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Factor analysis of the effect of class rules on the behaviors'

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Abstract

The effect of Intraclass behaviors on education is substantial. The behaviors are designated by the class rules. In this study, the survey consists of 35 questions which are class rules' in regard to effect of behaviors are implemented to 356 secondary school students. Obtained data that eliminated by SPSS is analyzed via factor analysis and is compared with other studying about the subject. Thereby is turned out statistical discussion and substantial main components are gained.

Keywords：Aberrant behavior; Checklist-community; Behavior rating scale; Factor analysis; Norms

1. Introduction

Exact freedom is anarchy for students in classroom. Balance of liberty is controlled rules. Classroom instructional responsibilities are consists of the rules and are supported individual learning, as well [1-17]. There needs to be a fine balance between liberty and order in a given educational institution to achieve best outcome through harmonious coordination mechanisms. While sufficient latitude of action is necessary for individuals to realize their best potential in these institutions, the magnitude of freedom should be carefully balanced with a sufficient level of order to minimize negative implications (e.g., anarchy and disharmony) of unbounded freedom. Formal establishments and enforcement of rules and procedures are necessary in a classroom environment to manage such complex interactions between students and teachers [2]. Such rules and procedures provide students an institutional framework of engagement and boundaries of socialization [3]. In addition, these rules and procedures set the clear behavioral expectations, thereby, reduce uncertainty associated with student behavioral outcomes [4].

Classroom rules and procedures should be interactive, participatory as well as comprise mutual information exchange between students and teachers. Otherwise, potential disconnect between such rules and procedures and the needs of the students arise and generate enforcement problem. Voluntary participation of students to rulemaking in the classroom environment may also enhance positive educational outcomes such as high motivation and creativity [5]. Furthermore, the lack of admissibility of these rules and procedures among students could potentially impede learning satisfactions of students and their productivity.

In a particular classroom setting, striking a fine balance between award and punishment is critical for establishment of efficient incentive mechanisms in educational institutions.

Particularly, formal rules and procedures should be supported by effective punishment mechanism to achieve best educational outcomes [6].

More importantly, the participation of students, particularly the participation of adult students, on the process of rulemaking through mutual feedback mechanism would enable these students to comprehend the scope and boundaries of such rules, thereby, increase compliance in the classroom [7].

Formal rules interact with informal school setting and facilitate social learning. Particularly, they have primary roles in reproducing social and cultural values in a particular school setting [8]. Such rules implicitly establish the framework of social and cultural interactions, thereby, coordinate harmonious learning experience for the students and teachers. Relatedly, formal rules are likely to minimize student resistance to hidden curriculum of the school and facilitate legitimate framework for social interactions among teachers and students [9]. By specifying and establishing boundaries of social interactions, formal rules may enhance friendly atmosphere in a particular classroom setting [10].

Certain characteristics of formal rules facilitate their legitimacy and applicability for longer terms. First of all, the boundaries and scope of the classroom rules should be specified before they become implemented in a classroom setting. Secondly, rules accompanied by actual, coherent, and sensible enforcement mechanisms strengthen the power of teachers. Finally, simple and clear rules that meet suitable expectations of students are more likely to be perceived legitimate and acceptable by the students [11]

2. Data

In this study, which questionnaire background study was accomplished [12], 356 students from secondary school in Istanbul is randomly selected and surveyed to understand underlying factors driving their attitudes and behaviors towards formal rule establishment in a particular classroom setting. As a survey measurement technique, four levels Likert scale is used. After their implementation to students, the survey data are saved and encoded into computer. The test's Cronbach's Alpha coefficient is 0.764, thereby the test is reliable.

About the first five questions descriptive statistics is given below table. The second part consists of 30 questions which specify subject of research.

Table 1. Frequency Table

q1

		Frequency	Percent	Valid	Cumulative
Valid	1	199	55.9	55.9	55.9
	2	157	44.1	44.1	100.0
	Total	356	100.0	100.0	

In the Table 1, data consist of 356 subjects. In the first part six questions are gender, age, class, frequency of come parents, education level of the parents. The subjects' 55.9 % is male and 44.1 % is female.

Table 2. Frequency Table

q2

		Frequency	Percent	Valid	Cumulative
Valid	1	41	11.5	11.5	11.5
	2	232	65.2	65.2	76.7
	3	82	23,0	23.0	99.7

Table 3. Frequency Table

q3

		Frequency	Percent	Valid	Cumulative
Valid	1	117	32.9	32.9	32.9
	2	118	33.1	33.1	66.0
	3	121	34.0	34.0	100.0
	Total	356	100.0	100.0	

In the Table 2, age intervals are 11.5% is 9-11, 65.2 % is 12-14, 23% is 15-17. In the Table 3, Students' 32.9% is from sixth class, 33.1% is from seventh class and 34 % is from eighth class.

In the Table 4, age intervals are 11.5 % is 9-11, 65.2 % is 12-14, 23% is 15-17.

Table 4. Frequency Table

q4

		Frequency	Percent	Valid	Cumulative
Valid	1	242	68.0	68.0	68.0
	2	14	3.9	3.9	71.9
	3	13	3.7	3.7	75.6
	4	35	9.8	9.8	85.4
	5	52	14.6	14.6	100.0
	Total	356	100.0	100.0	

3. Factor analysis method

Factor analysis methods and decision rules were the same as those described by Aman et al. According to Barlett test, the hypothesis R≠I is accepted. In this way factor analysis may be implemented to data. Factor analysis was carried out using the SPSS 18. A principal factoring method was used, and squared multiple correlations were used as prior communality estimates. The factors were rotated using the varimax method. The number of factors to be examined was determined by the scree plot method [13] the eigenvalues were plotted and examined for an elbow between the values (i.e., the point at which the plot of eigenvalues appeared to bend most). Based on the scree plot, solutions with eight factors were examined for interpretability (Fig. 1).

An intuitive way of looking at these results is to examine the factor loadings based on the original [13] item assignment. This method was used for all except the original factor. Thus, a eight-factor solution seemed to explain the present data adequately, and when the original item assignment was employed [13], factor loadings generally continued to be robust. Using the original assignment of items, alpha coefficients ranged from adequate to high.

The loadings for the eight factor solution are presented in Table 6. The eight factor solution accounted for 50% of the total common variance.

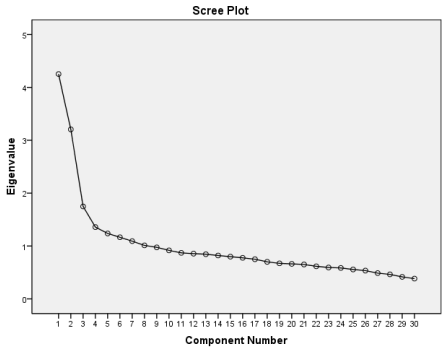

Fig. 1. Scree plot.

Table 5. Eigenvalues and variances

Total Variance Explained

Component		Initial Eigenvalues			Extr. Sums of Squared	
		Total	% of Variance	Cumulative %	Total	% of Variance
Dimensions	v1	4.252	14.175	14.175	4.252	14.175
	v2	3.205	10.683	24.858	3.205	10.683
	v3	1.748	5.826	30.683	1.748	5.826
	v4	1.358	4.526	35.209	1.358	4.526
	v5	1.238	4.126	39.335	1.238	4.126
	v6	1.165	3.884	43.219	1.165	3.884
	v7	1.092	3.64	46.86	1.092	3.64
	v8	1.012	3.373	50.233	1.012	3.373
	v9	0.975	3.249	53.482		
	v10	0.917	3.057	56.54		
	v11	0.87	2.901	59.441		
	v12	0.856	2.854	62.294		
	v13	0.845	2.816	65.111		
	v14	0.821	2.735	67.846		
	v15	0.799	2.662	70.508		
	v16	0.776	2.587	73.095		
	v17	0.75	2.501	75.596		
	v18	0.701	2.336	77.932		
	v19	0.672	2.239	80.171		
	v20	0.662	2.206	82.377		
	v21	0.651	2.169	84.546		
	v22	0.616	2.053	86.6		
	v23	0.593	1.978	88.577		
	v24	0.586	1.952	90.529		
	v25	0.556	1.854	92.384		
	v26	0.535	1.783	94.166		
	v27	0.487	1.625	95.791		
	v28	0.464	1.545	97.336		
	v29	0.416	1.387	98.722		
	v30	0.383	1.278	100		

Extraction Method: Principal Component Analysis.

We also used confirmatory factor analysis to examine the fit between the original factor assignments with the present data. Confirmatory factor analysis was conducted on the inter-item correlation matrix using the SPSS 18 program available. When we specified the model according to the original eight-factor solution with varimax rotation, the principal component estimation yielded overall fit indices.

4. Results and conclusion

It is obtained from Table 1 eight factor axis that is, respectively:
Factor 1: Negative effects,
Factor 2: Time decision adjusting,
Factor 3: Teacher must obey purposal rules,
Factor 4: Gender, award and penalty affects positively,

Factor 5: Pioneer conveys,
Factor 6: General coherent adjustement rules affect positively,
Factor 7: Wide spread, positive and imperative written rules,
Factor 8: Tidy and clean class, teacher's known rules.

Table 6. Factor loadings for the eight factor solution.

Rotated Component Matrix

	Component							
	1	2	3	4	5	6	7	8
v19	0.652		-137		0.142			
v30	0.642				0.129	0.116		-0.173
v29	0.608	0.113			-0.106			-0.157
v11	0.602				-0.216		0.215	
v23	0.579	-0.258		265	-0.181		0.150	
v8	0.440	0.300		-0.166	-0.272		0.187	0.273
v27	0.435	0.201	0.287		0.319	-0.201		
v20		0.774		164				
v25		0.592			0.279	0.258	0.100	0.116
v16		0.436	0.202	-0.162	0.261	0.213		
v5			0.697		0.105			0.109
v9	-0.153	0.147	0.555	0.230	0.109	-0.136	0.128	0.238
v12	0.385		-0.405	0.126	0.251	-0.242	0.129	0.133
v28	0.187	0.247	0.372	0.192	0.246		0.101	
v17		0.291		0.655				
v14	0.313	-0.271	-0.183	0.553				0.231
v26	0.410	-0.114		0.535				
v24		0.190		0.490		0.383	0.116	
v22		0.279	0.155	0.219	0.563		0.197	-0.109
v7	-0.116	0.142	0.101	0.101	0.539	0.221		0.182
v6	0.135			0.318	0-.500	0.155	0.277	
v15	0.139	0.127	0.357	-0.118	0.428	0.282	0.165	0.108
v18		0.160	-0.133			0.643	0.129	
v21		0.173	0.152		0.132	0.609	-0.140	0.159
v10			0.403			0.169	0.656	-0.137
v2	0.215	0.186				-0.228	0.626	0.136
v1	-0.114	-0.169	-0.263			0.369	0.517	0.171
v3			0.159		0.141	0.123		0.738
v13	-0.206	0.308		0.226	0.128	0.150		0.456
v4	.137	0.375	0.242		-0.170	0.231		0.411

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

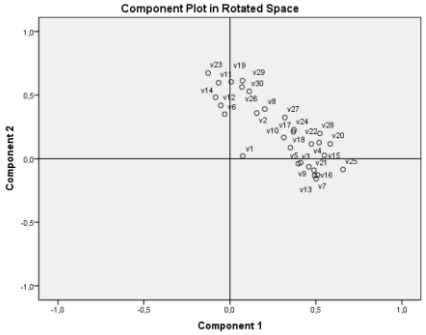

Fig. 2. Factor loadings for two factor solutions.

The factors consist of these items (Table 7).

Table 7. Factors

Factor 1:v19, v30, v29, v11, v23, v27.	Factor 2: v20, v25, v16.	Factor 3: v5, v9, v12.
Factor 4: v17, v14.	Factor 5: v26, v24.	Factor 6: v22, v7, v6, v15.
Factor 7: v18, v21, v10, v2, v1.	Factor 8: v3, v13, v4.	

In Table 7, v5, v30 variables may be separated to 3 groups because of the factor charge. These groups are:

1.Group: v23, v19, v11, v14, v12, v29, v30, v6, v26
2.Group: v1, v2, v8, v10, v17, v27, v24
3.Group: v18, v4, v28, v22, v3, v5, v20, v9, v15, v21, v13, v7, v16.

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Appendix

The questions which implemented to students are below that, **v1**: I easily adapt imperative rules, **v2**: I couldn't adapt rules in crowded classes**, v3:**I easily adapt rules which are constituted by the teacher,**v4:**I easily adapt rules in tidy and clear classes, **v5:**I easily adapt rules which I know purpose of its, **v6:**My point of view to the rules is different when I am inside the friends group, **v7:**I believe that to the rules of class changed positively my treatments**, v8:**If the rules often change, I am affected negatively, **v9:**I am affected positively when my the teacher obeys the rules, **v10:**I easily adapt the rules that my classmate are participated in democratically**, v11:**I am affected that negatively plenty of the rules**, v12:**The rules are reminded to me lack of discipline, **v13:**I easily obey the rules if I am informed previously, **v14:**Sexuality of my teacher is effect for me positively, **v15:**Concurrence of the rules of the school and class is affected me positively**, v16:**Care of my teacher the rules is effect for me in order to adap the rules, **v17:**Penalty and prize are effect for me in order to adapt the rules, **v18:**The rules which are written are made simpler to adapt me, **v19:**If the same rules carry out permanently, I may adapt the rules unwillingly, **v20:**I easily adapt to the rules when my teacher supports about my positive behavior**, v21:**Positive imperative clauses are affected me more than negative imperative clauses**, v22:**It is made simpler obey to the rules that the rules include observable behaviors, **v23:**When my teacher often makes the class to remember the rules, I may be affected negatively, **v24:**When the rules are notified my parents, I easily adapt to the rules**, v25:**I easily adapt to the rules which are specified in the begin of semester**, v26:**My teacher's age is effect to adapt to the rules, **v27:**If the rules are applied to the student as inequitable, I may be affected negatively, **v28:**If the rules are realistic, I may easy adapt them, **v29:**I am restricted by too many rules if there are, **v30:**The strict rules are inversely proportional with obedience.