

CHANGES IN PERSONALITY DIMENSIONS OF STUDENT-TEACHERSDURING A PRE-SERVICE PROGRAM

A.G. Mackay
 Armidale College of Advanced Education

B.Cole and H.J. Rogers
 University of New England, Armidale.

ABSTRACT

Student-teachers were surveyed in the first and last week of their three year diploma course on three personality dimensions: extroversion, anxiety and rigidity. Those who did not complete their first year were found to be more extroverted than those who completed the diploma. During the three year candidature students became more extroverted and less anxious. A comparison of those who completed in 1978 with those of 1982 showed that the latter were more anxious. Possible explanations of these changes are presented.

One of the most neglected areas of research in pre-service teacher education is the analysis of student-teacher personality. Clarke (1971) particularly emphasised the need for research into this area claiming that because

the personality of the individual is the vehicle through which his teaching behaviours are manifested, there are some individuals not fit to be teachers, in the sense that the institution does not have the competence, time or money required to bring about the requisite personality development. (Clarke, 1971, p.128.)

This assertion has also been emphasised by writers such as Blosser and Howe (1969), Spivey (1973) and Wragg (1974).

This paper reports a study of personality changes in large groups of students at a college of advanced education and includes a three year longitudinal study.

1. THE DEVELOPMENT OF A THREE DIMENSIONAL PERSONALITY MODEL

Despite the importance of the personality of the teacher as a significant variable in an analysis of classroom behaviour, very little is known about the relationship between personality and teaching behaviour (Getzels & Jackson, 1963). Although thirty years ago Cattell (1948) expressed optimism that the 16PF personality inventory would prove useful for research in teacher education, this optimism has not been realised.

The 16PF, which originated in descriptive terms of everyday behaviour, was refined by means of factor analysis employing oblique rotations which Cattell believed were appropriate and were required by the nature of this data (Cattell, 1957). From the 16PF, 16 first order factors and 6 second order factors were derived. Two of the 6 second order factors include Introversion vs. Extroversion (I) and Low anxiety vs. High anxiety (II).

There appears to be a close relationship between Cattell's factors and the introversion and neuroticism factors of the EPI (Eysenck & Eysenck, 1968, 1969). In fact, the similarity of the work of Cattell and Eysenck has been reported in a number of research studies. (Adcock, 1965; Bull & Strongman, 1971; Burt, 1965.)

Use of the EPI research on teaching behaviour appears to have an important advantage over the 16PF in that it represents two clear and relatively unambiguous dimensions which are applicable to a wide variety of behaviours and which seem to be present in most, if not all, systematic dimensional analyses of personality (Eysenck & Eysenck, 1968).

A number of independent studies using EPI have centred on the personality dimensions of extroversion and anxiety of student-teachers. Peck and Richek (1969) and Richek (1973) drew attention to the importance of the relationship between extroversion and the attitudes of student-teachers to themselves and to school-children.

A study investigating personality factors and attitudes of mature student-teachers (Soloman, 1967) reported that student-teachers who were considered successful in the classroom were rated by tutors as extroverted, showing a marked warmth, sociability and cheerfulness. Success on the overall teacher-training course seemed to depend on such dimensions of personality as stability and extroversion.

In a study based upon the EPI, Vingoe (1968) found that introverted and extroverted first-year women student-teachers did not differ in self-awareness but the extroverts were significantly more self-acceptant than the introverts. He found also that neurotic student-teachers were less self-aware and less self-acceptant than the stable student-teachers.

While not reporting the particular anxiety measures used, Iannaccone (1963) suggested that the period prior to entry into the school for practice-teaching was one of relatively high anxiety. He concluded that anxiety appeared to decrease as the student-teacher began to teach. This study, based on analyses of daily diaries and supplemented by interviews with student-teachers, is similar to one reported by Sorenson and Halpert (1968). From interviews with student-teachers on their perceived problems in practice-teaching, Sorenson and Halpert (1968) developed a 125 item questionnaire which was designed to examine stress. Approximately 70% of the 248 student-teachers reported that they experienced considerable "psychological discomfort" at the commencement of the practice-teaching period while 20% reported that they still experienced "discomfort" at the end of the period. The sources of the "psychological discomfort" ranged from disagreements about what and how the student-teachers felt they should teach, to feelings of inadequacy in being able to cope with the task of teaching or with the children. Some of these findings are consistent with those reported by Fuller and associates at the University of Texas at Austin and by Cope (1970).

In addition to extroversion and anxiety, dogmatism has also been studied on student-teachers using the Rokeach Dogmatism Scale (1960).

Musella (1969) reported significant differences between open and closed student-teachers on self-ratings of their own teaching effectiveness and their descriptions of themselves. Cohen (1971) reported that dogmatic student-teachers evaluated as "ideal", those pupils who were obedient, self-sufficient, earnestly-striving and ready to accept evaluation. A possible inference from this study could be that dogmatic student-teachers prefer a teaching role which is traditional and formal.

In one of the few studies on microteaching in Australia, Thew (1972) reported that student-teachers who scored low on a measure of dogmatism tended to benefit more from microteaching than student-teachers who scored high on that measure.

A personality inventory developed by Fitzgerald (1969), comprising items from the EPI (Eysenck & Eysenck, 1968), the D. Scale (Rokeach, 1960) and the Rigidity Scale (Gough & Sanford, 1952), was the basis for the personality model used in this study.

This inventory was trialled with a number of different student-teacher populations in the years 1972 to 1973 at the Armidale College of Advanced Education. In these pilot studies the data were analyzed using factor analysis and the factor matrix was then rotated to an orthogonal three factor solution.

A 60 item inventory containing 20 items designed to assess extroversion, 20 to assess anxiety and 20 dogmatism/rigidity was derived. When the data were gathered for a research project in 1973, the loadings on each of these personality dimensions ranged from .73 to .23 on extroversion, .56 to .22 on anxiety and from .54 to .01 on dogmatism/rigidity. On examination of the lowest five items on each of the three dimensions, it was felt that the questionnaire would benefit from a reduction to 45 items (15 items on each dimension). This would expedite the completion of the questionnaire by further respondents and generally tighten the inventory as a whole.

Throughout these studies the strongest items were:

For extroversion/introversion -

I am a good mixer.
It is usually easy for me to start a conversation with a stranger.
I can easily keep a conversation going.
I keep in the background on social occasions.
I can usually let myself go and really enjoy a party.

For anxiety/relaxation -

I have a vague feeling of anxiety most of the time.
Some particular unpleasant thoughts keep coming into my mind to bother me.
I am rarely depressed.
I seldom feel I am about to go to pieces.
I rarely lose sleep because I'm worried.

For rigidity/flexibility -

I am an easy-going person, not generally bothered about having everything well organized.
 I do not consider myself a methodical person.
 I often find it difficult to persevere in completing a task.
 I believe promptness is very important.
 I am often the last one to give up trying to do a thing.

2. VALIDATION OF THE MODEL IN EASTERN AUSTRALIA

The stability of the factorial structure for the 60 item inventory has been strongly supported in a study by Coulter and Elsworth (1975) who used the inventory with a sample of 1125 student-teachers in teacher education institutions along the eastern coast of Australia. Responses to the inventory were factor analysed and rotated to a varimax solution as previously described.

In Table 1 the results from this study and those of Cole (1978), who surveyed 207 students in 1973, shows the three clearly defined personality variables.

TABLE 1

Comparison of Factor Loadings

	COLE	COULTER
extroverted/ introverted	.70 to .45	.72 to .52
anxious/ relaxed	.55 to .35	.66 to .41
rigid/ flexible	.50 to .20	.61 to .18

On the extroversion and anxiety factors there was a slight difference in the ordering of the items but the magnitude of the factor loadings was almost identical.

On the flexibility scale, both studies reported that fourteen of the items loaded above 0.27; those below this tended to include dogmatism items. Those which loaded poorly on this dimension were among those deleted in producing the 45 item scale.

3. THE SAMPLE IN THIS STUDY

In 1976, 294 students at the Armidale College of Advanced Education were tested during Orientation Week (February) using the 60 item personality inventory. The selected 45 items were factor analysed and from the three factor structure, factor scores were dichotomized at the median on each of three personality variables extroversion, anxiety and flexibility, to provide a 2 x 2 x 2 classification. After three years the students were again tested during their final week (November) in the College. The following table (Table 2) sets out the number of students in the 2 x 2 x 2 matrix. Column 1 indicates those who began in 1976 but did not complete the three year programme (n = 147). Columns 2 and 3 indicate the same group of students (n = 149) who began in 1976 (Column 2) and completed study in 1978 (Column 3). Column 4 indicates completion of the inventory by a group of students who completed their three year programme at the Armidale College of Advanced Education at the end of 1982.

TABLE 2

Numbers of Students in Various Cells

<u>2 x 2 x 2 MATRIX</u>			<u>NON-COMPLETERS</u> <u>1976 (Col. 1)</u>	<u>BEGAN</u> <u>1976 (Col.2)</u>	<u>COMPLETED</u> <u>1978 (Col.3)</u>	<u>COMPLETED</u> <u>1982 (Col.4)</u>
introverted	relaxed	flexible	21	19	14	17
introverted	relaxed	rigid	16	23	21	14
introverted	anxious	flexible	18	16	18	18
introverted	anxious	rigid	19	17	22	17
extroverted	relaxed	flexible	17	19	25	17
extroverted	relaxed	rigid	20	14	15	18
extroverted	anxious	flexible	18	21	18	14
extroverted	anxious	rigid	18	20	16	17
<u>TOTALS</u>			N = 147	N = 149		N = 132

4. CHANGES IN PERSONALITY VARIABLES DURING THE LONGITUDINAL STUDY

Examination of the data indicated that during the period of candidature from 1976 to 1978 (Columns 2 and 3, Table 2), 38 of the 149 students did not change on any of the three variables, 64 changed on one variable, 41 on two and 6 on three variables of the personality classification. The specific directions of change are clearly demonstrated in Table 3, where students are classified using a median split on each of the three factor scores.

TABLE 3

Specific Direction of Changes

		1978					
		Extroverted/Introverted		Anxious/Relaxed		Rigid/Flexible	
1976	Extroverted	51	23				
	Introverted	23	52				
	Anxious			39	35		
	Relaxed			35	40		
	Rigid					50	24
	Flexible					24	51

On the extroversion/introversion dimension, 34.2% of students remained extroverted and 34.9% remained introverted. This means that 30.9% changed on that particular dimension. Similar trends were also found on the other two dimensions. On the anxious/relaxed dimension, 26.2% remained anxious and 26.9% remained

relaxed. Thus 46.9% changed from one classification to the other. On the rigid/flexible dimension, 33.6% remained rigid and 34.2% remained flexible. A total of 32.2% changed from rigid to flexible or vice versa.

These changes warranted further examination and explanation as the inventory claimed to provide a stable measure of social behaviours in everyday activities. An obvious explanation is that when one attempts a median split on a set of factor scores reflecting ambivalent behaviour patterns, then classification close to that median must necessarily be uncertain. It was therefore decided that the data be re-examined, using a three-way split on each of the personality variables. The highest and lowest third of the factor scores on each of the three variables were compared for those commencing in 1976 and completing in 1978. This tabulation is reported in Table 4.

TABLE 4

Specific Direction of Changes

		1978											
		Extroverted		Introverted		Anxious		Relaxed		Rigid		Flexible	
1976	Extroverted	32		4									
	Introverted	6		24									
	Anxious				16			13					
	Relaxed				16			22					
	Rigid									28			6
Flexible									8			19	

This shows on the extroversion dimension that less than 7% of students showed a marked change from introversion to extroversion and vice versa. Similarly, only 9% of students showed any marked change from rigidity to flexibility and vice versa. However, on the anxiety dimension almost 20% of students showed a marked change in either direction.

These results prompted an analysis of the trends in all the data collected. The raw scores for each student on the 15 items of each of the 3 dimensions were computed and the data examined by means of multivariate analysis of variance (MULTIVARIANCE, Finn, 1977). This means the range of scores on each variable was from 0 to 15. The overall means for each dimension are shown in Table 5.

TABLE 5

Range, Means and Scoring Direction for Each Personality Dimension

Score Range	DIMENSION		
	Introverted	Relaxed	Flexible
0			
	$\bar{x} = 9.59$	$\bar{x} = 4.58$	$\bar{x} = 9.58$
15	Extroverted	Anxious	Rigid

In Table 6 the significant differences on variables for all data are reported. It will be noted that only two significant changes were observed. Those students who began in 1976 but did not complete their course were more extroverted at the beginning of the programme than those who started at the same time and eventually completed their diploma. In addition, students completing their course in 1982 were more anxious than those completing in 1978.

TABLE 6
Results of Multivariate Analysis of Variances

	Multivariate F	Univariate F	Means
New Completers 1976	$F = 3.15 \quad p < 0.02$ (df 3, 571)	Extroverted-Introverted $F = 6.90 \quad p < 0.01$ (df 1, 573)	$\bar{X}_{NC76} = 9.71$
Beginners 1976			$\bar{X}_{B76} = 8.82$
Completers 1978	$F = 0.59 \text{ n.s.}$ (df 3, 571)		
Completers 1982	$F = 3.39 \quad p < 0.02$ (df 3, 571)	Anxious-Relaxed $F = 7.50 \quad p < 0.006$ (df 1, 573)	$\bar{X}_{C78} = 4.01$ $\bar{X}_{C82} = 5.00$

In order to compare the results of the students who began in 1976 with their results on completion in 1978, paired sample t tests were performed for each dimension. These results are reported in Table 7.

TABLE 7
Results of t tests on changes from 1976 to 1978

	Extroverted/ Introverted	Anxious/ Relaxed	Rigid/ Flexible
Beginners 1976	$\bar{X} = 8.82$	$\bar{X} = 4.85$	$\bar{X} = 9.89$
Completers 1978	$\bar{X} = 10.01$	$\bar{X} = 4.01$	$\bar{X} = 9.87$
	$t = -4.05$	$t = 3.05$	$t = 0.09$
	$p = 0.0001$	$p = 0.003$	$p = .93$

This indicates that on two of the variables there were significant changes. Students completing their course in 1978 had become more extroverted and less anxious over the three years.

5. DISCUSSION

The personality inventory has provided some "global" information on the student body as a whole and individuals within it. It is unfortunate that it was not used more systematically throughout the three year period and certainly after periods of practice-teaching. It was generally hypothesized that there would be no significant changes during the three year period of candidature. The finding reported in Table 6, indicating that those who began in 1976 but did not complete their course were more extroverted at the beginning of the programme than those who eventually completed in 1978, suggests the possibility that "more extroverted" student-

teachers may have found that the College programme was constraining and restrictive. The finding that students completing in 1982 were more anxious than those who completed in 1978 is not surprising since the job prospects of all pre-service primary and infants graduates during the early 1980's were particularly poor.

The findings in Table 7 reported that students who completed their course in 1978 had become more extroverted and less anxious over the three year period. These changes suggest that practice-teaching experiences elicit more behaviours for intending teachers which are more "extroverted" in interactions with school children. A similar comment on the decrease in anxiety can also be made. Such a decrease in anxiety is consistent with findings reported by Iannaccone (1963) and Sorenson and Halpert (1968).

The study reported by Cole (1978) indicated that student-teachers attitudes to practice-teaching decreased in apprehension, that is anxiety, over a period of time. There was also a corresponding growth in awareness that practice-teaching was more sophisticated and more demanding than students first realised. Student-teachers' attitudes to children also decreased in anxiety and increased in an awareness and understanding that children were more complex than they first believed. The findings reported in Table 7 also lend support to these conclusions.

The use of the inventory on its own is a very limited exercise. Its strongest advantage is the relationships which can be drawn with other measures. Examples of these studies have been reported above. They include one by Soloman (1967) who reported that successful teaching appeared to be related to extroversion and Vingoe (1968) who related the use of the EPI to a measure of self-awareness and self-acceptance. Sorenson and Halpert (1968) developed their own measures of reported anxieties. However, this study did not identify the personality types of students.

Cole (1978) noted that there were significant differences between groups of students classified on the basis of the three personality dimensions in an analysis of their verbal and non-verbal behaviours. In this study 207 students began a year-long education course, designed to introduce them to the skills of teaching in a micro-teaching situation and a series of child studies. The personality inventory reported in this study was used to classify the students on a 2 x 2 x 2 matrix. Following the initial seven week period of microteaching, reports on the student-teachers were written by the supervising teachers who had no knowledge of the personality classifications of the student-teachers. The reports indicated that some student-teachers experiencing problems and a random selection of other student-teachers, differences were apparent between the two groups where fewer smiles, shorter eye contact and a general monotony of speech frequently indicated those student-teachers experiencing difficulty. Many of these student-teachers were introverted and anxious as identified by the personality model.

There is little doubt that the 45 item inventory provides a valid and reliable basis for further study. It appears that the observation made by Clarke (1971) still holds true in that most institutions do not have the resources of time and skill for the complete development of all its candidates in pre-service programmes. It should not be inferred from this remark that some personality types are not suited for teaching. A better inference would be that, for some candidates, training will take longer and involve more qualified staff.

The inventory would be further strengthened by re-writing the items to make them "situation-specific" and less general than they are at present. The extroversion and anxiety items lend themselves readily to this. For the rigidity dimension, one would need to develop more items reflecting rigid and flexible behaviours in preference to the "dogmatism" items. Also, further research could be aligned more conceptually with recent research at the University of Texas at Austin. This research includes detailed analyses of the process of learning cognitive, affective and psychomotor objectives which contribute to the self-concept of the child. Each event in the educational process has the potential for change or reinforcement of the self-concept whether that event is viewed by the learner as a success or a failure. The personality of the teacher has a critical effect on the development of the self-concept of the child.

In other words, this type of research is examining the impact of the teacher on the development of the self-concept of the child.

Two of the authors of this paper have visited the University of Texas at Austin in the last few years. They are strongly of the view that the sharing of research and information by the Australian institutions and those at Texas would permit a wider variety of cross-cultural studies which are, at present, almost non-existent.

BIBLIOGRAPHY

- Adcock, C.J. A Comparison of the Concepts of Cattell and Eysenck. *British Journal of Educational Psychology*. 35. 1965. 90-97.
- Blosser, P.E. & Howe, R.W. An Analysis of Research Related to the Education of Secondary School Science Teachers. *Science Teacher*. 36. 1969. 87-95.
- Bull, R.H.C. & Strongman, K.T. Anxiety, Neuroticism and Extraversion. *Psychological Reports*. 29. 1971. 1101-1102.
- Burt, C. Factorial studies of personality and their bearing on the work of the teacher. *British Journal of Educational Psychology*. 35. 1965. 368-378.
- Cattell, R.B. Clinical versus statistical measures of teaching ability. *Journal of Educational Research*. 41. 1948. 718-719.
- Cattell, R.B. *Personality and Motivation Structure and Measurement*. New York: Harcourt, Brace & World, Inc., 1957.
- Clarke, S.C.T. Designs for Programs of Teacher Education. In *Research in Teacher Education: A Symposium*. Ed. B. Othanel Smith. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1971.
- Cohen, L. Dogmatism and views of the ideal pupil: a study of mature student-teachers. *Educational Review*. 24. 1971. 3-10.
- Cole, B. Personality Differences, Attitude Change and Selected Behaviours of Student-Teachers during Micro-teaching. Unpublished Ph.D. thesis. U.N.E., Armidale, 1978.
- Cope, E. Teacher Training and School Practice. *Educational Research*. 12.2. 1970. 87-98.
- Coulter, F. & Elsworth, G.R. Private Communication. November, 1975.
- Eysenck, J.J. & Eysenck, S.B.G. *The Manual to the Eysenck Personality Inventory*. San Diego, California: Educational and Industrial Testing Service, 1968.
- Eysenck, H.J. & Eysenck, S.B.G. *Personality Structure and Measurement*. London: Routledge & Kegan Paul, 1969.
- Finn, J.D. *Multivariate: a Fortran Program for Univariate and Multivariate Analysis of Variance, Covariance, Regression and Repeated Measures*. Version VI. Department of Educational Psychology, State University of New York. Buffalo. 1977.
- Fitzgerald, D. *A Personality Inventory*. Division of Educational Research Services, University of Alberta, 1969.
- Getzels, J.W. & Jackson, P.W. The Teacher's Personality and Characteristics. In Gage, N.L. (Ed.). *Handbook of Research on Teaching*. Chicago: Rand McNally & Co., 1963.
- Gough, H.C. & Sanford, R.N. Rigidity as a Psychological Variable. Unpublished manuscript, University of California, Institute of Personality Assessment and Research, 1952.
- Iannaccone, L. Student Teaching: A Transitional Stage in the Making of a Teacher. *Theory into Practice*. 2. 1963. 73-80.
- Musella, D. Perceptual-Cognitive Style as related to self-evaluation and supervision rating by student-teachers. *The Journal of Experimental Education*. 37. 3. 1969. 51-55.
- Peck, R.F. & Richek, H.G. Teacher Education for Mental Health: A Review of Recent Studies. In *Mental Health and Teacher Education*. Forth-sixth Yearbook. Iowa: The Association for Student Teaching, 1969.
- Richek, H.G. Personality Characteristics of Male and Female Prospective Teachers: A Multivariate Analysis. *The Alberta Journal of Educational Research*. XIX. 3. 1973. 208-215.
- Rokeach, M. *The Open and Closed Mind: Investigations into the nature of belief systems and personality systems*. New York: Basic Books, 1960.
- Soloman, E. Personality factors and attitudes of mature training college student. *British Journal of Educational Psychology*. 37. 1967. 140-142.
- Sorenson, G. & Halpert, R. Stress in Student Teaching. *California Journal of Educational Research*. 19. 1. 1968. 28-33.
- Spivey, D.R. The Prediction of Student Teaching Success in Teacher Education Programs: Development and Present Status. (Doctoral Dissertation, The Florida State University). Ann Arbor, Mich.: University Microfilms, No. 73,4702. 1973.
- Thew, D.M. The Effects on Student Teachers of Microteaching and Workshop Experiences with a Classroom Social Organization Category System for Analysing Teacher Behaviour. Unpublished Ph.D. Thesis, Uni. of Sydney, 1972.
- Vingoe, F.J. Rogers' Self Theory and Eysenck's Extraversion and Neuroticism. *Journal of Consulting and Clinical Psychology*. 32. 5. 1968. 618-620.
- Wragg, E.C. *Teaching Teaching*. London: David & Charles, 1974.