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COGNITIVE AND PERSONALITY FACTORS ASSOCIATED WITH THE CLASS PLACEMENT OF PUPILS

VINCENT GREANEY AND THOMAS KELLAGHAN

Educational Research Centre,
St Patrick's College, Dublin

Teachers of a representative sample of eleven-year old Irish pupils (N 402) responded to a questionnaire about (i) the class place of the pupils, (ii) the perceived difficulties of pupils in individual curricular areas (cognitive domain), and (iii) the perceived personality characteristics of the pupils (moral domain) Multiple regression analyses indicated that a pupil's class place was related more to moral than to cognitive factors The most important moral factor predicting class place was achievement tendency The most important cognitive factors predicting class place were written English, written Irish, and problem arithmetic Considerable over-lap was found between the cognitive and moral factors in teachers' ratings

The assessment of pupils is a common activity of the classroom Sometimes such assessment is specific as when a teacher judges how well a pupil is tackling a particular problem At other times it is more general, as when the teacher makes a judgement about the kinds of problems a pupil exhibits in any area of the curriculum, such as in reading, in spelling, in computation or in history A teacher's assessment may be more general again when it refers to the over-all scholastic progress of the pupil, over a number of curricular areas and over a period of time

What does a teacher take into account in making judgements about general progress? One may assume that such judgements reflect or summarize a variety of more specific assessments Factors like a pupil's day to day performance in class, how he answers questions, how he does on periodic oral and written tests, all seem relevant Less obvious are such things as a pupil's language usage, social behaviour, age relative to peers race and socio-economic background but these too seem to influence teachers' judgements (3) Thus, a combination of cognitive and non-cognitive variables as well as of status and process variables may enter into the teacher's assessment

Parsons (9) took up this point when he characterized achievement in terms of two components performance appropriate to the school situation on the one hand and performance considered by adults to be important in itself on the other For Parsons, the former is the cognitive dimension of achievement and refers to such things as the acquisition of information, and of reading and writing skills The latter, in Parson's terminology, is the moral dimension, and refers to such things as good 'work-habits', cooperation, leadership and initiative According to Parsons, teachers' evaluations of pupils are based on a fusion of cognitive and moral components

The present study is concerned with teachers' judgements at two levels the very general one in which judgements are made about the overall scholastic progress of pupils and the less general one in which judgements are made about more specific aspects of pupil behaviour in both the cognitive and moral domains For this study, judgements which refer to teachers' perceptions of pupil difficulties in specific curricular areas (e g , English reading, problem arithmetic) are taken to be judgements in the cognitive area, judgements which refer to teachers' perceptions of pupil personality characteristics (e g , leadership, originality, keeness to get on) are considered to belong to the moral domain The basic question which the study sets out to answer is how are teachers' perceptions of general scholastic progress (for which class placement is used as the index) related to their perceptions of the progress of pupils in particular curricular areas on the one hand (the cognitive component) and to their perceptions of the personality characteristics of pupils on the other (the moral component)

The study also provides the opportunity of investigating the specific curricular areas which teachers perceive as causing most difficulty for pupils In a previous report, Kellaghan, Macnamara and Neuman (4) found that teachers were more likely to report pupils as exhibiting difficulty with arithmetic or Irish than with English Furthermore, it seemed that progress in arithmetic and Irish, but not in English was regarded by teachers as important in deciding whether a pupils' overall progress was satisfactory or not The present study differs from the earlier one in that it provides an opportunity for further exploration of the relationships within the cognitive domain in teachers' assessments as well as using a different criterion of scholastic progress In the analyses for the present study, the subject areas Irish and English are each broken into three components (reading, oral and written) and

mechanical and problem arithmetic are considered separately The study examines teachers' perceptions of pupil difficulties in each curriculum area, it also relates the perceived performance of pupils in the individual areas to perceived overall school progress

It should be noted that all the data for the present study are derived from subjective teacher ratings,, that is, no objective measures (such as standardized test results) were available to the teachers The primary advantage of confining the data to teacher ratings is that it helps to assess the relative importance of many of the subjective evaluations made by teachers in reaching decisions about the scholastic progress of their pupils In considering the findings, it should also be borne in mind that they are based on data gathered in 1968 Teachers' perceptions of some of the factors related to scholastic progress may have changed since then

METHOD

Sample

In 1967 a representative sample of 2,164 children participated in the standardization of a verbal reasoning test (1) The sample was selected from the population of eleven-year old children attending Irish primary schools (with the exception of pupils attendmg special schools for the handicapped) During the following year a random sample of 500 pupils was selected from the larger sample and a postal questionnaire which sought among other things, information on the class placement of the pupils, was sent to their teachers Completed questionnaires were returned for 483 pupils In the case of the remaining 17 pupils, teachers failed to indicate the class place A series of chi-square analyses revealed that these pupils did not differ significantly from the 483 pupils in terms of teacher ratings in eight subject areas Accordingly, the investigators felt justified in assignmg the mean class position to these 17 pupils At the time of the test standardization 304 pupils were in fifth or sixth standard, 98 m fourth, 11 in third, while the remaining 87 were attending post-primary schools Only pupils in standards four to six are the subjects of the present investigation

Variables investigated

(i) *Class place* Teachers were asked to estimate each pupil's rank in class over all school subjects By dividing the rank assigned by the number of pupils in the class, it was possible to categorize each pupil

as being in one of the following categories (a) top 10 per cent (coded 0), (b) next 20 per cent (coded 1), (c) middle 40 per cent (coded 2), (d) next 20 per cent (coded 3), (e) last 10 per cent (coded 4)

(ii) *Cognitive measures pupil progress ratings* Each teacher was asked to indicate whether or not the pupil had any difficulties in any of the following subjects Irish reading, oral Irish, written Irish, English reading, oral English, written English, mechanical arithmetic, and problem arithmetic The teacher was asked to express his judgement simply by writing yes or no for each subject (In coding, a zero signified that difficulty was being experienced)

(iii) *Moral measures pupil personality ratings* A five-point scale based on scales used by Terman and Merrill (12) and Lightfoot (6) was used by teachers to rate pupils on each of the following personality traits (a) keeness to get on (b) enquiring mind, (c) achievement tendencies, (d) leadership, (e) concentration on own activities, (f) self-confidence, (g) dominance, (h) creativity, (i) dependence, (j) deference (submissiveness), (k) gregariousness, (l) common sense, (m) originality, (n) sense of humour (p) popularity with other children, (q) sensitivity to approval or disapproval (r) appreciation of beauty A score of 1 indicated a low degree of the trait a score of 5 a high degree

RESULTS

Separate analyses were carried out for pupils in standards five and six on the one hand and for those in standard four on the other

Standards five and six

Subject difficulty The data in Table 1 indicate that problem arithmetic is the subject which causes most difficulty for pupils It, in turn, is

TABLE 1

MEANS AND STANDARD DEVIATIONS OF COGNITIVE MEASURES
(Standards five and six N 304)

Variable	$\bar{X}$	SD	Variable	$\bar{X}$	SD
Class place	1 84	1 03	Oral English	89	31
Irish reading	72	45	Written English	81	39
Oral Irish	70	46	Mechanical arithmetic	82	39
Written Irish	62	49	Problem arithmetic	54	50
English reading	90	30			

(For curricular areas, a score of 0 indicates perceived difficulty, a score of 1 indicates no perceived difficulty)

followed by written Irish, oral Irish, and Irish reading The relatively large standard deviations for these subjects suggest that teachers perceived considerable variation in pupil performances in these areas

Class place and cognitive variables The intercorrelation matrix for the subject variables is presented in Table 2 To estimate the unique

TABLE 2

INTER-CORRELATIONS AMONG COGNITIVE VARIABLES

(Standards five and six N 304)

		2	3	4	5	6	7	8	9
1	Class place	— 48	— 39	— 48	— 37	— 29	— 49	— 39	— 45
2	Irish reading		58	56	46	26	45	20	22
3	Oral Irish			54	25	36	31	22	32
4	Written Irish				30	26	56	27	36
5	English reading					45	45	21	11
6	Oral English						38	31	22
7	Written English							32	30
8	Mechanical arithmetic								48
9	Problem arithmetic								

contribution of each of the eight subjects to class place, the data were subjected to a stepwise multiple regression analysis Variables which did not add a significant amount to the precision of the model were excluded Details of the analysis are presented in Table 3 When the eight independent variables are included, 43 9 per cent of the total variance in class place is accounted for The deletion from the model

TABLE 3

MULTIPLE-REGRESSION COEFFICIENTS OF CLASS PLACEMENT ON COGNITIVE VARIABLES (REDUCED MODEL)

(Standards five and six N 304)

Subject	Order of entry	Beta	Percent of total variance
Written English	1	— 24	11 69
Problem arithmetic	2	— 25	11 42
Irish reading	3	— 29	13 81
Mechanical arithmetic	4	— 14	5 52
Percent of total variance explained by significant independent variables			42 44

of oral Irish, written Irish, English reading and oral English does not decrease the precision of the model by a significant amount

Class place and personality characteristics To examine the relationship between perceived student personality attributes and class place, a separate regression analysis was carried out in which the seventeen personality variables were used as independent variables In the analysis, a total of 51 9 per cent of the variance was accounted for Of this total, 47 9 per cent was accounted for by the first three variables entered—originality, self-confidence and achievement tendency

Class place, cognitive and personality variables When the cognitive and personality variables are considered together as independent variables, 57 7 per cent of the variance in class place is accounted for In the combined analysis, the best predictors of class place were found to be achievement tendency, written English, originality and self-confidence

A canonical correlation was computed to determine the extent of the relationship between the set of cognitive and the set of personality measures This technique maximizes the common variance between two sets of variables In effect, two linear combinations of variables are calculated in such a way that the resultant correlation between the two composite indices (the canonical variates) is maximized The magnitude of the canonical correlation obtained in this study was 72 Thus 52 per cent of the variance in the cognitive canonical variate is accounted for by the variation in the personality canonical variate

TABLE 4
MEANS AND STANDARD DEVIATIONS OF COGNITIVE MEASURES
(Standard four N 98)

Variable	$\overline{X}$	SD	Variable	$\overline{X}$	SD
Class place	2 23	98	Oral English	89	32
Irish reading	63	48	Written English	74	44
Oral Irish	54	50	Mechanical arithmetic	66	48
Written Irish	47	50	Problem arithmetic	39	49
English reading	89	32			

(For curricular areas, a score of 0 indicates perceived difficulty, a score of 1 indicates no perceived difficulty)

Standard four

Subject difficulty Table 4 contains mean difficulty levels of subjects for pupils in standard four The subjects perceived as causing most

difficulty are problem arithmetic, written Irish, oral Irish and Irish reading The intercorrelation matrix for the subject variables at the fourth standard level is presented in Table 5

TABLE 5

INTERCORRELATIONS AMONG COGNITIVE VARIABLES
(Standard four N 98)

		2	3	4	5	6	7	8	9
1	Class place	— 38	— 41	— 41	— 34	— 28	— 43	— 38	— 43
2	Irish reading		66	50	47	33	48	22	17
3	Oral Irish			58	32	13	35	17	36
4	Written Irish				27	20	50	28	47
5	English reading					59	53	16	08
6	Oral English						46	23	15
7	Written English							28	32
8	Mechanical arithmetic								39
9	Problem arithmetic								

Class place and cognitive variables Table 5 contains the inter-correlation matrix for subject variables In a stepwise multiple regression analysis in which the cognitive variables were regressed on class place, a total of 37 per cent of the variance in class place was explained by the eight achievement measures A reduced model in which variables which do not contribute significantly to the proportion of explained variance are excluded is presented in Table 6

TABLE 6

MULTIPLE REGRESSION COEFFICIENTS OF CLASS PLACEMENT ON COGNITIVE VARIABLES (REDUCED MODELS)
(Standard four N 98)

Subject	Order of entry	Beta	Percent of total variance
Written English	1	— 16	7 12
Problem arithmetic	2	— 22	9 27
Oral Irish	3	— 19	7 86
Mechanical arithmetic	4	— 20	7 47
English Reading	5	— 15	5 04
Percent to total variance explained by significant independent variables			36 76

Class place and personality characteristics In a regression analysis the seventeen personality measures were found to account for 59 2 per cent of the variance The most important independent contributors were concentration on own activities achievement tendency and creativity which together accounted for 51 5 per cent of the variance

Class place, cognitive and personality variables When achievement and personality variables are included together in a regression analysis at the fourth class level, a total of 63 0 per cent of the variance in class place is explained When coupled with the cognitive measures, the same three personality variables emerge as the best independent predictors of class place

A canonical correlation of 77 was found between the set of cognitive measures and the set of personality ratings

A summary of the regression analyses is presented in Table 7 At both levels, the addition of the seventeen personality or moral factors to the

TABLE 7

PREDICTION OF CLASS PLACE FROM COGNITIVE (C) AND PERSONALITY (P) FACTORS*

Standard	N	Percentage of Explained Variance C	P	C+P	Significance of addition
5 and 6	304	43 9	51 9	57 7	$p < 01$
4	98	37 0	59 2	63 1	$p < 01$

cognitive measures increases the proportion of explained variance by significant amounts

DISCUSSION

Subjects perceived by teachers as causing difficulty to pupils show considerable consistency for the two levels investigated in the present study At both the fourth class and the fifth and sixth class levels, the same set of subjects was identified and in the same rank order problem arithmetic, written Irish, oral Irish and Irish reading The inclusion of

*In the above regression analyses the personality variables were added after the cognitive variables had entered the regression equation When the order of entry of the two sets of variables was changed, the increase in explained variance as a result of the addition of the moral variables was significant only in the case of the fifth and sixth standard sample On first impression it might seem that the order of entry of the set of variables should not influence the result of the significance test However, the test of significance for the addition of further variables depends on both the number of extra variables as well as on the proportion of variance accounted for by the first set of variables entered in the regression equation (8) It should be added that irrespective of which set of measures is entered initially, the proportion of variance explained by both sets of variables together remains the same

the three Irish curricular areas and the failure of the English curricular areas to appear as subjects perceived as causing difficulty is perhaps surprising though it confirms the findings of an earlier study by Kellaghan *et al* (4) Apparently teachers are more satisfied with the progress of pupils in English than in arithmetic, or, even more strikingly, in Irish The failure of teachers to report difficulty in English, particularly in English reading, runs counter to conclusions about the standard of English reading based on surveys using objective tests, in which it was found that Irish children performed less well than English children (5, 7)

A comparison of Table 1 with Table 4 shows that, in general, eleven year olds in fourth standard were perceived as having greater difficulty in each subject area than pupils of a similar age in higher standards This is not surprising The mean class rating of the fourth standard pupils shows that these pupils tended to occupy relatively low places in their classes Furthermore, on the basis of verbal reasoning scores, which were available for the pupils it was possible to determine that the mean score of the fourth standard pupils (89 6) was significantly lower than that of pupils of similar age who were in higher standards (100 8) (t 6 64, df 400, $p < 001$) Together, these indicators imply that the eleven-year olds in fourth standard were relatively poor achievers, it may well be that many of them were in that class because of retention for a year or more during their school careers

The findings of the regression analysis regarding teachers' judgement of over-all scholastic progress at first sight might seem to run counter to the findings on perceived difficulty of individual curricular areas For one thing some aspect of all subject areas (Irish English and Mathematics) is taken into account in deciding on class places, whereas, as we saw not all subjects are perceived as causing difficulty The position of English is especially worthy of notice While no aspect of this subject is seen as causing difficulty to pupils, it occupies an important role as a predictor of class place When the predictors are considered separately written English, written Irish and problem arithmetic appear, at both levels among the four best predictors In the multiple regression analyses, written English and problem arithmetic also appear at both levels among the four best predictors The importance of English in the teacher's mind is something that does not emerge from a consideration of difficulty level alone in the present study or from Kellaghan *et al's* (4) univariate analysis of the relationship between subject difficulty and

teachers' judgements of general progress While it is clear that teachers perceive Irish and arithmetic as being the greatest sources of difficulty for children, it does not follow that such awareness among teachers is an indication that English is not an important curricular area in their minds It is true that teachers do not generally perceive English as being a major source of pupil difficulty however, the present findings indicate that when difficulty is perceived in English, particularly in English writing, the recognition of such difficulty weighs heavily in the teacher's judgement concerning over-all school progress Putting it another way, if a pupil receives a high rating (absence of difficulty) in English writing then he is likely to receive a higher class position than if he had received a high rating on any of the other cognitive variables This statement requires one qualification Perception of difficulty in English writing is fairly highly correlated with perception of difficulty in Irish writing This suggests the presence of a 'writing' factor which is common to both Irish and English, and indeed may also be a factor in problem arithmetic It is because of this relationship, that the importance of Irish writing as a predictor of class place, which appears in the correlation matrices, drops when entered into the regression analysis once English writing has been entered as a predictor

The importance of written activities and the relative non-importance of oral activities in predicting class place is striking Oral Irish appears only at the lower level as a predictor carrying any weight, oral English does not appear at all It may be that, in making their judgements, teachers are most influenced by the pupil's likely performance on examinations—the teacher's own term examinations, the old primary certificate examination and entrance examinations to post-primary schools—all of which are based on writing It may also be that the child's ability to write—to express his views and organize material—are seen by teachers as being highly correlated with a child's general ability and his likelihood of doing well in school

So far, our discussion has been concerned only with the role of cognitive factors in teachers' allocation of class places However, one of the most striking findings of the study is the relevance of non-cognitive factors when teachers make such judgements For both our samples, more than 50 per cent of the variance in class place was accounted for by what Parsons describes as the moral dimension of achievement This figure is higher than for the cognitive factors (37 per cent for fourth class pupils and 44 per cent for fifth and sixth class pupils) At both

levels, achievement tendency emerged as an important predictor of class place. There was some variation between levels regarding the other important predictors. However too much weight should probably not be attached to the precise personality factors that emerged as important since many of the personality variables were highly inter-correlated (2). However, the fact of the importance of the moral dimension in teachers' assessments remains.

The magnitude of the canonical correlations in the present study shows that there was considerable over-lap between the cognitive and moral variables. Nevertheless, the addition of either set of variables improved the prediction of class place significantly. This suggests that teachers generally take into consideration both aspects of achievement when estimating class place. One would expect the degree of emphasis placed on the cognitive or moral dimensions to vary from teacher to teacher. A pupil's class place presumably depends to a large extent on those aspects of achievement most valued by the particular teacher.

As the perceived importance of various subject areas and personality traits change, no doubt the factors determining class place also change. In the present study, the moral dimension was relatively more important in the lower than in the higher classes. It may be that cognitive factors become more important as children advance through school and performance in the curricular areas, as opposed to personality factors, assumes increased importance in preparation for the examination-conscious Irish secondary system. However, it will be recalled that pupils in the fourth standard in the present study were not typical of pupils in that standard. The evidence suggests that they were, in fact, less 'academic' than other pupils at that level and so teachers may have emphasized moral rather than cognitive factors in their assessments.

In conclusion, the findings of this study support Parson's (9) view that pupils are assessed in school on a moral as well as on a cognitive dimension. This is hardly unexpected since in their day to day activities, teachers interact with total personalities, not just with the cognitive dimensions of those personalities. But it does raise the problem of how teachers' assessments might affect pupil behaviour. Some attention has been given to this problem elsewhere, particularly in the context of teacher expectancies (10, 11). While our study throws no light on this area, its findings do provide a justification for further studies of teachers' assessment procedures and their possible consequences.

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