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INDIGENOUS EDUCATION

Eysenck conclude further that attempts at compensatory education have failed and are misguided. The appeal of such an assertion to the politically and socially conservative is obvious. Can we doubt that it will be imported to Australia?

Three Australian studies dispute the genetic hypothesis. De Lacey (1970, 1971) has shown that the relative performance of Aboriginals and part-Aboriginals on tests of intelligent behaviour is probably determined by level of contact with European culture rather than by race. Dasen *et alii* (1973) have shown that the performance of Aboriginal children adopted early into white families in Adelaide does not differ significantly from white children of equivalent socio-economic status. Despite the fact that a scientific completion of this natural experiment would require the early fostering of white children by Aboriginal families, the evidence points clearly to great importance of environmental variables in determining the development of intelligent behaviour.

The fact,nevertheless, remains: Aboriginals and part-Aboriginals on the whole do relatively poorly in intelligence tests and their low performance predicts poor scholastic and occupational attainment. Genetic arguments aside, the following theories have been propounded.

1. *Subnutrition.* Aboriginals do poorly in intelligence tests because they have been exposed to severe protein-calorie subnutrition from conception into early childhood. The subnutrition has limited brain growth and stunted intellectual development. This is almost certainly the case in grossly deprived full-descent groups in Central Australia, and probably amongst many fringe-dwelling people (Duffy and Nurcombe, 1973).

2. *Cultural Deprivation.* Aboriginals do poorly on testing and in school because they have been deprived of adequate early stimulation. In its baldest form this theory is untenable. Aboriginal children are exposed to a rich and stimulating experience, but the environment differs greatly from that of the European.

3. *Cultural Disadvantage.* Aboriginals do poorly because they have not been exposed to certain early patterns of stimulation that emphasize, for example, predictability, cause-effect relationships and Western classificatory concepts.

4. *Cultural Expectation.* Aboriginals do poorly because their teachers and employers expect them to. The minority group develop a self-image of failure. The child, particularly the boy, fears to be rejected by the group if he excels and is perceived as aping white authority.

5. *Cultural Relativism.* Traditional Aboriginal societies emphasize the need to maintain kinship ties, to preserve the kinship group and to distinguish clearly between male and female, old and young and different grades of relative. This contrasts markedly with the European emphasis on individual achievement, nuclear family groups and conceptual thinking in a technological society (Nurcombe 1970). The very idea of testing the performance of another to predict competence is peculiarly European. It is to be expected, therefore, that the (middle-class) European will test, and devise tests to test, those attributes appropriate to technological adaptation. Problem-solving tasks, involving symbolic logic and classificatory concepts, are heavily weighted. Modes of thinking foreign to a nomadic culture therefore form the basis of such tests and from them is abstracted the trait called *intelligence*. It is little wonder, therefore, that Aboriginals - along with other traditional people - appear to be defective on this basis. These tests are probably largely invalid across cultures as an estimate of cognitive potential, but, on the other hand they have proved to be accurate predictors of school performance in Western society.

The probability is that each of these five approaches has some validity. Very likely many disadvantaged children have been affected by subnutrition, but this explanation is incomplete as it ignores the profound socio-cultural differences between black and white and poor and middle-class. The *deprivation* theory suffers from an implicit ethnocentricity - other cultures are perceived as defective in relation to one's own. Both the *deprivation* and *disadvantage* theories may promote a naive interventionist approach - pour in money, medicines and education to right a wrong and fill a need. Such a crude, shotgun approach proved to be a failure in the initial phase of Operation Headstart in the United States. *The culturally relative* approach, on the other hand, may lead to an *objective* inaction: one has no right to tamper with

an alien culture. The most constructive channel for action must lie apart from these puritanical polarities.

This paper is the summary of three years' experience in a preschool established in rural New South Wales. The project began as an intervention based on the deprivation model, thus: fringe-dwelling part-Aboriginals do poorly at primary school mainly because of their poor verbal competence in standard English. The deficit is due theoretically to lack of appropriate stimulation in the preschool years and afterwards. Preschool intervention should, therefore, stress language development. The most appropriate form of language stimulation for the Australian rural setting should be devised, tested, developed and refined.

The evolution of a broader social approach and of a philosophy of intervention is now described, along with the objective results of the programmes employed.

THE SETTING

The experimental preschool was established at Bourke, New South Wales, the centre of a district of 3,500 people. There are approximately 900 Aboriginals in Bourke. About one-third live on the outskirts of town in substandard housing. The rest live in the town proper, mostly in housing commission areas inhabited predominantly by Aboriginals. Virtually all the Aboriginals are of part-descent and, though some traditional Aboriginal words remain, their language is basically a variant of working-class rural English and their folkways are largely comparable with those of the culture of poverty described by Oscar Lewis (1961). Standards of physical health and nutrition are poor; eye, ear and respiratory tract infection, gut infestation and stunted physical growth are common (Nurcombe, 1970).

The principles followed in the establishment of the preschool have been described by Moffitt and Nurcombe (1970). The project followed closely upon the previous work of a social psychologist and psychiatrist (Ross and Cawte, 1969) in Bourke and was able to enlist the support of both Aboriginal and European people.

METHODOLOGY

In the original 1969 survey of the entire eligible population of Bourke preschool children, the levels of language development were found to be much lower than the norms (Nurcombe and Moffitt, 1970). The mean receptive verbal IQ measured by the Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965) for Aboriginals was 68; while for whites it was little better - 77. Similar findings applied to

the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk et alii, 1968) which measures various aspects of receptive, associative and expressive ability in standard English: the Aboriginals varied between 6 and 20 months below the norms in language age and the whites between 2 and 10 months below the norms, except in auditory memory.

Of the 60 children tested, those 44 who had lowest scores on the PPVT were selected for the school. The parents of the remainder were informed of their children's *satisfactory progress*. The 44 pupils selected included all the Aboriginal children in Bourke of the requisite age, together with about the same number of whites. The same selection procedure has been followed for each year: 1970, 1971, 1972, and 1973. The classes entering and passing through the preschool will be referred to henceforth as *waves* for each year from 1970 to 1973.

Each wave has been divided into four classes of 11 pupils with equivalent mean PPVT IQ. Each class attends for two hours per day, throughout the school year. Two teachers have been employed each year and, when two programs are employed, each teacher teaches each program on some days in the morning and on other days in the afternoon. In 1970 both teachers were primary-school infant-trained, but in 1971 and 1972 one was preschool-trained and one primary infant-trained. At the end of each year the results of the programs were assessed blind by independent psychologists, hired for the purpose.

The nature of the programs and the results will now be summarized.

PROGRAMS AND RESULTS - Wave, 1970

The 1970 year has been fully described elsewhere (Moffitt et alii, 1971). In the first year we compared two classes who were exposed to a traditional preschool program with two who were taught by the Bereiter-Engelmann direct, structured technique (Bereiter and Engelmann, 1966). The traditional program, while providing language stimulation, emphasized broader aims to do with social, emotional and motor development. The structured Bereiter-Engelmann program had specific language objectives and utilized direct teaching techniques aimed at these objectives.

In the upshot, the Bereiter-Engelmann technique proved, at least initially, markedly superior. Overall mean IQ gains

of 25 points on the PPVT were recorded, compared with insignificant changes in the traditional classes. Similar changes were recorded on the ITPA, the Bereiter-Engelmann technique producing markedly superior results on each subtest, particularly on those subtests estimating the ability to interpret speech, to form associations between words and to use standard syntax. An important and unexpected finding, however, was the failure of either group to make gains in spatial performance.

When the Aboriginal and white children who had passed through the program in 1970 were retested in mid 1971, while in primary school, it was found that the white children had largely retained their gains, whereas the Aboriginal children had lost one third of their gains on the PPVT and ITPA subtests (Figures 1, 2 and 3). The 1970 wave was significantly superior, in mid 1971, on the Nixon test of reclassification ability (de Lacey, 1971), however, to a group of children who had not been to preschool.

WAVE, 1971

During 1971 all children were taught by the Bereiter-Engelmann technique. Thus an attempt was made to replicate the striking results of 1970. In addition, two of the groups were exposed to the Marianne Frostig program to foster visual-motor co-ordination and spatial performance (Frostig and Horne, 1964), while two matched groups experienced a specific program designed by the researchers to stimulate co-ordination and spatial ability.

The results were striking but less so than in 1970. Overall gains of average 10 points of PPVT IQ were recorded, Aboriginal children gaining 15 points, and the white children 8.5 points. Similar gains were noted on the ITPA - significant, but less striking than in 1970 (Figures 4 and 5). On this occasion spatial performance showed marked improvement - an overall average of 1.9 scaled score points on the geometric design subtest of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) (Wechsler, 1967) and 14 points of Drawing Quotient on the Draw-a-Person test (DAP) (Goodenough, 1926).

A follow up of the 1971 wave in mid 1972 revealed that, once again, the white children had retained most of their gains while the Aboriginal children showed a tendency to decrement. Nevertheless, the total 1971 wave scored higher on all tests than a control group who had not been to preschool, particularly on the PPVT, the ability to form logical associations between words and the use of standard syntax (Figures 4 and 5).

WAVE, 1972

In terms of the stated but limited objectives of formal language skills, the Bereiter-Engelmann program had proven its initial worth. Henceforth, it was to be used as a baseline with which other language development programs could be compared.

Two major changes were planned for 1972, the Bereiter-Engelmann program being retained, along with the Frostig and the locally developed programs to stimulate spatial performance; but, firstly, the co-operation of the primary school was enlisted to continue specific language stimulation and to obviate the alarming erosion in performance of Aboriginal children during the first year of primary school.

The second major change was the introduction of a different language program to compare and contrast with the Bereiter-Engelmann yardstick. It was felt important at this stage to move from the position of pure, direct, teacher-orientated language instruction and to experiment with a freer, Piaget-based program in which language stimulation would be co-ordinated with the child's own activity in play, and specifically related to the child's familiar environment. Consequently, a new curriculum, the Extended Experience Program or EEP, was developed. It is akin to the Cognitively Orientated Curriculum described by Weikart *et alii* (1971). Though it retained the heavy emphasis on formal language development of the Bereiter-Engelmann program in the classroom, it used situations drawn from the children's own experiences. It also sought to engage the parents more actively in understanding and supporting the curriculum.

The results of the 1972 wave have recently been analysed. Both Aboriginal and white children showed marked gains in spatial performance and co-ordination, the Aboriginals gaining an average of up to 37 points of Drawing Quotient on the Draw-a-Man Test and the whites up to 22 points.

Language testing revealed that, overall, both language programs had stimulated major changes, but that the Bereiter-Engelman program had done rather better across the board. For example, Aboriginal children had made gains of 21 points of PPVT IQ after the Bereiter-Engelmann technique and 11 points after the extended-experience approach. Aboriginals had gained 10.5 scaled-score points on the ITPA test of syntax (grammatic closure) whereas Extended Experience Aboriginals gained 9 points. Results for the overall group are set out in Tables 1 and 2.

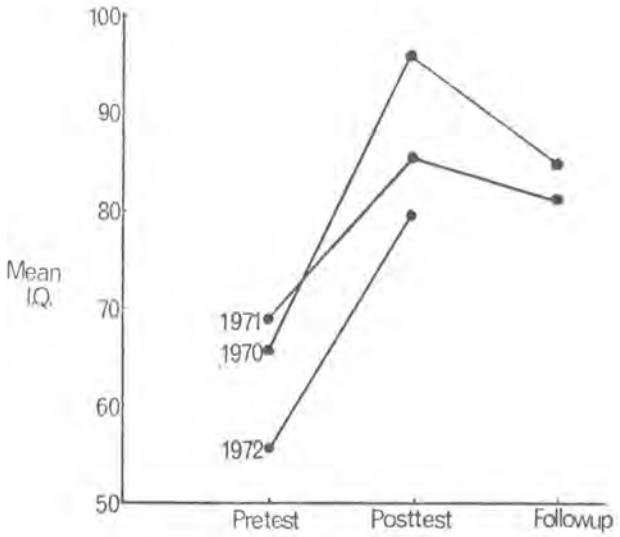

Figure 1: Results for Aboriginal children on PPVT: Waves 1970, 1971, 1972, Bereiter-Engelmann technique.

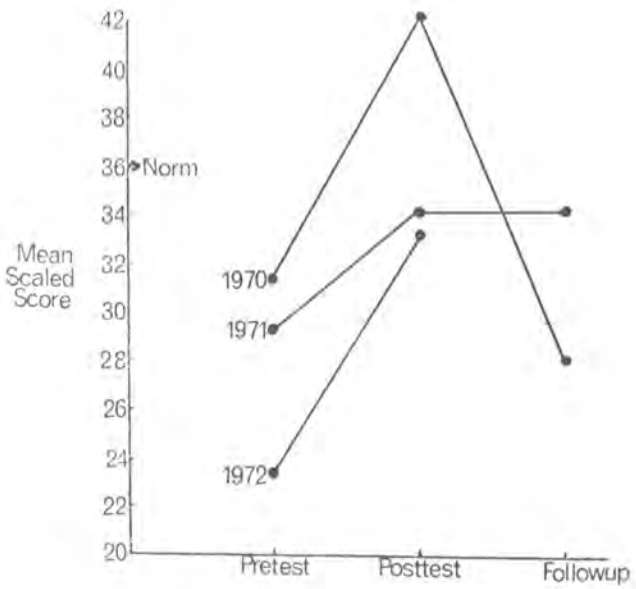

Figure 2: Results for Aboriginal children on ITPA, Auditory Association: Waves 1970, 1971, 1972, Bereiter-Engelmann technique.

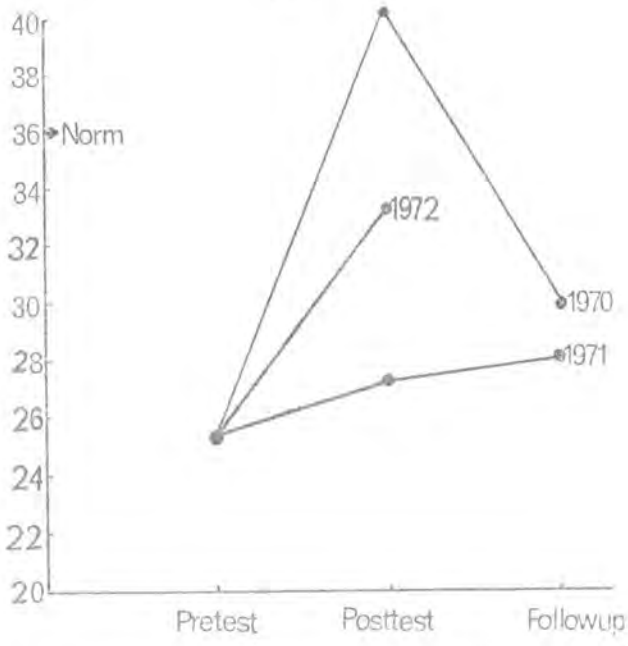

Figure 3: Results for Aboriginal children on ITPA grammatic closure: Waves 1970, 1971, 1972, Bereiter-Engelmann technique.

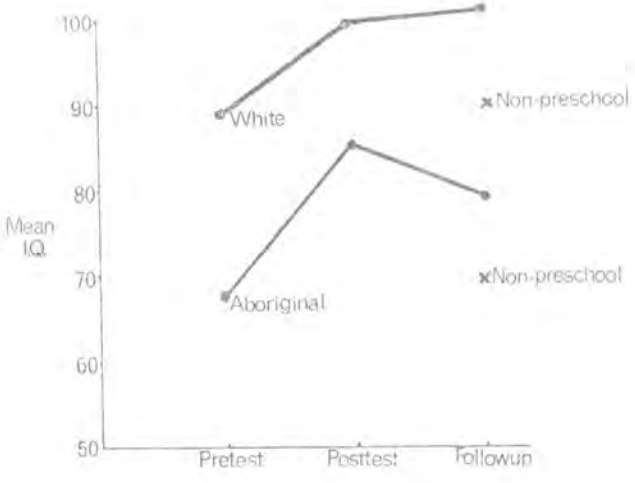

Figure 4: Results on the Peabody picture vocabulary test: 1971 wave, Bereiter-Engelmann technique.

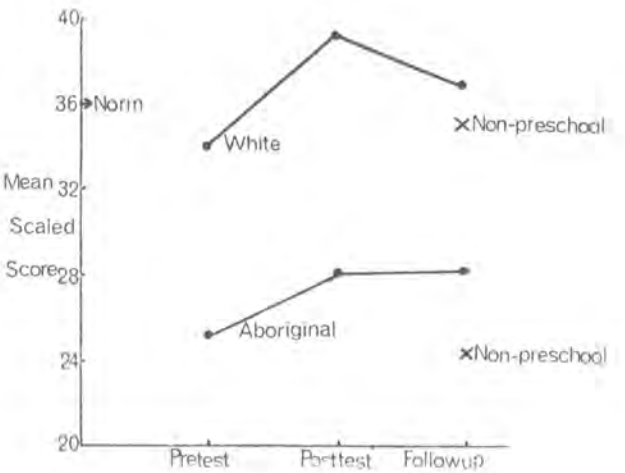

Figure 5: Results on ITPA grammatic closure: 1971 wave, Bereiter-Engelmann technique.

It is interesting to compare results for waves 1970, 1971 and 1972 on the Bereiter-Engelmann technique (see Figures 1, 2 and 3). The enormous changes of 1970, only partially repeated in 1971, were largely recovered in 1972. The reason lies probably in the fact that, in 1971, after the resignation of one of our infant-trained primary teachers, the new appointee was an inexperienced preschool-trained girl who found the direct instructional technique unfamiliar and difficult to assimilate. Its rather rigid and exacting requirements do take a toll of the teacher; so much so that it is probable that one class per day represents the upper limit of usual teacher efficiency. In 1972 the contrasting freer extended experience program was enjoyed by the teachers and provided a stimulus for imaginative and innovative thinking.

DISCUSSION AND CONCLUSIONS

A number of positive conclusions can be drawn. A group of initially naive investigators have been able to enlist community support in a rural Australian centre to establish an integrated preschool.

A technique developed originally in the United States for disadvantaged children in urban ghettos has been borrowed, modified, married to a spatial ability program and adapted to an Australian country setting. An innovative, contrasting activity-based experimental language program has also been developed. Objectives, teaching strategies and evaluation have been stated and closely co-ordinated. It is clear that traditional programs which do not stress language development will produce little improvement in this area. Similar findings have been reported by Harries (1970) in Kempsey and by Bereiter and Engelmann in the United States (1966). This is not to say, however, that the traditional child-centred model cannot be modified to produce major changes in language performance, as demonstrated by Weikart *et alii* (1970). One suspects however, that fringe-dwelling Australian Aboriginal children begin so far behind American ghetto blacks that traditional preschool programs are likely to start at too high a level and may easily become merely custodial.

The results gained at the preschool hold up well for at least a year for whites into the first year of primary school, but only partially so for Aboriginals. This finding has emphasized the urgent need to develop a follow-through program in co-operation with the primary school, and to seek greater home support for the preschool program.

The increasing expectations placed upon the children to concentrate and perform have not produced the psychological disturbance predicted by some. On the contrary, since expectations are individualized and liberal encouragement is offered, a sense of competence develops and marked improvements in social and emotional adaptation can be noted. In addition, the preschool is an excellent setting for the medical assessment of physical status, the detection - for example - of eye and ear abnormalities, and the correction of subnutrition.

The prestige of the project in the community is high. Both Aboriginals and whites spontaneously apply for admission to preschool. No persuasion is needed, now, to convince the disadvantaged group of the educational benefit of the preschool.

It will be noted that the investigators have placed their faith in the hypothesis that conceptual development, made possible by competence in standard English, underlies the operational thinking that is essential for success in primary school. This remains to be proven conclusively. There is empirical evidence that it is so, but a comprehensive theoretical exposition of the relation between language and cognitive performance has not yet appeared.

It has been suggested that the project merely teaches the tests employed, and that the results have no general validity. To some extent this circularity is unavoidable - a language program must employ tests of language performance. But the argument can be countered by pointing out that such tests as the PPVT and WPPSI are not specifically taught and that generalization to an increased classificatory ability on the Nixon test has been demonstrated

Nevertheless, the fact remains that this is a program designed and executed by white professionals in an integrated preschool. Without greater ownership by Aboriginals of the program, we cannot expect beneficial and long-lasting effects on the level of verbal stimulation in the interaction between black parents and their children. Without this reinforcement, the initial gains achieved may become irrelevant to the world of the children involved. For this reason a third preschool teacher, to work in home-school liaison, will be employed in 1973.

Ultimately the question is one of choice. If Australia wants a plural society in which different cultural groups can retain their identity, yet mix, co-operate and share in the economy, then each of these groups requires the skills to do so. In a technological and increasingly urban economy, skills in standard English are vital,

TABLE 1

Results on PPVT and WPPSI Testing for Aboriginals and Whites Combined, 1972 Wave, Bereiter-Engelmann versus Extended Experience Program.

Test	Group	Number	Pretest	Post-test	Difference	Significance (P)
PPVT IQ	B-E	20	77.5(23.6)(a)	86.0(17.9)	8.5	0.05
	EEP	17	67.5(21.5)	77.0(21.0)	9.5	0.05
					P NS	
WPPSI information(b)	B-E	20	6.0 (3.2)	10.6 (2.7)	4.6	0.001
	EEP	18	5.9 (2.9)	10.4 (3.6)	4.5	0.001
					P NS	
WPPSI vocab.(b)	B-E	20	5.7 (2.6)	11.4 (2.7)	5.7	0.001
	EEP	18	5.4 (2.2)	10.7 (3.3)	5.3	0.001
					P NS	
WPPSI geom.des.(b)	Frostig	20	7.2 (3.1)	9.1 (2.7)	1.9	0.01
	Non-Frostig	18	7.8 (2.9)	7.9 (2.4)	0.1	NS
					P NS	

(a) Figures in parentheses are standard deviation. (b) Expressed as scaled scores.

TABLE 2

Results on ITPA Subtest Scaled Scores for Aboriginals and Whites Combined, 1972 Wave, Bereiter-Engelmann versus Extended Experience Program.

ITPA Subtest	Group	Number	Pretest	Post-test	Difference	Significance (P)
Auditory association	B-E	20	28.4(7.7)(a)	37.6 (8.3)	9.2	0.001
	EEP	18	27.1(6.6)	33.7 (7.8)	6.6	0.001
					P NS	
Visual Association	B-E	20	27.5(5.2)	34.1 (6.8)	6.6	0.001
	EEP	18	26.8(5.0)	28.1 (5.3)	1.3	NS
					P 0.01	
Grammatic closure	B-E	20	31.0(10.9)	40.7 (9.0)	9.7	0.001
	EEP	18	26.9(4.8)	39.1 (5.7)	12.2	0.001
					P NS	

(a) Figures in parentheses are standard deviation

whatever the dialectal code at home. It is suggested that the ability to switch voluntarily from a restricted to an elaborated language code (Bernstein, 1960) underlies the opportunity for real choice in a technological society.

The opportunity to work in such a project as this gives a useful perspective to the theoretical arguments about deficit, disadvantage, social rejection and cultural relativism. One realizes, like Weikart (1971), that curricula are essentially aids (or hindrances) to the constructive operation of teachers. One perceives the inadequacy and danger of the *deficit* model. No group can effectively *intervene* and *do something to* another, educationally, unless the latter meet their educators at least part of the way.

Beyond this, one becomes aware that the resurrected Jensen-Eysenck argument about racial differences in intelligence is a scientific *cul-de-sac* arising from an inappropriate question, based on a false genetic premise (Bodmer, 1972), supported by largely irrelevant data from twin research and sustained by those who have excessive reverence for the immutability of that utilitarian statistic, the IQ.

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