

Factor Analysis of Behaviour Change among Pupils in Public Primary Schools in Kisii County, Kenya

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Abstract Education is the foundation in which the community is built, pupils need to be mentored and nurtured in such a way that they behave as the society norms dictates. This study was conducted to examine and identify the pupil's behaviour changes and the remedy by teachers through the trainings they receive in guidance and counselling. The study was conducted in Kisii County using questionnaire and face to face interview where 345 pupils and 69 teachers participated. Data was collected and analyzed using SPSS. Factor analysis was used. The study realized that 58.09% of total variance of the behaviour changes was explained by pupils engaging in drugs, pupils being disobedient and pupils engaging in early marital sex. In the same case 88.001% of the total variance was explained by three teacher training factors: family issues in guidance and counselling and administration of guidance and counselling, behavioral modification of talented children and ethical principles of guidance and counselling. Thus, the result indicates unpleasant behaviour changes that need to be addressed by all stakeholders in public primary schools.

Keywords Factor Analysis, Behaviour Change, Teacher Training, Factor Analysis, Variance

1. Introduction

There is an increase in the number of primary schools involved in all kinds of misbehavior in Kisii County. [1, 2] pointed out that there were incidences of substance and alcohol abuse, absenteeism, early pregnancies, premarital sex, lack of respect for the authority resulting into many school dropouts, and poor performance in National examinations. It is very common nowadays that; parents, teachers, the public administrators and church leaders blame each other for failing to teach young people to be well behaved. The Ministry of Education has ensured that each primary school appoints one teacher counselor to cater for psychosocial problems of pupils yet misbehavior has not been curbed. Schools boards of management and parents-teachers association have addressed pupil's misbehavior in their meetings, yet indiscipline persists. The information collected from the office of Quality assurance and standards office from Gucha South (one of the sub-county) of Kisii County, indicated that there were still incidences of absenteeism, late coming to school, premarital sex, unplanned pregnancy and pupils moving out of school to engage in Boda Boda business during class hours [1]. A

similar incidence was reported by [3] who indicated that police in Kisii County arrested 18 primary school pupils between the age of 13-14 years drinking in a bar.

It's believed that this may be partly caused by poor parenting skills, indiscipline in schools, society moral breakdown and poor implementation process of guidance and counseling programmes which promote positive behavior among pupils. If this issue of misbehavior among pupils is not treated and curbed with the seriousness it deserves, opportunities that could have otherwise been available for primary school pupils to advance academically and have adjusted life will become foreclosed due to misbehavior complications. This will pose a serious threat to the social economic, and security of Kisii County. There is therefore a need to strengthen guidance and counseling programmes which influence positive behavior among the pupils.

2. Methods

The study used an exploratory factor analysis design. Exploratory factor analysis was used to uncover underlying complex patterns by exploring the data sets to testing predictions [4]. Extraction method based on principal component analysis and rotation method on varimax with Kaiser Normalization was used.

The study was carried out in Kisii County. Kisii County has nine sub-counties originally called districts namely, Kisii

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Central, Masaba South, Kenyena, Marani, Kisii South, Nyamache, Sameta, Gucha and Gucha South. Kisii county is located in western Kenya, on latitude: 0° 41' 0 S and longitude: 34° 46' 0 E. The town is a driving distance of 309 km (192 mi) from the capital city of Nairobi, located east-southeast, on Class B3 all-weather road. Other major urban center's distances from Kisii town are Kisumu City which is 114 km (71 mi) to the northwest; Nyamira at 23 km (14 mi) to the immediate north; Keroka at 25 km (16 mi) to the east; Kericho at 101 km (63 mi) to the northeast; Kilgoris at 46 km (29 mi) to the southeast; Narok at 165 km (103 mi) to the east; and Migori to the south-west 67 km (42 mi) which otherwise connects the town to the Kenya/Tanzania border at Isebania town a further 31 km (19 mi) south.

The study had a target population consisting of 696 teacher counselors and 696 head teachers of 696 schools and 2445 pupils from all primary schools in the 9 sub counties.

Simple random sampling and Purposive sampling were used to collect samples [5] was used to calculate sample size. A sample size of 68 teachers and 345 pupils was used.

3. Results and Discussions

Behavioral changes

Table 1 shows Kaiser- Meyer-Olik test which was done to measure the adequacy of behavioral change variables for factor analysis. The KMO statistic is equal to $0.679 > 0.6$ which clearly indicates that factor analysis is appropriate for the data set. This is supported by the study done by [6] which indicated the Kaiser-Meyer-Olkin (KMO) measure of 0.886 which was above the threshold of 0.6 and was acceptable for factor analysis. The Bartlett's test is statistically significant $p < 0.001$ this indicates there is a relationship between the variables. The determinant score is $0.53 > 0.01$ which shows absence of multicollinearity.

Table 2 shows how the Principal Component Analysis was applied as an extraction method, it identified 10 linear components within the data set. After extraction, there is 3 linear components within the data set that have Eigen value

greater than 1. The results in the table above depict that component 1, 2 and component 3 were the only factor with Eigen value greater than 1. The rotation sums of squared loadings indicate that the highest variance of observed components was 32.311% followed by 14.102% and the lowest variance was 11.596%. Therefore based on the results, only two components (component 1, component 2 and component 3) were accounted for analysis because their values were statistically significant. Further the result indicates that 58.009% common variance shared by 10 variables can be accounted by 3 factors. This is in agreement to KMO of 0.679. This initial values shows that the final values will not extract more than 3 factors.

Table 3 displays the results of behavioral factors categorized into three components. Component 1 was observed to have 10 factors with values higher than 0.5 indicating they are statistically significant. The highest value observed was 0.760 on "pupils being pregnant" which is equivalent to 76.0% while the lowest value was .102 on "pupils engaging on drugs" which is equivalent to 10.2%. Relatively, Component 2 had the highest value of 0.601 on "pupils being disobedient" which is equivalent to 60.1% and the lowest value of -0.278 on "pupils engaged in business during class hours" which is equivalent to -27.8%. The last component had the highest 0.513 on pupils being engaged on drugs and lowest -0.156 indicating early marriages therefore based on the results depicted in the rotated component matrix, only one factor of component 2 and 3 was significant.

Table 1. KMO and Bartlett's test for Behaviour changes and determinant score

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.679
Bartlett's Test of Sphericity	Approx. Chi-Square	142.533
	Df	45
	Sig.	.000
Determinant score		0.53

Table 2. Eigen values and Variance for Behavior change Explained

Component	Total Variance Explained					
	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.231	32.311	32.311	3.231	32.311	32.311
2	1.410	14.102	46.413	1.410	14.102	46.413
3	1.160	11.596	58.009	1.160	11.596	58.009
4	.966	9.659	67.668			
5	.862	8.624	76.291			
6	.779	7.793	84.084			
7	.525	5.251	89.336			
8	.460	4.603	93.938			
9	.383	3.833	97.771			
10	.223	2.229	100.000			

Extraction Method: Principal Component Analysis.

Table 3. Rotated Component Matrix for Behavior change

	Component		
	1	2	3
Engaged in drugs	.102	.472	.513
Engaged in Sex	.416	-.371	.053
Bullying	.677	.366	.271
Disobedience	.453	.601	-.578
French leave	.521	-.297	-.313
Pregnant	.760	.387	-.248
Dropout	.604	.078	.499
Early marriage	.678	-.389	-.156
Theft	.644	-.285	.232
Business	.544	-.279	.019

Extraction Method: Principal Component Analysis.

The results in figure 1 indicate the significance of three components that had Eigen value greater than 1, moreover, the screen plot depicts the flattened curve at component 2 showing that the rest of components had Eigen values less than 1. Based on the result component 1, 2 and component 3 were the data with most variability and hence were retained.

Table 4. KMO and Bartlett's test for teacher counselor training

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.779
	Approx. Chi-Square	142.533
Bartlett's Test of Sphericity	Df	45
	Sig.	.000



Figure 1. Scree plot

Table 5. Total Variance for Teacher counselor training

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.584	38.204	38.204	4.584	38.204	38.204
2	3.727	31.055	69.259	3.727	31.055	69.259
3	2.251	18.760	88.019	2.251	18.760	88.019
4	.974	8.119	96.138			
5	.375	3.126	99.263			
6	.088	.737	100.000			
7	4.646E-16	3.872E-15	100.000			
8	1.474E-16	1.228E-15	100.000			
9	-8.963E-18	-7.469E-17	100.000			
10	-6.160E-17	-5.133E-16	100.000			
11	-4.794E-16	-3.995E-15	100.000			
12	-1.749E-15	-1.457E-14	100.000			

Extraction Method: Principal Component Analysis.

Kaiser- Meyer-Olik test was done to measure the adequacy of behavioral change variables for factor analysis. The result in the table above shows that KMO value of 0.779 was observed indicating that behaviour data were adequate because they fall in acceptable KMO test range. This is supported by the study done by [1] which indicated the Kaiser-Meyer-Olkin (KMO) measure of 0.886 which was above the threshold of 0.5 and was acceptable for factor analysis.

Table 5, Principal Component Analysis was applied as an extraction method, the results in the table above depict that component 1, 2 and component 3 were the only factor with Eigen value greater than 1. The rotation sums of squared loadings indicate that the highest variance of observed components was 38.204% followed by 31.055% and the lowest variance was 18.76%. Therefore based on the results, only two components (component 1, component 2 and component 3) were accounted for analysis because their values were statistically significant. Additionally, the results indicate that 88.001% common variance shared by 10 variables can be accounted by 3 factors. This is in agreement to KMO of 0.779. This initial values shows that the final values will not extract more than 3 factors.

Table 6. Rotated Component Matrix for Behavior change

	Component		
	1	2	3
Administration of guidance and counseling	.826	-.270	.324
Principles of guidance and counseling	.753	-.491	-.338
Theories of guidance and counseling	.823	-.421	-.278
Family issues of guidance and counseling	.826	-.270	.324
Human growth and development	.538	.757	-.298
Personality inventory assessments	.666	-.241	.463
child psychology	.528	.811	-.233
abnormal psychology	.666	-.241	.463
counseling of gifted/talented children	.528	.811	-.233
behavior modification/talented children	.398	.906	.111
ethical principles in guidance and counseling	-.122	.483	.732
addiction counseling	.264	-.320	-.822

Extraction Method: Principal Component Analysis.

Table 6 above displays the results of training teacher counselors received factors categorized into three components. Component 1 was observed to have 12 factors with values higher than 0.5 indicating they are statistically significant. The highest value statistically was 0.826 on "family issues in guidance and counseling and administration of guidance and counseling" which is equivalent to 82.6% while the lowest value was -0.122 on "ethical principles in guidance and counseling and abnormal psychology" which is equivalent to 12.2%. Relatively, Component 2 had the highest value of 0.906 on "behavior modification for talented children" which is

equivalent to 90.6% and the lowest value of -0.241 on "pupils engaged in business during class hours" which is equivalent to -24.1%. The last component had the highest 0.732 on ethical principles of guidance and counseling and lowest -0.233 indicating child psychology and counseling gifted pupils. Therefore based on the results depicted in the rotated component matrix.

4. Conclusions

The result of this study indicates that behaviour changes in Kisii county has deteriorated. The pupils engage in different misconduct in the schools including drug abuse, early marriages, sneaking out of school and indiscipline cases are on the rise. On the other hand the teacher counselors' training to handle guidance and counselling is of great importance in capping the misbehavior. The result of factor analysis found that three behaviour changes factors; pupils engaging in drugs, pupils being disobedient and pupils engaging in early marital sex explained 58.09% variance of the behaviour changes. In the same case factors for teacher training in family issues in guidance and counselling and administration of guidance and counselling, behavioral modification of talented children and ethical principles of guidance and counselling explained by 88.001% variance of teacher training. Guidance and counselling teachers should step up their initiatives in dealing with behavior decay in most public primary schools. The headteacher should make it mandatory for the pupils to participate in weekly guidance and counselling programs by putting them in the timetable.

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