicated that inhibitory control training paradigms can influence health behaviour, but perhaps only in the short-term.

From the reviewed literature, some studies were meta-analysis and were not empirical in nature as was the present study. Some of the studies did not focus on delinquent behaviours alone, which the present study investigated. In Rongo sub-county of Kenya, there are several students in secondary schools who have undergone counselling from delinquent behaviours. The school counsellors have utilized several counselling techniques to address the behavior problems of the students. Despite the structured school counselling services, the student continues to display delinquent behaviours. The counselling is meant to enhance the social cognitive skills among the learners among other expected outcomes.

## The present study

Therefore, the present sought to investigate the relationship between social cognitive skills and delinquent behaviour modification among students in secondary schools in Rongo sub-county of Kenya. The null hypothesis was thus stated as follows:

**H<sub>0</sub>:** *There is no significant relationship between social cognitive skills and delinquent behaviour modification among students in secondary schools*

## METHODS

### Research Design

The Correlational Research design within the Positivist paradigm was adopted. Correlational research design is used in situations when there is an interest to establish the strength and direction of relationships between two variables but it does not indicate whether it is a causal relationship (Holton & Burnett, 2005). Correlational research is supported by relational theories that attempt to test relationships between dimensions of individuals, groups or situations or events (Salkind 2010). This Correlational Research design is appropriate for exploring problems about the relationships between constructs, construct dimensions and items on a scale (Cohen, Cohen, West, & Aiken, 2003). This design was appropriate for the study because it helped to assess the extent of relationships between social cognitive skills and delinquent behavior modification.



**Study participants**

The accessible population comprised of 3,740 students who had undergone school based counselling on delinquent behaviours in 26 secondary schools in Rongu sub-county of Kenya. A sample size of 374 counselled students was obtained and this was 10% of the accessible population of students. This sample size was considered to be appropriate as recommended by Mugenda and Mugenda (2003) that, the sample size can range between 10% to 30% allowing the results to be representative of the target population. Stratified sampling technique was used to classify the students into four school categories, national, extra county, county and sub-county schools. Thereafter, proportional sampling method was used to obtain students from each school, and simple random sampling used to obtain students from each of the selected schools.

**Measures**

The Social cognitive skills, the Self-Control, inhibition, Attributions and vicarious experience were measured from students using various scales. *The Brief Self-Control Scale*, had 13 items rated on a 5-point Likert scale, anchored at 1 ‘not at all like me’ and 5 ‘very much like me’. The Brief Self-Control Scale was guided by a broader conception of self-control as “the self’s capacity to override or change one’s inner responses, as well as to interrupt undesired behavioral tendencies and to refrain from acting on them (Tangney *et al.*, 2004). *The Behavioral Inhibition Scale* (BIS) was used for measuring behavioral inhibition (Van Brakel, & Muris, 2006). The BIS Scale is a 24-item self-report questionnaire designed to measure behavioral inhibition system. Participants respond to each item using a 4-point Likert scale: 1 (*very true for me*), 2 (*somewhat true for me*), 3 (*somewhat false for me*), and 4 (*very false for me*) (Van Brakel & Muris, (2006). *The Challenging Behaviour Attributions Scale* (CHABA) developed by Hastings (1997b), assessed a range of staff attributions about the causes of challenging behaviours. Participants were asked to rate how likely they thought the explanations were on a 5 point scale, ranging from “*very unlikely*”, “*unlikely*”, “*equally likely/unlikely*”, “*likely*” to “*very likely*”. The *Vicarious Experience Scale* was adapted from the Bandura’s self –efficacy scale (Bandura, 2006), and the items had a 5-point Likert scale, (1 = strongly disagree, 5 = strongly agree). *The Behavior Modification Scale* developed by Dubno, *et al* (1975) was adopted to obtain information on behavior modification. There were 26 items on a 5-point Likert scale, Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree.

The internal validity of the constructs of the scales was tested by subjecting the survey data to suitability tests using the Kaiser-Meyer-Okin measure of sampling adequacy (KMO Index) and the Bartlett’s Test of Sphericity, as explained by Gravetter & Wallnau (2000). Therefore, the internal validity of the questionnaire’s data set for analysis was assessed for each sub-scale and the results was summarized as in Table 1.

**Table 1:** KMO and Bartlett’s Test results of scales

Scales	Kaiser-Meyer-Olkin (KMO index)	Bartlett's Test for Sphericity		
		Approx. Chi-Square	df	Sig.
Brief Self-Control Scale	.715	515.978	78	.000
Vicarious Experience Scale	.727	162.807	15	.000
The Behavioral Inhibition Scale	.509	238.752	66	.000
Vicarious Experience Scale	.643	1490.887	378	.000
The Behavior Modification Scale	.727	694.953	66	.000

**Source:** Survey data (2019), SPSS Analysis

Table 1 shows the results of the Kaiser-Meyer-Okin measure of sampling adequacy (KMO Index) and the Bartlett’s Test for Sphericity for each subscale of the questionnaire, indicate that the questionnaires had acceptable internal validity. Kaiser (1974), as reported by Creswell (2014) states that the Kaiser-Meyer-Okin measure of sampling adequacy index > 0.6 is of adequate internal validity. Similarly, Creswell (2014) commends that Bartlett’s Sphericity test statistic should be less than 0.05 for an adequate internal



validity. From the results, Bartlett's test for Sphericity are significant ( $p=0.000$ ) and Kaiser-Meyer- Olkin indexes are all  $> .6$  for all the subscales of the questionnaire. As a result, based on the results, it was concluded that the questionnaires were of adequate internal validity.

Cronbach's alpha coefficient analysis was used to investigate the internal consistency of the questionnaires, since it is the most reliable test of inter-item consistency reliability for Likert scaled or rating scaled questionnaire. The reliability for multi-item opinion items were computed separately for all the subscales in the questionnaires and the coefficient alpha of these variables were reported in Table 2.

**Table 2:** Internal Consistency: Cronbach's Alpha Results for the Questionnaires

Scales	Cronbach's alpha	Conclusion
Brief Self-Control Scale	.701	Reliable
Vicarious Experience Scale	.759	Reliable
The Behavioral Inhibition Scale	.707	Reliable
Vicarious Experience Scale	.709	Reliable
The Behavior Modification Scale	.721	Reliable

Table 2 reveals that all the sub-scales reached the required level of internal consistency of reliability, with the Cronbach's alpha values ranging from a low of 0.701 (Brief Self-Control Scale) to a high of 0.759 (Vicarious Experience Scale). These findings were in line with the recommendation by Oso and Onen (2011) that a coefficient of 0.60 and above is of adequate reliability, indicating that the instrument has adequate inter-item consistency reliability standard. The Cronbach's alpha for all the sub scales reveals that the instruments had adequate reliability for the study.

## Procedure

The ethical clearance was first obtained from National Commission for Science Technology and Innovation in Kenya. Thereafter, a letter of permission to access the selected secondary schools was obtained from Migori County Education Office. Upon obtaining the permission, the researcher made introductory visits to the selected secondary schools and explained the purpose of the study to the principals. On the day of data collection, the grade 11 students were assembled in the school hall, they were briefed on ethical issues, that they had the right not to participate in the study. The students were assured that the data was to be used for research purposes only and that anonymity was assured. Upon accepting to participate in the research, the students were issued with consent forms which they signed. Thereafter, the students were given sets of questionnaires to complete and it took approximately 45 minutes to fill them, after which the researcher collected them in preparation for analysis.

## DATA ANALYSIS

The data was analyzed by entering the data into SPSS version 22 and performing a Pearson Correlation with self-control, vicarious experience, rational attribution, and inhibition variables against success in behaviour modification among students as the other variables. In order to test the null hypothesis, a Pearson Product Moment Correlation Coefficient was computed with scores on students' aspects of social cognitive skills as independent variables and delinquent behaviour modification as dependent variable. The scores of independent variable (students' social cognitive skills) was computed from frequencies of responses by computing mean responses per respondents. Mean response across a set of questions of Likert scale responses in each item was computed to create an approximately continuous variable, within an open interval of 1 to 5, that is suitable for the use parametric methods, as explained by Sullivan & Artino (2013). This was done after reversing the negatively worded statements, where high scale ratings implied high perceived students' self-control. Equally, behaviour modification was computed in a similar manner from the student responses on its indicators. The significant level ( $p$ -value) was set at .05, where, if the  $p$ -value is less than 0.05, the null hypothesis would be rejected



and conclusion reached that a significant difference exists. However, if the p-value is greater than 0.05, it would be concluded that a significant difference does not exist. Table 4.5 shows the SPSS output correlation analysis results.

**RESULTS**

**Background Information of the Student Respondents**

The study sought to investigate the background information of the students who took part in the study. The background information was well thought-out for the determination of whether the respondents were representative enough in terms of their demographic characteristics for the generalization of the results of the study. The demographic information investigated include age, gender, class and the school category of the students, as shown in Table 3.

**Table 3:** Students’ Demographic Information (n=344)

Characteristics	Frequency	Percentage
<b>Gender</b>		
Male	209	60.8
Female	135	39.2
Total	344	100.0
<b>Age</b>		
Below 15 Years	5	1.5
15-17 Years	254	73.8
18-19 Years	75	21.8
Above 19 Years	10	2.9
Total	344	100.0
<b>Class</b>		
Grade 9	42	12.2
Grade 10	157	45.6
Grade 11	89	25.9
Grade 12	56	16.3
Total	344	100.0
<b>Category of School</b>		
Sub-County	112	32.6
County	21	6.0
Extra-County	196	57.0
National	15	4.4
Total	344	100.0

From the exploratory data analysis, it is evident that majority 209 (60.8%) of the student respondents were males. The results of the study indicate that there was glaring disparity in terms of the number of female students and their male counterparts. However, this sample seemed to depict the actual position of student composition by gender in Migori County, where majority of secondary school students are females. Nonetheless, both gender took part in the study making generalization of the results across gender possible. On their ages, a significant majority 254 (73.8%) of the students who took part in the study were in the age group of 15-17 years. The students who were under 15 years of age had the least 5 (1.5%) representation, followed by those above 19 years at 10 (2.9%) and the rest 75 (21.8%) were age 18-19 years of age. Likewise, it emerged that although all classes were represented in the study, grade 10 students took highest proportion at 157 (45.6%) and the least being grade 9 students at 42 (12.2%). The grade 11 students were at 89 (25.9%) and 56 (16.3%), respectively. On the category of schools, where the students respondents came from, it emerged that



majority 196 (57.0%) of the students were from extra-county secondary schools and the least were from National schools. However, the other students came from the sub-county 112 (32.6%) and county schools 21 (6.0%). This implies that all categories of schools were represented in the study, indicating that the results of this study can be generalized across all category of schools.

**Correlation Analysis of social cognitive skills and delinquent behaviour modification**

To investigate whether there was any statistical significant relationship between social cognitive skills and delinquent behaviour modification, a Pearson Product Moment Correlation Coefficient was computed, with scores on aspects of social cognitive skills as independent variable and delinquent behaviour modification as dependent variable. The scores of both the variables, were converted into ratio scaled data by computing mean responses per respondents. The correlation analysis result was shown in SPSS output, as indicated in Table 4.

**Table 4:** Correlation results of social cognitive skills and delinquent behaviour modification

<i>social cognitive skills</i>		<b>delinquent modification</b>	<b>behaviour</b>
Self-Control	Pearson Correlation	0.276	
	Sig. (2-tailed)	.000	
	N	344	
Vicarious Experience	Pearson Correlation	0.207	
	Sig. (2-tailed)	.000	
	N	344	
Rational Attribution	Pearson Correlation	0.240	
	Sig. (2-tailed)	.000	
	N	344	
Inhibition	Pearson Correlation	0.190	
	Sig. (2-tailed)	.000	
	N	344	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The results in Table 4 indicate that there is statistically significant positive correlation between self-control and delinquent behaviour modification among secondary school students (n=344; r = .276; p<.05); there is statistically significant positive correlation between vicarious experience and delinquent behaviour modification among secondary school students (n=344; r = .207; p<.05); there is statistically significant positive correlation between rational attribution and delinquent behaviour modification among secondary school students (n=344; r = .240; p<.05); and finally, there is statistically significant positive correlation between inhibition and delinquent behaviour modification among secondary school students (n=344; r = .190; p<.05). Since the p-value = 0.000 which is far less than 0.05 was established, the null hypothesis which stated that, “there is no significant relationship between social cognitive skills and delinquent behaviour modification among students” was rejected. Therefore, it was concluded that there is statistically significant positive relationship between social cognitive skills and delinquent behaviour modification among secondary school students in Rongo Sub-County of Kenya.

**Linear Regression Analysis of relationship between social cognitive skills and delinquent behaviour modification**

To estimate the level of Influence of social cognitive skills on delinquent behaviour modification, a coefficient of determination was computed. This was done using regression analysis and the results are as shown in Table 5.



**Table 5:** Model Summary on Regression Analysis of Influence of social cognitive skills on delinquent behaviour modification

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Self-Control	.276a	.076	.074	.29379
Vicarious Experience	.207a	.043	.040	.29906
Rational Attribution	.240a	.057	.055	.29678
Inhibition	.190a	.036	.033	.30014
<b>Predictors:</b> <i>self-control, vicarious experience, Rational Attribution, Inhibition</i>				

The model summary results in Table 5 reveals that students’ level of self-control accounted for 7.4% (Adjusted R<sup>2</sup> =.74) of the variation in their delinquent behaviour modification. This finding indicates that variation in the students’ self-control explains about 7% of the variability in delinquent behaviour modification among the secondary school students. Although, it is a small influence its impact is significant. The students’ level of vicarious experience accounted for 4.0% (Adjusted R<sup>2</sup> =.040) of the variation in their delinquent behaviour modification. This finding indicates that 4% of the variability in behaviour modification among the secondary school students is as a result of differences in their level of vicarious experience. It is fairly a small influence, however, it is significant. The students’ level of rational attribution accounted for 5.5% (Adjusted R<sup>2</sup> =.055) of the variation in the level of behaviour modification. This finding indicates that about 6% of the variability in delinquent behaviour modification among the secondary school students is as a result of differences in their level of rational attribution. The students’ level of inhibition accounted for 3.3% (Adjusted R<sup>2</sup> =.033) of the variation in the level of delinquent behaviour modification. This finding point out that only about 3% of the variability in student delinquent behaviour modification among the secondary school.

**Multiple Regression Analysis**

The study sought to establish a linear model that could be used to describe the optimal level of behaviour modification among students in public schools in regard to their social cognitive skills. This was done by use of standard multiple regression analysis, where all the four aspects of social cognitive skills were factored in the model at once. It was suitable because it could help to investigate how well the set of the independent variables was able to predict the level of behaviour modification among students in public schools, in line with the recommendations by Oso and Onen (2009). The analysis provided information about the relative contribution of aspects of social cognitive skills that make up the model. Each variable was evaluated in terms of its predictive power, over and above that offered by all the other independent variables. It enabled the researcher to know how much unique variance in behaviour modification, each of the aspects of social cognitive skills explained. Table 6 shows the regression analysis model summary output.

**Table 6:** Regression Analysis Model summary output: Social Cognitive Skills on Delinquent Behaviour Modification

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.408 <sup>a</sup>	.166	.157	.28032
a. Predictors: (Constant), Inhibition , Self-Control, Rational Attribution, Vicarious Experience				

In the model summary the “R” column represents the value of R, the multiple correlation coefficients. It is a measure of the quality of the prediction of the behaviour modification by social cognitive skills among the students. The value of .408 indicates a fairly weak level of prediction. However, the value of Adjusted R Square (.157) indicates how much of the variance in the behaviour modification was explained by factors of social cognitive skills. This value expressed as a percentage means that the model explains 15.7 percentage of the variance in behaviour modification. This is the proportion of variance in the behaviour modification that is explained by the four predictor variables of social cognitive skills. It is the proportion of variation accounted for by the regression model above and beyond the mean model.





**4.9.1: Evaluating Contribution of each of the Predictors**

The study sought to investigate the level of contribution of the individual aspects of social cognitive skills factored in the model in the prediction of behaviour modification among secondary school students. This was shown by coefficients values in Table 7.

**Table 7: Coefficient Output: Social Cognitive Skills on Delinquent Behaviour Modification**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.882	.162		11.619	.000	1.563	2.200
Self-Control	.184	.032	.286	5.696	.000	.121	.248
Vicarious Experience	.088	.072	.214	1.209	.028	-.055	.230
Rational Attribution	.130	.036	.183	3.608	.000	.059	.201
Inhibition	.002	.072	.008	.022	.982	.143	.140

a. Dependent Variable: Delinquent Behaviour Modification

A regression model for the relationship between these independent variables and dependent variable is shown below.

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + \epsilon$$

Where: Y is Delinquent Behaviour Modification

- X<sub>1</sub> Self-Control
- X<sub>2</sub> Vicarious Experience
- X<sub>3</sub> Rational Attribution
- X<sub>4</sub> Inhibition

Optimum level of behaviour modification among the secondary school students was presented by:

$$1.882 + .184X_1 \text{ units} + .088X_2 \text{ units} + .130X_3 \text{ units} + .002X_4 \text{ units} + \text{error term}$$

The model show that the constant value of the model is 1.882 with a confidence interval of (1.563, 2.200), implying most students will present about 1.882 units of Delinquent behaviour modification before factoring their level of social cognitive skills. However, it is evident that the aspects of social cognitive skills contributed differently in influencing delinquent behaviour modification among secondary school students. For example, student self-control had the highest impact on behaviour modification, while inhibition made the least contribution in explaining the variability of the model, when all the independents are put together. The variable “self-control.” had the largest beta coefficient of .286 (p<.05), implying that it made the strongest unique contribution to explaining the dependent variable. This means that a one standard deviation improvement in student self-control leads to a .286 standard deviation increase in behaviour modification, with the other variables held constant. On the contrary, the beta value for inhibition was the lowest at .008, indicating that it made the least contribution to the model; a one standard deviation increase in inhibition on would only lead to a .008 standard deviation increase in behaviour modification, with the other variables in the model held constant, however this effect was also significant (p=.982). However, from the model it was noted that all the independent variables made a statistically significant (p<.05) unique contribution to the equation.

It was noted that the total R squared value for the model (.157 or 15.7 explained variance) did not equal to the sum of the R Squared for each variable. This was because the part correlation values represented only the unique contribution of each aspects of social



cognitive skills, with any overlap or shared variance removed. The total R squared value, however, included the unique variance explained by each aspects of social cognitive skills and also that shared. The predictors were positively correlated (shown by zero-order correlations) hence there were a lot of shared variance that was statistically removed when they were all included in the model. Given that only one predictor did not have unique significant change in the model, it is concluded that the model was adequate to predict behaviour modification among secondary school students. The model was statistically significant [ $F(4, 339) = 16.928$ , Adjusted  $R^2 = .157$ , sig.  $< .05$ ], implying it was adequate enough to predict the dependent variable. However, this finding indicates that only 15.7% of the variability in behaviour modification among the secondary school students is explained by social cognitive skills. However, it is worth noting that the R-squared does not necessarily indicate if a regression model provides an adequate fit to a data set, implying that a good model can have a low  $R^2$  value. On the other hand, a biased model can have a high  $R^2$  value. Hence, regression models with low R-squared values can be perfectly good models. For instance, this field of study had an inherently greater amount of unexplainable variation given that the respondents were given self-administering questionnaires whose items sought their views which were bound to differ. Hence,  $R^2$  values are bound to be lower for this nature of study. Nonetheless, despite the low R-squared value the independent variables are statistically significant, therefore important conclusions about the relationships between the variables could still be drawn from the study. Statistically significant coefficients continue to represent the mean change in the dependent variable given a one-unit shift in the independent variable. Clearly, being able to draw conclusions like this is vital. However, other factors (not covered in this regression model) also accounted for apart of 84% of the model which was not explained by variables factored in the model. The other possible factors that may influence behaviour modification but not included in the study could include other explanatory variables, moderating effects and extraneous variables whose effects were not completely excluded.

## DISCUSSION

The study investigated the relationship between social cognitive skills and delinquent behaviour modification among secondary school students in Kenya. The findings indicated that there was a significant positive relationship between self-control and delinquent behaviour modification among secondary school students. This finding agrees with Oliva *et al* (2019) that low scores in self-control are significantly associated with greater substance consumption, more anxiety-depression symptoms, and higher scores on the Internet addiction. Similarly, Powers, *et al* (2020) found that greater self-control did predict lower third-year anxiety. On the contrary, Staubit, *et al* (2019) indicated that self-control training alone did not improve self-control. The study reported a significant positive correlation between vicarious experience and delinquent behaviour modification. This finding agrees with Ashuri *et al* (2018) which showed that the observation mechanism contributes to reward envy that leads to a high level of self-disclosure behavior. Similarly, Farzad *et al* (2010) study revealed that observation of model with verbal teaching improves learning of the handstand skill, while observation without verbal description has no effect on learning the skills.

The study findings also reported a significant positive correlation between rational attribution and delinquent behaviour modification. This finding agrees with Gilbert and Warburton (2013) confirmed that attributions to abstinence were significantly higher for increased negative experiences. Similarly, Nikbin and Hyun (2017) indicate that both dimensions of casual attribution influenced pre-recovery emotions and negative behavioural intentions. Korn *et al* (2016) study predicts that participants change their evaluations of the actors' credibility toward the positive after receiving positive performance feedback and toward the negative after negative performance feedback. The study findings also reported a significant positive correlation between inhibition and delinquent behaviour modification among students in secondary schools. This finding agrees with Walker, *et al*, (2014) that behavioral inhibition was positively associated with displayed social withdrawal and negatively associated with assertive behavior. Similarly, Jones, *et al* (2016) reported that the magnitude of the effect of Inhibition control training on behaviour was predicted by the proportion of successful inhibitions. On the contrary, Bartsch, *et al* (2016) reported that participants in the inhibition condition did not have lower levels of alcohol consumption, nor improved response inhibition after the intervention, compared to participants in the active control condition.

The study concludes that the model was statistically significant implying that social cognitive skills was adequate enough to predict the delinquent behavior modification among grade 11 students in secondary schools. The student self-control had the highest impact



on behaviour modification, while inhibition made the least contribution in explaining the variability of the model, when all the independents are put together. The implication of this finding is that school counsellors should put more emphasis on the development of self-control among students to enhance behavior modification more effectively. The study recommends that school counsellors should train students on self-control to assist them in appropriate behavior modification. This is because the study reported that self-control had the largest beta coefficient implying that it made the strongest unique contribution to explaining the behavior modification. The school counsellors should use person centered counselling techniques to enhance inhibition among students. Future studies could investigate gender differences in behavior modification among students in secondary schools.

## REFERENCES

1. Ahmad, B., Sayyed, M. F., Bagher, G.B., Hamid, A.& Ghorban, H. (2012). The Impact of a Self-Control Training Program on Enhancement of Social Skills in Students with ADHD. *Psychology*, 3, 616-620. doi: 10.4236/psych.2012.38094.
2. Allom, V., Panetta, G. Mullan, B. & Hagger, M. (2016). Self-report and behavioural approaches to the measurement of self-control: Are we assessing the same construct? *Personality and Individual Differences*, 90, 137-142.
3. Aloka, P.J.O. (2020). Choice Shifts in School Disciplinary Decision Making: Analysis of Age Differences of Panel Members. *The Open Psychology Journal* Volume 13, 86-94. DOI: 10.2174/1874350102013010086.
4. Arseneault L. (2018). Annual research review: the persistent and pervasive impact of being bullied in childhood and adolescence: implications for policy and practice. *Journal of Child Psychology and Psychiatry*, 59, 405-421.
5. Ashuri, T., Shira Dvir-Gvisman, Ruth Halperin, (2018). Watching Me Watching You: How Observational Learning Affects Self-disclosure on Social Network Sites?, *Journal of Computer-Mediated Communication*, Volume 23, Issue 1, 34-68, <https://doi.org/10.1093/jcmc/zmx003>
6. Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Annals of child development*. Vol. 6. Six theories of child development (pp. 1-60). Greenwich, CT: JAI Press.
7. Bandura, A. (2006). *Self-efficacy beliefs of adolescents*. Information Age
8. Bartsch A. L., Kothe, E., Allom, V., Mullan, B. & Houben, K. (2016). The Effect of Non-specific Response Inhibition Training on Alcohol Consumption: An Intervention. *Journal of Addiction Research & Therapy* 7,260. doi:10.4172/2155-6105.1000260
9. Bartsch, R. A., Case, K. A., & Meerman, H. (2012). Increasing academic self-efficacy in statistics with a live vicarious experience presentation. *Teaching of Psychology*, 39(2), 133-136. doi:10.1177/0098628312437699
10. C. D. Frith and U. Frith, (2007). Social Cognition in Humans. *Current Biology*, vol. 17, no. 16, 724-732.
11. Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Lawrence Erlbaum Associates Publishers.
12. Creswell, J. W. (2014). *Research Design Qualitative, Quantitative and Mixed Methods Approaches (4th ed.)*. Thousand Oaks, CA Sage.
13. Diamond, A. (2013). Executive Function. *Annual Review of Psychology*, 64, 135-168.
14. Dubno, P., Cannon, C., Costas, J., Emin, H. & Wankel, C. (1975). *Managerial attitudes toward women executives: Development of an empirically-keyed attitude scale* (Rep. No. 76-76, Working Paper), Unpublished manuscript, New York University Graduate School of Business Administration, 1975
15. Dumontheil, I., Apperly, I.A.& Blakemore, S.J. (2010). Online usage of theory of mind continues to develop in late adolescence. *Developmental Science*, 13, 331-338
16. Elliott, D. S., Huizinga, D., & Menard, S. (2012). *Multiple problem youth: Delinquency, substance use, and mental health problems*. New York: Springer
17. Farzad M., Nia, P.S., Zarghami, M. & Neisi, A. (2010). The Comparison of Different Types of Observational Training on Motor Learning of Gymnastic Handstand. *Journal of Human Kinetics* volume 26, 13-19.
18. Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill



19. Gilbert, H.M. & Warburton, D.W. (2013). Attribution and the effects of expectancy: how beliefs can influence the experiences of smoking cessation. *Addictive Behaviors*, Volume 28, Issue 7, Pages 1359-1369
20. Gillebaart, M. & De Ridder, D. (2017). "Positioning self-control in a dual-systems framework," in *Routledge International Handbook of Self-Control in Health and Well-Being*, eds D. T. D. De Ridder, M. A. Adriaanse, and K. Fujita (New York, NY: Routledge), 35–46
21. Gravetter, F.J. & Wallnau, L.B. (2000). *Statistics for the Behavioural Sciences*. West Publishing Company. # 5th ed.
22. Green, M. F., Penn, D. L., Bentall, R., Carpenter, W. T., Gaebel, W., Gur, R. C. & Heinsen, R. (2008). Social cognition in schizophrenia: An NIMH workshop on definitions, assessment, and research opportunities. *Schizophrenia Bulletin*, 34(6), 1211-1220.
23. Guerrieri, R., Nederkoorn, C., Schrooten, M., Martijn, C. & Jansen, A. (2009). Inducing impulsivity leads high and low restrained eaters into overeating, whereas current dieters stick to their diet. *Appetite*, 53 (2009), pp. 93-100.
24. Hagger, M. S., Gucciardi, D., & Hamilton, K. (2019). Self-Control and Health-Related Behavior: The Role of Implicit Self-Control, Trait Self-Control, and Beliefs in Self-Control. *British Journal of Health Psychology* 24(4):764-786 <https://doi.org/10.1111/bjhp.12378>
25. Hastings, R. P. (1997b). Measuring staff perceptions of challenging behaviour: The Challenging Behaviour Attributions Scale (CHABA). *Journal of Intellectual Disability Research*, 41(6), 495-501.
26. Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York: Wiley.
27. Hoge, R. D. (2001). *The juvenile offender*. New York: Springer.
28. Holton, E. F., & Burnett, M. F. (2005). The Basics of Quantitative Research. In R. A. Swanson & E. F. Holton (Eds.), *Research in organizations: Foundations and methods of Inquiry* (pp. 29-44). San Francisco: Berrett-Koehler.
29. Houben K. (2011). Overcoming the urge to splurge. Influencing eating behavior by manipulating inhibitory control. *Journal of Behavior Therapy and Experimental Psychiatry*, 42 (2011), pp. 384-388, [10.1016/j.jbtep.2011.02.008](https://doi.org/10.1016/j.jbtep.2011.02.008)
30. Jones, A., Di Lemma, L. C. G., Robinson, E., Christiansen, P., Nolan, S., Tudur-Smith, C. & Field, M. (2016). Inhibitory control training for appetitive behaviour change: A meta-analytic investigation of mechanisms of action and moderators of effectiveness. *Appetite*, 97, 16-28.
31. Judistira, A.A. & Wijaya, H.E. (2018). The Role of Self-Control and Self-Adjustment on Academic Achievement Among Junior High School Students. *Advances in Social Science, Education and Humanities Research*, volume 128, 122-125.
32. Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31–36.
33. Kirby, K. N. & Herrnstein, R. J. (1995). Preference reversals due to myopic discounting of delayed reward. *Psychological Science*, 6(2), 83–89. <https://doi.org/10.1111/j.1467-9280.1995.tb00311.x>
34. Korn, C.W., Rosenblau, G., Rodriguez, J.M. & Heekeren, H.R. (2016). Performance Feedback Processing Is Positively Biased As Predicted by Attribution Theory. *PLoS ONE* 11(2): e0148581. <https://doi.org/10.1371/journal.pone.0148581>
35. Lam, C.B., McHale, S.M. & Crouter, A.C. (2014). Time with peers from middle childhood to late adolescence: developmental course and adjustment correlates. *Child Development*, 85, 1677-1693.
36. Masashi S. (2016). Both Direct and Vicarious Experiences of Nature Affect Children's Willingness to Conserve Biodiversity. *International Journal of Environmental Research and Public Health*, 13, 529-539.
37. Mugenda, M.O. & Mugenda, A. (2003). *Research methods: Qualitative and quantitative Approaches*. Africa Center for technology studies, Nairobi, Kenya
38. Nikbin, D. & Hyun, S.S. (2017). Does travellers' casual attribution affect pre-recovery emotions and behavioural intentions? A field study of airline travellers in Malaysia. *Current Issues in Tourism*, 20(1), 80-93. DOI: [10.1080/13683500.2014.898618](https://doi.org/10.1080/13683500.2014.898618)
39. Nwagu, E.N., Enebechi, J.C. & Odo, A.N. (2018). Self-Control in Learning for Healthy Living Among Students in a Nigerian College of Education. *SAGE Open* 8(3), 1-10.
40. Odigie, J. I. (2013). The Effectiveness of Cognitive Behavioural Counseling Model in Managing Adolescent Psycho-social Crisis. *The Counselor*, Volume 32(1&2), 24-29.



41. Oliva, A., Antolín-Suárez, L. & Rodríguez-Meirinhos, A. (2019). Uncovering the Link between Self-control, Age, and Psychological Maladjustment among Spanish Adolescents and Young Adults. *Psychosocial Intervention*, 28, 49 - 55. <https://doi.org/10.5093/pi2019a1>
42. Oso, W. Y. & Onen, D. (2011). *A general guide to writing research proposal and report; Handbook for beginning researchers*. Nairobi. Jomo Kenyatta Foundation.
43. Oso, W. Y., & Onen, D. (2009). *A general guide to writing research proposal and report*. Nairobi: Jomo Kenyatta Foundation.
44. Otengei, S.C. Kasekende, G. & Ntayi, J.F. (2017). Vicarious Experience: A Neglected Source of Career Identity among Indigenous Hospitality Graduates in Uganda. *Journal of Hospitality & Tourism Education*, 29(4), 1-13. 10.1080/10963758.2017.1382364.
45. Poduthase, H. (2012). *Parent-adolescent relationship and juvenile delinquency in Kerala, India: A qualitative study*. Doctoral dissertation. Utah: The University of Utah.
46. Powers, J. P., Moshontz, H., & Hoyle, R. H. (2020). Self-Control and Affect Regulation Styles Predict Anxiety Longitudinally in University Students. *Collabra: Psychology*, 6(1), 11. DOI: <http://doi.org/10.1525/collabra.280>.
47. Rosenbaum, D. P., Schuck, A. M., Costello, S. K., Hawkins, D. F., & Ring, M. K. (2005). Attitudes toward the police: The effects of direct and vicarious experience. *Police Quarterly*, 8(3), 343–365. doi:10.1177/1098611104271085
48. Salkind, N. J. (2010). *Encyclopedia of research design*. Thousand Oaks, CA: SAGE Publications Ltd
49. Scott, H.K. & Cogburn, M. (2019). *Behavior Modification*. In: StatPearls. StatPearls Publishing, Treasure Island (FL).
50. Simms, A. P. (2014). *The Relationship Between Teachers' Causal Attributions For Student Problem Behavior And Teachers' Intervention Preferences* A Dissertation Submitted To The Kent State University College Of Education, Health, And Human Services In Partial Fulfillment of The Requirements For The Degree Doctor of Philosophy.
51. Staubitz, J.L., Lloyd, B.P. & Reed, D.D. (2019). Effects of self-control training for elementary students with emotional and behavioral disorders. *Journal of Applied Behavior Analysis*, 53(2), 857-874. doi: 10.1002/jaba.634
52. Sullivan, G. M., & Artino Jr., H. R. (2013). Analyzing and Interpreting Data from Likert-Type Scales. *The Journal of Graduate Medical Education*, 5, 541-542.
53. Tangney, J.P., Baumeister, R.F. Boone A.L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, pp. 271-322. [10.1111/j.0022-3506.2004.00263.x](https://doi.org/10.1111/j.0022-3506.2004.00263.x)
54. Van Brakel, A.M.L. & Muris, P. A (2006). Brief Scale for Measuring “Behavioral Inhibition to the Unfamiliar” in Children. *Journal of Psychopathology and Behavioral Assessment*, 28, 79–84. <https://doi.org/10.1007/s10862-006-7485-7>
55. Vanessa, A.; Barbara M. & Martin, H. (2016). Does inhibitory control training improve health behaviour? A meta-analysis, *Health Psychology Review*, 10:2, 168-186, DOI: 10.1080/17437199.2015.1051078.
56. Walker, O. L.; Henderson, H. A.; Degnan, K. A.; Penela, E. C. & Fox, N. A. (2014). Associations Between Behavioral Inhibition and Children's Social Problem Solving Behavior During Social Exclusion. *Social development* (Oxford, England), 23(3), 487–501. doi:10.1111/sode.12053.
57. Young, S., Greer, B., & Church, R. (2017). Juvenile delinquency, welfare, justice and therapeutic interventions: a global perspective. *BJPsych bulletin*, 41(1), 21–29. <https://doi.org/10.1192/pb.bp.115.052274>

---

*Cite this Article: Tom K.O. Onyango, Peter J.O. Aloka (2023). Social Cognitive Skills and Delinquent Behavior Modification among Students in Secondary Schools in Kenya. International Journal of Current Science Research and Review, 6(1), 645-657*