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Factorial Structures of Difficult Behaviours of Secondary School Students as Perceived by their Teachers: A Q-Study

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Abstract: ***Present study is an illustration to the utility of Q-methodology for dealing subjective issues in an objective manner. The issue of difficult behaviours of adolescent learners in classroom is also a subjective issue as there is no well-structured definition is available in the literature. The study used Q-type factor analysis to reveal nine factors structure of the concept 'difficult behaviours'. These factor are- Disobedience, Insensitivity, Dominance, General Deviant Behaviour, Irrational Behaviour, Challenge, Psycho-academic deviance, Ill-Mannered Behaviour, and MischievousBehaviour. Further on frequency analysis it is revealed that teachers are most concerned about challenge to their authority followed by social behaviours both acting in and acting out type. In third order they are concerned with general behavioural problems. At the same time teachers don't consider at least nineteen out of fifty one behaviours as difficult behaviours. These mostly included ordinary deviant behaviours. This shows that teachers are really aware of the concept of difficult behaviours.***

Keywords: Q-study, difficult behaviours, Q-type factor analysis, Factor analysis, adolescent learners

1. Introduction

Classroom management is one of the parameters of effective and efficient teaching. Better the class management, congenial is the environment for teaching and learning, consequently good results are inevitable. Quality of teaching does not only depend upon the skills and behaviour of the teacher, but also decided by the intrinsic and extrinsic nature of the learners. Students have behaviours which are of both positive and negative extremes, where former type can make teaching a smooth ride but latter have potential to disturb the classroom proceedings to any extent. It can lead to a rift between teacher and learner/s. Here we are concerned with the negative behaviours, and will be terming these as difficult behaviours. Every child misbehaves at times especially in adolescence age. When it happens in a classroom it is distressing for a teacher who always likes to be a perfect teacher of his/her students. There are many reasons for a child's misbehaviour, and many ways for teachers to help the child improve. Adolescence by its transitional nature (full of changes) can be a difficult time for significant numbers of young students. "Problems" with adolescents are not so much located within the individual adolescent but within the social structures in which they are embedded. Thus the issue at hand is significant not only for the sake of child, teacher or school, but has scope to cover whole gamut of social structures. Nevertheless it has important social implications like negative development, antisocial elements, huge economic losses and great loss of human resource. Teachers have an important role to play in managing difficult behaviours of the adolescents and in modeling problem-solving behaviour.

2. What is the Behavior?

Behavior is that which can be directly sensed, such as seen or heard. Often people"s "descriptions" of behavior include inferences ("He was aggressive," "She is lazy"). Instead, describe the behavior itself. Say, "He kicked the chair" rather than "He was aggressive" or "She turned in only one of five assignments" rather than "She was lazy." The problem with inference is that it includes the prescription before the facts are known and allows for misinterpretation. In one case we know of, instructors regarded a grossly overweight student as behaviorally disruptive in class. His actual in-class behavior was within normal ranges, but the instructors made false generalizations from his physical appearance. The inverse problem is also common. A very attractive student may be given more leeway than is appropriate, encouraging misbehavior in other students. *(http://www.uow.edu.au/content/groups/public/@web/@stsv/@swd/documents/doc/uow068340.pdf)*

3. What is a Difficult Behaviour?

In the literature related to adolescent learners we find term difficult behaviours synonymous to challenging behaviours, disruptive behaviours, aggressive behaviours, deviant behaviours and the like. All the terms are overlapping but except term „difficult behaviour" are unidirectional and have potentially to go beyond classroom. For instance disruptive behaviour, aggressive behaviour are negative in nature and have notion of „acting out" domain. In case of deviant behaviour it includes unacceptable behaviours coming from disabilities both physical and mental. Challenging behaviour is most close to difficult behaviour, but this also has extreme like threatening behaviours, anti-social behaviour, sexually abusive behaviour, physical attack, open defiance to rules and procedures. Author believes difficult behaviours is the most suitable term for classroom scenario. We here want to include both „acting out" and „acting in" sort of behaviours i.e. both aggressive as well as withdrawal behaviour should be termed as difficult behaviours. Also we are not including deviant behaviours appearing by virtue of any sort of disability i.e. as it could be in case of special children including ADHD or even autism. There is no well-structured definition of „difficult behaviour". Investigator surveyed available attempts of defining the concept in literature and came up with definition as given below.

These definitions are sufficient to design a working definition for a difficult behaviour to be accepted for present piece of research work.

"A difficult behaviour is any form of activity expressed by a child in classroom which falls outside the realm of classroom protocols and is not a consequence of abnormal mental or physical state of the child. Further a difficult behaviour should be categorized so after ascertaining its nature (need to be exceptional), frequency (should be high), intensity (need to be high), consistency (should be repeated) and pattern (identifiable with title) to decide the existence and nonexistence of a particular behaviour".

For taking stoke of difficult behaviours shown by learners in classroom, teachers are the best source of information, this is why teachers are made participants for the present study. Since the subject under study is a subjective one, application of Q-methodology seems to be the best choice.

Q-methodology
Q-methodology was devised by Stephenson "to characterize a set of philosophical, psychological, statistical and psychometric ideas oriented to research on the individual" (Stephenson, 1953). It is a method of Q-sorting which calls for a person to rank order a set of stimuli according to a well-defined rule. The Q-sorting is done by using a set of objects, behaviours or statements. An individual is asked to sort them into a number of piles in accordance with some criterion. The sorter is instructed to place varying number of cards in several piles using approval/ disapproval (or some other) criterion, the whole making up a distribution called Q-distribution.

Ipsative versus Normative Measures
Normative measures are generally used with tests and scales. An individual is free to choose any of the alternatives out of five/seven alternatives if administration is done on a five/seven point scale. On the other hand ipsative measure (as used by Q-methodology) involves forced choice procedure of placing fixed number of items into fixed number of categories using a specific criterion. It fixes the available choices.

Unstructured and Structured Q-Sort
An unstructured Q-sort is a set of items assumed without specific regard to underlying factors i.e. no specified (pre-decided) factors are kept in mind while framing the items of the measure. On the other hand structured Q-sort consists of items or statements framed or collected with specific regard to the underlying structure of factors (or variables). The main purpose of a structured Q-sort is to develop a theory or theoretical structure. Also it intends to test already existing theory or constructs.

R-Methodology
R-technique is concerned with co relational analysis of tests. In R-methodology tests and scales are administered on samples of persons which are then scored objectively using normative methods of scaling. Purpose of R-methodology is to study individual differences through tests or scales which measure their abilities.

Q-Methodology versus R-Methodology
Q-methodology uses ipsative method of measurement while in R-methodology data are obtained on normative measure. Factor analysis of inter-person correlations is done in Q-methodology and classification of statements is derived by manipulation of factor arrays. In R-methodology factorial structure is obtained by factor analysis of inter-item correlations.

Steps of Q-methodology are a) working out a "concourse" to frame statements (developing a Q-Set); b)Sampling of P-Set (participants/ persons); c) Q-Sorting uses ipsative measures; d) Finding the inter- Person correlations; e) Factor analysis to find groups of persons; f) Working out underlying Structure of items

4. Objectives of the Problem

The study has been conducted to attain the following objectives

1. To construct unstructured Q-sort for concept „Difficult behaviours".
2. To find Inter-person correlation for data obtained for persons (Teachers) through Q-sorting.
3. To obtain the group of persons using Q-type factor analysis.
4. To obtain factors of items based on perceptions of persons in the groups obtained using Q-type factor analysis.
5. To give naming (dubbing) to the obtained factors base on most approved difficult behaviors by group of persons corresponding to factors.

How does Present Investigation Proceed?

The concourse is developed by using a number of tools and sources like observation, interview, and literature on the subject of the study. The items are then written on different cards for the purpose of sorting by the respondents. The sorting is done on the ipsative scale in seven piles of distribution of 1, 4, 12, 17, 12, 4, 1 cards. Scoring is done from 1 to 7 for all items in the piles from least approved to most approved continuum. Data so obtained is then subjected to Q-type factor analysis i.e. finding inter-person correlation and forming groups of persons. Q-arrays are then used to work out the factorial structure of the items for the purpose of interpretation. In order to find items from factor of persons Sontag"s Q- array technique has been applied, which involves calculation of weights, weighted scores, and calculating factor scores or Q-values.

Calculation of weights of persons in respect of group
$W_j = a_j(1-a_k^2)/a_k(1-a_j^2)$
W_j = weighted score of person j
a_j = loading of person j
a_k = the lowest loading in the group of persons which isused to compute factor array

Calculation of Weighted Scores of items
$W=Z_j * W_j$, where Z is standard score for person j

Calculation of Factor Scores
$w_1+w_2+w_3\ldots\ldots\ldots\ldots+w_n$= factor score for a given item

Then Difficult Behaviours are rank ordered according to factor scores. The highest factor score was given a value of 7 and others were assigned accordingly, these were called array values. Thus original quasi normal distribution on desirability scale from 7to1 was obtained.

Q-Type Factor Analysis

The data derived on Q-sorts of 51 difficult behaviours of 60 secondary school teachers was subjected to analysis. A Matrix of inter-person correlations for teachers (60x 60 matrix) was subjected to Principal Components Method of Factor Analysis. The computations were performed on a computer using SPSS-16 software program.Eighteen factors (factors with Eigen values>1) were obtained. The 18x60 matrix was then subjected to Varimax rotation to obtain an easily interpretable factorial structure. The finally rotated matrix was then subjected to interpretations.

Interpretation of Factors of Persons

It was easy to interpret nine factors solution of persons. The persons with high factor loadings were retained in each of the nine factors. Table1 shows the number of persons assigned to each of the eight factors so obtained.

Table 1: Number of Persons on the Nine Factors

Factor	I	II	III	IV	V	VI	VII	VIII	IX	Total
Number of Persons	7	6	6	6	6	7	4	4	6	52

It is worth mentioning here that factors with three or less than three persons were rejected and the persons in those factors were tried to be retained in factors on which they had loading next to the highest. Loadings of persons on respective factors could not be shown here, however for sample sake it is shown for factor I in table 2

Table 2: Factor I in terms of Factor Loadings

Sr. No.	Teachers	Factor Loadings								
		I	II	III	IV	V	VI	VII	VIII	IX
1.	T_{39}	**0.8080**	-0.1030	0.0940	-0.0110	-0.1410	-0.0360	-0.038	0.1360	-0.0770
2.	T_{3}	**0.7460**	-0.1150	0.1410	0.0220	-0.1850	-0.0630	-0.1250	0.0970	-0.0780
3.	T_{57}	**0.6660**	0.1430	-0.1450	0.0180	0.1570	-0.0430	-0.1550	0.0650	0.2030
4.	T_{38}	**0.5320**	0.1830	-0.2060	-0.2640	0.1540	0.1420	0.1870	-0.2720	-0.2060
5.	T_{35}	**0.5120**	0.1830	0.1750	0.2730	-0.0110	0.2230	0.2410	-0.1840	-0.1750
6.	T_{27}	**-0.4550**	0.3210	0.1600	0.0790	-0.0210	0.0790	-0.2260	0.1120	.032500
7.	**T58**	**0.4410**	0.1260	-0.3090	0.0460	0.0710	0.1660	0.0070	0.4060	0.0640

Using array technique as described array values were found for each of the items in all thefactors. Due to paucity of space all calculations are not presented here, however, for demonstration sake array values and corresponding Q-distribution are shown ahead for factor 1.

Table 3: Rank Ordered Array Values of 51Difficult Behaviours for Factor – I

Item No.	Factor Score in Rank Order	Q-Value	Item No.	Factor Score in Rank Order	Q-Value	Item No.	Factor Score in Rank Order	Q-Value
25	21.1299	7	36	5.0196	4	49	-3.2948	3
16	16.9268	6	10	5.0178	4	42	-3.4012	3
7	16.6493	6	1	4.9207	4	15	-5.6021	3
44	15.4870	6	14	4.4035	4	46	-7.1219	3
17	11.0524	6	2	4.1313	4	38	-7.6710	3
37	10.3947	5	51	3.1671	4	50	-7.8839	3
12	10.3101	5	8	2.3061	4	41	-9.5006	3
11	9.9150	5	33	1.5049	4	47	-9.7531	3
32	9.5169	5	23	-0.4236	4	28	-10.1835	3
13	9.0770	5	30	-1.0005	4	21	-11.6238	3
39	8.1884	5	3	-1.0418	4	31	-11.8368	3
29	7.5646	5	22	-1.2851	4	5	-11.8599	3
43	7.2815	5	24	-1.4636	4	40	-12.5575	2
35	5.9746	5	34	-1.5196	4	9	-13.0821	2
27	5.8811	5	45	-1.5445	4	20	-19.0104	2
48	5.8003	5	4	-2.3002	4	18	-22.7108	2
26	5.2076	5	19	-2.7666	4	6	-26.3896	1

51Difficult Behaviours placed In Original Q – Sort DistributionforFactor – I

	Least approved	Slightly greater than least least approved	Somewhat greater than least approved	Equidistant from Least and most approved	Somewhat less than most approved	Slightly less than most approved	Most approved
Score	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	Least approve						**Most approved**
	06	18	05	36	37	16	25
	1Card	20	31	10	12	07	**1Card**
		09	21	01	11	44	
		40	28	14	32	17	

4 Cards	47	02	13	**4 Cards**
	41	51	36	
	50	08	29	
	38	33	43	
	45	23	35	
	15	30	27	
	42	03	48	
	49	22	26	
	12 Cards	24	**12 Cards**	
		34		
		45		
		04		
		19		

17 Cards

The factor structure of desirable teaching behaviours for the purpose of interpretation was then obtained by selecting the top two piles with Q-sort values (7 and 6 in order from the most desirable end) in each factor. Consequently nine factors each having five items were obtained. Factors were then checked to find items, which occurred in more than one factor. Items common to two or more factors were included in only the factor in which it found its place by virtue of its highest array value. However some of the items were retained in more than one factor by virtue of almost equal or nearly equal loading. Nine factors solution was finally obtained and factors were dubbed according to nature of items. These factors are presented in tables 4 to 12.

Table 4: Factor I: Disobedient Behaviour / Disobedience

Sr. No.	*Array Value*	*Item No.*	*Item*
1.	7	25	is moody
2.	6	16	disobeys
3.	6	7	argues
4.	6	44	is a truant
5.	6	17	is neurotic

Table 5: Factor II: Insensitive Behaviour / Insensitivity

Sr. No.	*Array Value*	*Item No.*	*Item*
1.	7	51	has careless attitude
2.	6	41	is unfair in his/her dealings
3.	6	37	is antisocial
4.	6	25	is moody
5.	6	50	is of withdrawal nature

Table 6: Factor III: Dominating Behaviour / Dominance

Sr. No.	*Array Value*	*Item No.*	*Item*
1.	7	11	is adamant
2.	6	4	is talkative
3.	6	8	complains too much
4.	6	28	is critical of others
5.	6	45	is unsocial

Table 7: Factor IV: General Deviant Behaviour

Sr. No.	Array Value	Item No.	Item
1.	7	22	is lazy
2.	6	31	is different
3.	6	17	is neurotic
4.	6	49	is an arrogant
5.	6	25	is moody

Table 8: Factor V: Irrational Behaviour

Sr. No.	Array Value	Item No.	Item
1.	7	38	is irrational
2.	6	8	complains too much
3.	6	31	is different
4.	6	36	is submissive
5.	6	16	disobeys

Table 9: Factor VI: Authority Challenging Behaviour / Challenge

Sr. No.	Array Value	Item No.	Item
1.	7	45	is unsocial
2.	6	39	a ring leader
3.	6	43	is a cheater
4.	6	13	is hostile
5.	6	16	disobeys

Table 10: Factor VII: Psycho-academic Deviant Behaviour / Psycho-academic deviance

Sr. No.	Array Value	Item No.	Item
1.	7	26	is abusive
2.	6	34	is a slow learner
3.	6	23	has low self-esteem
4.	6	49	is an arrogant
5.	6	47	is hyperactive

Table 11: Factor VIII: Ill-Mannered Behaviour

Sr. No.	Array Value	Item No.	Item
1.	7	51	has careless attitude
2.	6	2	throws temper tantrum
3.	6	6	feels shy
4.	6	9	is unstable
5.	6	32	is ill mannered

Table 12: Factor IX: Mischievous Behaviour

Sr. No.	Array Value	Item No.	Item
1.	7	36	is submissive
2.	6	4	is talkative
3.	6	49	is an arrogant
4.	6	14	is mischievous
5.	6	20	is dependent

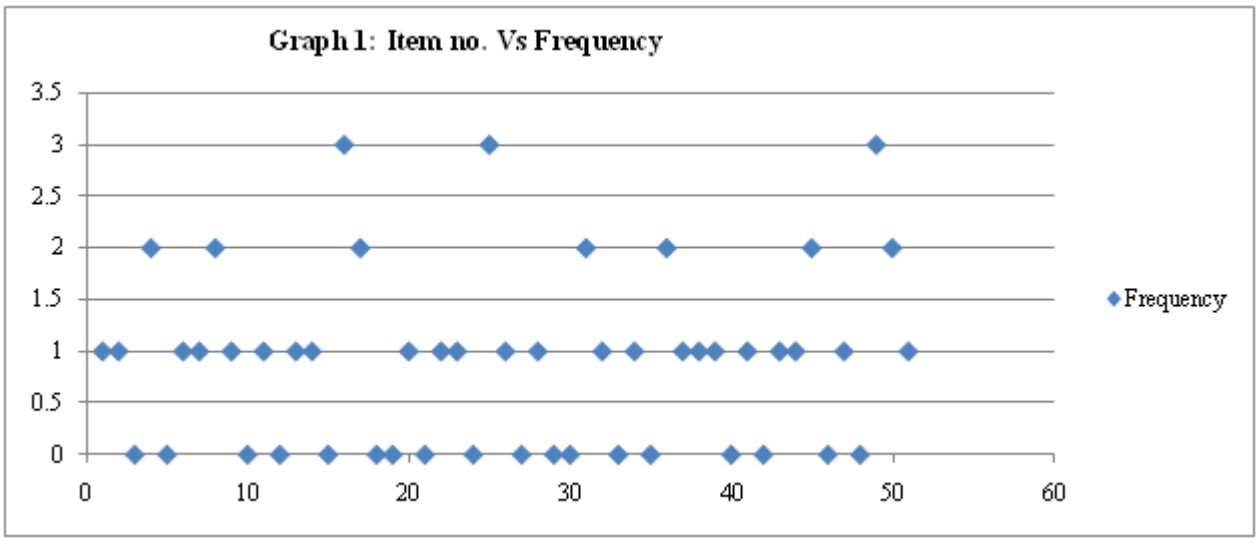
Another Look on Difficult Behaviours

Integrating all the factors for contained difficult behaviours we can analyze all the approved behaviours in terms of frequency of approval. Frequency here means how many times a difficult behaviour figures in these final factors for the concept. Table 13 details about frequency, intensity and

nature of difficult behaviours. It is clear from table 13 and graph 1 only three behaviours are found to have frequency 3 i.e. approved by three groups of persons (teachers), we call these as highly approved difficult behaviours. These

Table 13: Item Number vs. Frequency of Approved Difficult Behaviours (all Groups / Factors Combined)

Sr. No.	*Item No.*	*Frequency*	*Difficult Behaviour*	*Intensity*	*Nature of Behaviour*
1.	16	3	Disobedience	Highly approved	Challenge to teacher"s authority
2.	25	3	Moodiness		
3.	49	3	Arrogance		
4.	4	2	Talkativeness	Recommended	Socially acting out & Socially acting in
5.	8	2	Complaining		
6.	17	2	Neuroticism		
7.	31	2	Being different		
8.	36	2	Submissiveness		
9.	45	2	Unsocial		
10.	50	2	Being withdrawal		
11.	2	1	Throwing teamer tantrum	Approved	Behavioural problems
12.	6	1	Shyness		
13.	7	1	Arguing		
14.	9	1	instability		
15.	11	1	adamant		
16.	13	1	Hostility		
17.	14	1	mischievousness		
18.	20	1	Being dependent		
19.	22	1	Laziness		
20.	23	1	Feeling of low self-esteem		
21.	26	1	Abusiveness		
22.	28	1	Criticizing others		
23.	32	1	Ill mannerism		
24.	34	1	Slow learning		
25.	37	1	Being antisocial		
26.	38	1	Irrationality		
27.	39	1	Being a ring leader		
28.	41	1	Unfairness		
29.	43	1	Cheating		
30.	44	1	Truancy		
31.	47	1	Hyperactivity		
32.	51	1	Carelessness		
33	1	0	Defiance	Not approved	Miscellaneous
34.	3	0	Aggressiveness		
35.	5	0	Impulsiveness		
36.	10	0	Rebelliousness		
37.	12	0	Distractibility		
38.	15	0	Physical disability		
39.	18	0	Sensitivity		
40.	19	0	Isolation		
41.	21	0	Being indifferent		
42.	24	0	Day dreaming		
43.	27	0	Enviousness		
44.	29	0	Being hypocritical		
45.	30	0	Non-cooperation		
46.	33	0	Non-punctuality		
47.	35	0	Boastfulness		
48.	40	0	Being sentimental		
49.	42	0	Being unethical		
50.	46	0	Attention seeking		
51.	48	0	Egotism		



three behaviours are disobedience, moodiness and arrogance which clearly points towards a tendency to challenge teacher‟s authority. Thus teachers strongly dislike students challenging their authority in the classroom i.e. why they strongly recommended these as difficult behaviours. There are seven behaviours (talkativeness, complaining, neuroticism, being different, submissiveness, unsocial and being withdrawal) which appear twice in factors of difficult behaviours. These seven behaviours are categorized as „recommended‟ behaviours comparatively less than highly approved ones. It is mixture of two polarities of socially acting out (talkative, and complaining) socially acting in (submissive, unsocial and withdrawal) difficult behaviours. Remaining two difficult behaviours (neuroticism and different) could fall under any of the two categories. Twenty two behaviours (from sr. no. 11 to 32 in table 4.40) are included in one of the extracted factors could be categorized as approved difficult behaviours. These behaviours could be categorized as „acting out‟, „acting in‟ and „neutral‟ behaviours. Majority of these behaviours are routine classroom expected difficult behaviours. Nineteen difficult behaviours (from sr. no. 33 to 51 in table 4.40) are behaviours which could not be included in any of the factors. We may safely categorize these as „not approved‟ behaviours. These behaviours are of miscellaneous nature form simple ones (sensitivity, day dreaming, non-punctuality, non-cooperation, boastfulness, sentimental and attention seeking) to deep routed ones (impulsive, distractible, envious, hypocritical, unethical and egoistic). However some of the difficult behaviours are in between these two extremes (defiance, aggressiveness, rebelliousness, disability, sensitiveness, isolation, indifference, and being sentimental) could be considered as common behavioural deviations. In nut shell we understand that teachers are highly concerned about challenge to their authority, thus categorize these as most difficult behaviours of students to manage. Next they consider socially acting in and acting out behaviours that poses threat to classroom social fabric. Next in order are behavioural problems (both acting out and acting in) of students which they find as difficult to manage, but are routine in classroom situation. Finally they reject some miscellaneous behaviours to be categorized as „difficult behaviours‟.

5. Conclusions

- Q-methodology proved to be an effective and perhaps better than R-methodology for finding factorial structure of subjective concepts like difficult behaviours of adolescent learners in classroom.
- There are at least nine factors are running through the factor structure of difficult behaviours as a concept.

6. Significance of the Study

This structure of the concept „difficult behaviours‟ could be used to define and conceptualized using factors obtained for it. The study can contribute to theorize the concept of difficult behaviours, which could further be used a standardized measure for quantitative analysis in respect of some variables including demographic ones.

7. Further Leads for the Study

The factors obtained for the concept should be used as independent measures for relatedness to other significant variables which could influence the difficult behaviours. Similar studies can be designed for finding factorial structure of other subjective issues like values, beliefs, interests etc. in educational context. Results of Q-methodology could be verified by normative analysis of data or by conducting an empirical study on the same issue.

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