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THE CULTURALLY DISADVANTAGED: PSYCHOLOGICAL AND EDUCATIONAL ASPECTS

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THE literature on children called culturally disadvantaged that has recently proliferated is likely to give the impression to those who have not surveyed it in detail that much scientifically verified knowledge is now at hand as a sound basis for large-scale ameliorative action promising highly predictable and optimal results.

This is an incorrect impression. Although substantial knowledge about disadvantaged children, particularly of a demographic nature, is now available, the literature dealing with the psychological aspects of the problem is better viewed as a source of programmes for research and theoretical formulation. It is important to keep this in mind, not to discourage action programmes, which are obviously needed immediately, but to ensure that such action programmes are conceived of and conducted as research and not as the application of knowledge already established by research. This means that school programmes for the disadvantaged should be conducted, as far as possible, in the manner of scientific experimentation, which is to say with great attention to control and description of the 'input' variables (what we do with the children, their parents, their environments, etc.) and the 'output' variables (how the children respond). As in any investigation which attempts to evaluate the effects of an experimental variable, there should be appropriate control groups. Finally, there should be careful description of the population's social, economic, racial, family, and individual psychological characteristics.

The aim of this report is to indicate some of the main trends of thought and research on the psychology of disadvantaged children, to comment particularly on the research findings and

hypotheses which seem to have the most direct implications for ameliorative action, and to point out a few of the most crucial gaps in our current knowledge and the controversies issuing from them.

Description and assessment of the culturally retarded

Descriptions of the disadvantaged have usually consisted of both environmental and personal characteristics. There is seldom any attempt to separate the causal, or background, factors from the supposedly resultant behavioural characteristics, of which the most important to the educator is the low educability of the disadvantaged child. In fact, low or mediocre intelligence (as assessed by standard intelligence tests) and particularly poor school achievement, are often included in the definition and identification of the 'culturally deprived', along with such criteria as low socio-economic status and culturally impoverished home environment. The relatively rare slum child with a high IQ and superior school achievement is often not regarded as being culturally disadvantaged, while low-IQ, low-achieving pupils from what may appear to be very similar home backgrounds are characterized as disadvantaged and their poor school performance is attributed largely to this condition.

The question raised by this type of definition is not without important practical implications. If we assume that the low-IQ children actually have the potential both for higher intelligence and for normal progress in school, but have merely been 'depressed' by an unfavourable environment, we must ask if average or above-average culturally disadvantaged children are similarly depressed. A slum child with an IQ of 115 might thus have the intellectual potential of the middle-class child

¹ On leave from the University of California, Berkeley, 1966-7.

with an IQ of 130 or 140, and he might be able to realize this potential more fully if he were provided with the right kind of cultural stimulation at some stage of his development. Thus, in looking for potential college material among low socio-economic status children, we might pin our greatest hopes on those already of at least average ability, despite a poor environment, and simply regard most low 'socio-economic-status' children (whose IQ's are in the 'dull' range of intelligence, that is, from 75 to 95), though capable of benefiting educationally from intervention programmes such as Head Start, as more or less destined for intellectual and occupational mediocrity. This widespread belief gives rise to various plans for watered-down, less intellectual, and less academic educational programmes tailored to the apparent limitations of a large proportion (at least one-half to two-thirds) of low socio-economic status children. This is a harmful and unjust set of beliefs, if acted upon, since some evidence now makes it reasonable (though surprising) to hypothesize that a greater absolute amount of educational potential may exist among the low socio-economic status children who, under present circumstances, obtain IQs in the range of 70 to 90 than among those whose measured IQs are in the above-average range from about 100 to 120. To state this proposition even more paradoxically, we can hypothesize that there is a greater chance of finding a potential IQ of 130, or 140, or 150 among the groups whose measured IQs are 70 to 90 than among the group whose IQs are 100 to 120, providing we are dealing with a population regarded by the usual criteria as predominantly culturally disadvantaged. All the evidence, which is massive, indicates conclusively that such a prediction with respect to children from middle-class families would be utterly ridiculous. With respect to low socio-economic status children (especially, in the U.S.A., Negroes; and possibly, in Britain, children of immigrant groups), however, it is a hypothesis worth investigating. No evidence as yet contradicts the hypothesis, and some evidence makes it seem reasonable, and, in fact, suggested this seemingly paradoxical idea in the first place (Jensen, 1963). But before we can elaborate on this line of thought, some supporting background information must be provided.

Differential diagnosis of cultural retardation

In principle, intellectual and educational retardation can and must be clearly distinguished from what we will here refer to as primary retardation. Primary and cultural retardation are not at all mutually exclusive; one may exist without the other, or they may exist in independently varying degrees simultaneously. There is substantial evidence of some degree of correlation, albeit quite low, between primary and cultural retardation in the total population (Burt and Howard, 1956; Tyler, 1965).

Primary retardation can be subdivided into three main types, all having an essentially biological causation: (1) an inevitable consequence of what geneticists call the multifactorial or polygenic inheritance of intelligence; (2) a result of a single, major gene defect; and (3) a result of brain damage. Factors 1 and 3 and factors 2 and 3 are not mutually exclusive, but may occur singly or together. Factor 2, however, always overrides factor 1, so that when factor 2 is involved, factor 1 is of almost no importance.

Polygenic Inheritance

Intelligence is inherited in much the same fashion as height (Burt, 1955, 1958, 1966; Burt and Howard, 1956; Huntley, 1966; Pearson, 1903). It is the result of a large number of genes each having a small additive effect. Because of random assortment of these genes, the total additive effect will be normally distributed in the population. Thus, the hereditary mechanism (in effect a random lottery) that results in one person's being bright, results in another's being dull, and the person who is dull or mentally retarded for this reason is, biologically speaking, no more abnormal or pathological than the average or bright person or the short or tall person. He is simply a part of normal variation. Being at the very low end of the distribution may be a personal misfortune from an educational standpoint, but it is not an abnormality in a medical or psychological sense and is presumably not biologically or environmentally remediable. (In this respect dullness and brightness are genetically quite analogous to shortness and tallness of stature.) Persons at the low end of the distribution of intelligence need educational treatment somewhat different from that afforded

average and bright persons. The majority of dull children in our schools who do not show neurological signs of organic impairment are of this type, regardless of their race or social class. For these children, education must be modified in accordance with their intellectual limitations, which is not to say that an appropriate education is not just as important for them as for the bright child. It must simply be a different kind of education, with different goals. The great misfortune of culturally disadvantaged children is that many are treated educationally (and they often perform accordingly) as if they were at the lower end of the genetic distribution of intelligence when, in fact, they may be in the middle or even at the upper end of the distribution. Failure to distinguish between hereditary retardation and cultural retardation, as well as being a social injustice, results in a waste of educational potential and talent. The consequences are especially damaging to the social progress of minority groups, and the costs are borne by our whole society. The discrimination between cultural and genetic retardation in the culturally disadvantaged is a difficult diagnostic problem which does not even arise in middle-class children, with exceedingly rare exceptions, since retardation in this group is almost always of the primary type. There are, of course, gradations of cultural retardation, just as there are gradations of primary retardation. But it is unlikely that the degree of cultural retardation is a simple linear function of the degree of environmental impoverishment. There is evidence that the environment may act as a threshold variable in such a way that a quite severe degree of environmental deprivation must exist in order to produce cultural retardation in a child of normal genetic potential. This idea is explicated more fully in a later section of this paper.

Major Gene Defect

Practically all severe forms of mental deficiency, where the IQ is below 50, are the results either of severe brain damage or of major gene defects (Ellis, 1963, p. 276). Examples of major gene defects are Mongolism, phenylketonuria, and amaurotic idiocy. Genetically these intellectual defects are analogous to dwarfism in the trait of stature. They are caused by Mendelian inheri-

tance of a single gene or by a mutant gene, which for all practical purposes may be regarded as completely overriding the normal polygenic determinants of intelligence. The resulting severe degree of mental defect, which is generally easy to diagnose in the first days or weeks of life, is not of concern in the present discussion except to distinguish it from retardation which constitutes a part of normal variation.

Brain Damage

Brain damage, especially prenatal and perinatal, is a continuous variable; that is, its effects can range from the negligible to the disastrous, and the effects can be manifest at all levels of genetic potential. Thus, a child who would have grown up to have an adult IQ of, say, 150 may, as a result of the brain damage incurred by anoxia at birth, have an actual IQ of 140. The literature on the subject suggests that brain damage to a degree that makes a difference in measurable mental ability is sufficiently rare not to constitute an appreciable source of variance in intellectual ability in the total population. An upper-limit estimate would be about five per cent of the total variance of measured intelligence, which means that, on the average, brain damage lowers the IQ only slightly more than three IQ points (Corah, *et al.*, 1965; Eichenwald, 1966; Graham, *et al.*, 1962; Pasamanick and Knobloch, 1966). Of course, the effects of brain damage in individual cases may be intellectually devastating. There is also evidence that brain damage has a higher incidence in low socio-economic status groups in which the mother's nutrition, prenatal care, and obstetrical practices are substandard (Osler and Cooke, 1965). All possible efforts should, of course, be made to minimize these conditions in order to decrease the chances of brain damage, but these ameliorative efforts should prove considerably easier than combating the causal agents of *cultural retardation per se*.

All three types of primary retardation have three major effects in common: they result in below-average measured intelligence (IQ), in below-average educability in school subjects, and in a slow rate of what we shall refer to as basic learning ability. Cultural retardation, on the other hand, is distinguishable from primary retardation, at least in principle, on this third

factor—basic learning ability. While cultural deprivation results in lowered IQ and lowered school achievement, it does not, except in extreme rare cases, result in lowered basic learning ability. This is a theoretically and practically important distinction, because it means that in trying to improve the educability of the culturally disadvantaged, we are trying not to make over genetically poor material but to allow sound innate learning potential to manifest itself. But now, to present further our thesis, we must clarify the special meaning we have given the terms *intelligence*, *basic learning ability*, and *educability*.

Intelligence, learning ability and educability

Standard intelligence tests, such as the Stanford-Binet and the Wechsler, are measures of specific knowledge and problem solving skills which have been acquired by the testee at some time prior to the test situation. Mental age is determined directly from the amount of such knowledge and skill. By taking into account the amount of time the individual has had to acquire this knowledge, that is, his chronological age, we obtain a measure of learning rate expressed as the IQ. The validity of the IQ as a measure of learning ability, therefore, depends to a large extent upon equal opportunity for exposure to knowledge and skills that the test calls upon. Since intelligence tests were originally devised to predict school performance, they call upon knowledge and cognitive skills similar to the kinds of learning required in school—skills which are more or less prerequisite for school learning and which have considerable transfer value in the classroom.

Now, if IQ is a measure of learning rate, we should expect that learning tasks of the type used by experimental psychologists to study learning should show substantial positive correlations with IQ. This, in fact, is exactly what our research has found (e.g. Jensen, 1965). But here is the interesting thing: the correlation between IQ and learning ability, as measured directly in a controlled laboratory learning task, is much higher among middle-class children than among lower-class children (Jensen, 1961, 1963; Rapier, 1966). Furthermore, in comparing level of performance (i.e. speed of learning) as a function of IQ level and of social-class (lower vs. middle), we have

found in several studies that low-IQ (60-85) lower-class children are, on the average, markedly superior in learning ability to low-IQ middle-class children. In the IQ range above 100, on the other hand, there are not significant differences in learning ability between lower- and middle-class children matched for IQ. This suggests that once the IQ has exceeded a certain level (somewhere in the neighbourhood of 100 to 110), it gives a fairly accurate assessment of learning ability regardless of social-class level. In the lower IQ range (which, incidentally, contains the modal performance of lower-class children), the IQ test grossly underestimates learning ability among lower-class children. We are speaking here, of course, only of averages, for a certain proportion of lower-class low-IQ children are slow learners on the laboratory tasks just as are middle-class low-IQ children. The middle-class low-IQ group seems to be made up almost completely of slow learners. But the lower-class low-IQ group contains all levels of learning ability. The probability of finding a very fast learner (i.e. learning speed comparable to that of 'gifted' middle-class children) seems to be greater in the low-IQ low socio-economic-status than in the average IQ range of either social-class group. This suggests that the IQ is almost totally unpredictable of learning ability in the low-IQ range for low socio-economic-status children. It should be noted that the majority of low socio-economic-status children are in the below-average IQ range. This is especially true for Negroes in the U.S.A. On a national average only about 12 per cent of Negroes exceed the median IQ of the white population (McGurk, 1956; Tyler, 1965; Shuey, 1966).

In view of what has been said above, it might seem puzzling that the IQ is substantially correlated (correlations between .50 and .70) with school achievement regardless of social class. Ability for school learning may be referred to as *educability*. Educability is much more complexly determined than intelligence or learning ability. For one thing, it depends not only upon learning ability of the type measured in the laboratory, in which transfer from prior learning is relatively unimportant, but also upon a fund of prior knowledge, skills, and acquired cognitive habits, much of which is tapped by intelligence tests.

But educability also involves much more than these intellectual abilities, as indicated by the fact that intelligence tests do not account for more than about 50 per cent of the variance in school achievement. A host of other factors must be taken into account to 'explain' the remaining variance. These are usually described under labels, such as attitudes, motivation, work habits, regularity of school attendance, parental interest, and help in school work.

Another point of interest and educational implication lies in a comparison of the heritabilities of intelligence and of educability. Despite the popular denigration of the genetic study of intelligence in educational circles in recent years, it is entirely possible to estimate the relative contributions of heredity and environment to the total variation in intelligence in a given population. The numerous studies done in this field over the past fifty years show a great consistency (Erlenmeyer-Kimling and Jarvik, 1963). They indicate that in Caucasian populations above the poverty line (and this is an important qualification), some 80 to 90 per cent of the variability in measured intelligence can be attributable to genetic factors and about 5 to 10 per cent to social environmental factors (Burt, 1958). (The remaining variance is divided between biological environmental factors and error of measurement.) The genetic component in school achievement or educability, on the other hand, is much less than for intelligence, accounting for only 40 to 50 per cent of the total variance (Burt, 1958; Jensen, 1967). Family influences largely account for the remaining variance. One of the obvious tasks of educational psychology and sociology is the analysis and isolation of these environmental influences on educability, so that they may be provided by one means or another when they are lacking in the child's natural environment. But before these environmental factors are discussed, a few other points need to be made concerning the inheritance of intelligence and the distribution of intelligence in the total population.

Environment as a threshold variable

By virtue of a largely fortuitous set of conditions, the Stanford-Binet intelligence test, when used on a white American population, which for the most

part excludes the lowest segment of the socio-economic-status continuum, yields a distribution of IQs which conforms almost exactly to the so-called normal or Gaussian distribution. This is the distribution one would expect on the basis of polygenic inheritance of intelligence (Burt, 1957, 1963). In this same population, estimates of the genetic component in the variance of intelligence range between 80 and 90 per cent (Burt, 1958). Even the seemingly rather large environmental variations within this bulk of the American population apparently contribute very little to the variance in intelligence, as measured by an excellently constructed test such as the Stanford-Binet.

However, if the Stanford-Binet is administered to a large and truly representative sample of the total population (or to the *entire* population of school children, as was done in Scotland in 1947), we find that the distribution of IQs departs in a very systematic way from the normal Gaussian distribution. There is a bulge (i.e. excess frequency) in the lower half of the distribution, especially in the IQ range from about 65 to 90 (Burt, 1957, 1963). This suggests the presence of some nongenetic influence which hinders intellectual development. (Another possible explanation is the differential fertility of dull and bright persons, there being a negative correlation of about -0.2 between intelligence and family size, which would result in there being a slight preponderance of low IQs. This theory is seriously undermined by the fact that by far the best explanation for the negative correlation between family size and IQ involves strictly environmental causation; there is no equally reasonable genetic interpretation of this correlation.) An American study shows that if low socio-economic-status subjects are removed from the distribution, and especially if Negroes are removed, the distribution again closely approximates the normal (Kennedy, Van de Riet, and White, 1963). There is always a slight bulge, however, at the very lowest end of the distribution, below an IQ of 50, due to major gene defects and brain damage (Zigler, 1967).

These facts taken together are consistent with the hypothesis that the environment influences the development of intelligence as a threshold variable. (Actually it is best thought of as a number of thresholds.) That is to say, once certain kinds

of environmental influences are present to a probably rather minimal degree, the individual's genetic potential for the development of intelligence will be more or less fully realized, and variations in the extent of these influences beyond this minimal threshold level will make only a slight contribution to the variance in measured intelligence. The situation is analogous to diet and physical stature. Once the diet is up to a certain minimal standard of adequacy with respect to vitamins, minerals, and proteins, the addition of more of these elements to the diet will not make any appreciable difference in physique; if they are present in the required minimal amounts, it will make no difference whether the person lives on beans and hamburger or on Oysters Rockefeller and pheasant-under-glass—the genes will entirely determine variations in stature. The case for intelligence seems much the same.

Another line of evidence is quite consistent with this threshold hypothesis, namely the studies concerned with upward changes in the IQ as a result of rather drastic environmental changes, either from 'natural' causes or by means of experimental manipulation of the environment. Environmental changes or manipulations seem to affect to any marked degree only those children whose social environments are quite wretched and clearly below what is presumably the environmental threshold for the normal development of genetic intellectual potential. Thus, when children are removed as infants from very poor homes, in which the natural parents have subnormal IQs, and are placed in foster homes, in which the foster parents are of average or superior intelligence, the children will grow up to obtain IQs that may be from 10 to 30 points higher than would be predicted if they had been reared by their natural parents, and their educational attainments will be even higher (Skodak and Skeels, 1966). (Of course, due allowance is made here for statistical regression.) It is only when there is a great discrepancy between the early environmental background of the natural parents and the environment provided for their children by the superior foster parents that we find evidence of a substantial boost in the children's IQs. It is simply a case of innate intellectual potential receiving the nurturance needed for its

full development. It is also instructive to note that even though the IQs of foster parents may span a fairly wide range, the IQs of foster children are not correlated in the least with those of their foster parents (Honzik, 1957). Again, once the threshold of adequate environment is attained (the adoption agencies see that this is nearly always the case in foster homes), practically all the variability in the children's IQs will be determined by genetic factors.

Social class and intelligence

It has been hypothesized that the bulge in the lower half of the distribution of IQs is due to the proportion of the population reared under conditions which are below the threshold of those environmental influences necessary for the full development of genetic intellectual potential. Thus, presumably, if these environmental lacks were eliminated, the bulge in the distribution of IQs would be smoothed out and the distribution would more nearly approximate to the Gaussian curve required by genetic theory. The portion of the population which contributed to the bulge would become redistributed at various higher points along the IQ scale; some would make only very slight gains, while others would make considerable gains in IQ. It would be difficult to estimate precisely the average expected gain, but it is likely to be somewhere between 10 and 20 IQ points.

Differences in mean IQ among various social classes and occupational levels are, of course, a well-established fact. But it is commonly believed that *all* of the socio-economic-status differences are due to environmental factors and none to differences in genetic potential. Though the evidence on this point is quite complex, and therefore cannot be presented in this brief paper, it suggests the conclusion that social classes probably differ in innate potential (Burt, 1961; Burt and Howard, 1956). Perhaps as much as half of the between-classes variance in IQ is genetically determined. Several lines of evidence lead to this conclusion. One of the most striking is the phenomenon of regression to the population mean, which can be most satisfactorily accounted for in terms of genetic mechanisms. Even though low socio-economic-status parents provide a poor environment for their children, their children, on

the average, have higher intelligence than the parents; and though high socio-economic-status parents provide a good environment for their children—often better than the environment they themselves grew up in—their children, on the average, have *lower* IQs than the parents (Burt, 1961; Jensen, 1968). This would be almost paradoxical from an environmentalist point of view, while it is completely in accord with genetic expectations. Also, it should be pointed out that the greater the equality of opportunity in a society and the fewer the restraints on social mobility, the greater will become the genetic differences between social classes. The educational and occupational hierarchies act as an intellectual screening device. Genetic differences between social classes could be minimized only by means of imposing rigid and impermeable class and caste boundaries that would rule out social mobility for many generations. This obviously is the very antithesis of a democratic society which, strange as it may seem at first glance, actually tends to maximize genetic differences and minimize environmental differences as a basis of social and economic rewards.

Racial differences in intelligence

The above statements concerning socio-economic-status differences in innate potential cannot be applied to differences between racial groups when there are greater barriers to social and occupational mobility in one racial group than in another, as is clearly the case for Negroes and Mexicans as compared with Caucasians of European origin in the U.S.A. There are probably socio-economic-status differences in innate intellectual potential *within* any particular racial group, but these innate differences would be diminished to the extent that intellectually irrelevant genetic factors, such as lightness of skin color and other caucasoid features, are important as determinants of social and occupational mobility. Therefore, the fact that Negroes and Mexicans are disproportionately represented in the lower end of the socio-economic-status scale cannot be interpreted as evidence of poor genetic potential. For we know that there have been, and are still, powerful racial barriers to social mobility. Innate potential should be much more

highly correlated with socio-economic-status among whites than among Negroes or other easily distinguishable minorities, who are discriminated against on the basis of intellectually irrelevant characteristics

The Negro population in the U.S.A. as a whole has an average IQ about 15 to 20 points below the average for the white population, and the variance of Negro intelligence is less than 60 per cent that in the white population (Kennedy, Van de Riet, and White, 1963; Tyler, 1965). The Negro population (11 per cent of the total U.S. population) is thus largely bunched up in that lower part of the IQ distribution where we find the bulge or departure from the so-called normal distribution. Since we know that the Negro population for the most part has suffered socio-economic and cultural disadvantages for generations past, it seems a reasonable hypothesis that their low-average IQ is due to environmental rather than to genetic factors. A much larger proportion of Negroes (and Mexicans) than of whites probably grow up under conditions that may be *below* the environmental threshold required for the realization of genetic potential. It also appears that the economic condition of the Negro, which has markedly improved over the past two generations, does not bear a close relationship to the really crucial environmental threshold variables. It has been pointed out that the rise of the Negro IQ since World War I has not been nearly commensurate with the improvement of the Negroes' economic condition (McGurk, 1956). But the important environmental threshold variables, mainly interpersonal and psychological in nature, seem to be only incidentally correlated with economic status. Except in the most extreme cases, economic factors in themselves seem to have little causal potency as determinants of IQ and educability.

Environmental influences on intelligence and educability

It remains now to identify those environmental factors presently thought to be the most potent influences in the development of intellectual and educational potential. In recent years there has been a shifting of emphasis by psychologists working in this area. The trend has been away

from rather crude socio-economic variables towards more subtle intrafamily and interpersonal psychological variables. This shift in emphasis is given cogency by the fact that crude socio-economic variables, such as income, occupation, and neighbourhood, do not correlate as highly with intelligence and educability as do ratings of more psychological variables, such as whether the parents read to the children during the pre-school years, whether the family eats together, whether children are brought into the conversation at the dinner table, and other features of parent-child interaction, especially involving verbal behaviour. The usual socio-economic variables found to correlate with IQ and educability have shown correlations in the range from .30 to .50. At most, only about 30 per cent of the variance in intelligence can be predicted from a composite of various indices of socio-economic status. Most variables that index socio-economic status, however, are better thought of as incidental correlates of IQ rather than as causal factors. The quality of the parent-child relationship, on the other hand, may be thought of as causal correlation, even though one cannot overlook the high probability that the quality of the parent-child interaction is influenced to a not inconsiderable degree by the genetic potential of both the parents and their children.

What are some of the environmental variables most highly associated with the development of intelligence? Wolf (cited in Bloom, 1964, pp. 78-9) found that ratings on 13 process variables, describing the interactions between parents and children, would yield a multiple correlation with intelligence of +.76. These variables may be classified as follows:

(a) Press for Achievement Motivation

1. Nature of intellectual expectations of child
2. Nature of intellectual aspirations for child
3. Amount of information about child's intellectual development
4. Nature of rewards for intellectual development

(b) Press for Language Development

5. Emphasis on use of language in a variety of situations

6. Opportunities provided for enlarging vocabulary
7. Emphasis on correctness of usage
8. Quality of language models available

(c) Provision for General Learning

9. Opportunities provided for learning in the home
10. Opportunities provided for learning outside the home (excluding school)
11. Availability of learning supplies
12. Availability of books (including reference works) periodicals and library facilities
13. Nature and amount of assistance provided to facilitate learning in a variety of situations

Specific experiential deficiencies of the culturally disadvantaged

More specifically, in terms of educational potential, what are presently thought to be the most crucial psychological deficiencies of the culturally disadvantaged can be grouped into three main categories: perceptual and attentional abilities, verbal and cognitive abilities, and orectic or motivational factors. A knowledge of the exact nature and etiology of deficiencies in these areas is, of course, highly germane to methods of prevention and remediation.

We have not mentioned motor abilities in connection with the disadvantaged, but because of current practices in some school programmes for the culturally disadvantaged, the topic deserves a few words. Retarded motor development, poor muscular co-ordination, balance, and the like, are known to be characteristic of mental retardation of the primary type, particularly of retardation associated with brain damage. There is no evidence [in fact, there is evidence to the contrary (Bayley, 1965)] that a greater proportion of culturally disadvantaged children are retarded in motor development or are in any way deficient in this sphere than the proportion in the total population. Yet in some kindergartens and primary grades we find culturally disadvantaged children being required to engage in various tasks intended to develop or improve motor co-ordination, such as 'rail walking'—balancing on the

narrow edge of a two-by-four. Though such exercises may be found helpful for primary retardates, there is no reason to believe they are anything but a waste of school time for culturally disadvantaged children, unless these children also show definite signs of primary retardation or motor deficiency. This is one example of the mistaken notion, which unfortunately is rife in the field of education of the disadvantaged, that the educational methods suitable for primary retardates and slow learners are also the most effective methods for the culturally disadvantaged.

Perceptual Abilities

From the rather meagre research now available, it appears that low socio-economic-status children come to kindergarten or first grade with less well developed visual and auditory discrimination abilities (Jensen, 1966). The deficiency is not great in an absolute sense, but it is generally thought to hinder learning to read. Exercises in perceptual skills have been developed which apparently overcome these deficiencies fairly readily. Since ability to discriminate differences among shapes and sounds is an important prerequisite skill to school learning, these abilities should be assessed in kindergarten and compared with middle-class norms, and appropriate remedial training applied where deficiencies exist. Special tests, norms, and remedial techniques have still to be developed for this purpose, though some techniques already have been developed for experimental use. These remedial techniques can usually be played as games by small groups of children with the teacher, and the perceptual training can readily be combined with the much needed training in language skills.

Attentional Ability

Anyone who has observed culturally disadvantaged children in the classroom, particularly in the primary grades, notes as one of the most outstanding deficiencies these children's inability to sustain attention. This deficiency is not so conspicuous in kindergarten but becomes clearly manifest in the first grade, as soon as reading is introduced and other structured cognitive demands are made upon the child. I have noticed this attentional lack in culturally disadvantaged children in my own observations in classrooms,

and it has also been described to me by numerous teachers of the disadvantaged. The recent literature makes little reference to attention, but some of the phenomena discussed here under this heading have come to be identified with the concept of motivation. An excellent discussion of attention, as the term is used here, and of its importance to educability is found in Sir Cyril Burt's *The Backward Child* (1937, pp. 479-85). Attentional ability presumably is innate but may be strengthened through reinforcement in infancy and early childhood. It develops differentially in various kinds of situations and is reinforced through the parent-child relationship. Typically, the disadvantaged child's attention is poorly developed with respect to the teacher's speech and whatever things the teacher tries to make the focus of the child's attention. These particular attentional abilities are developed in middle-class children from an early age, probably through certain features of the parent-child relationship (reading to the child, mutual play accompanied by relevant speech, etc.) which are presumably relatively lacking in lower-class parent-child relationships. These activities are mutually reinforcing to the parent and child: attentional behaviour on the child's part reinforces the parent's interaction with him, and the parent's interaction with the child further reinforces and shapes the child's attention. This shaping of attention in middle-class children is probably not only greater in sheer amount than in lower-class children but related to activities that more nearly resemble those of the school and of the pupil-teacher relationship.

Thus, attention is less well developed in the low socio-economic-status child at the time he enters school. In addition, I have observed a secondary phenomenon: there is an actual deterioration of the child's attentional ability, usually beginning in the first grade (Jensen, 1968). Some children begin actively to resist focusing attention on teacher-oriented tasks and activities. Normal attentional behaviour gives way to a kind of seemingly aimless and disruptive hyperactivity. This is an almost universal observation by teachers of the disadvantaged, especially disadvantaged Negro children. This behaviour can be likened to some extent to the phenomenon referred to by Pavlov as 'experimental neurosis'. In Pavlov's

conditioning laboratory, dogs which were forced to learn discriminations beyond their capabilities became disturbed and resisted further attempts at training, even on much simpler tasks; they developed aversion to the entire laboratory setting and at times even lost previously conditioned habits. Though the analogy with culturally disadvantaged first-graders may seem far-fetched, it does suggest the possibility that the gap in difficulty between the tasks required of the disadvantaged child in the kindergarten and those encountered in the first grade might be too great in many schools. If the child cannot meet the tasks set by the teacher with *successful* performance (not merely receiving indiscriminate approval by the teacher for any quality of performance), the child gradually develops aversion to the school-learning situation. His attention is, as teachers are heard to say, 'turned off', and distractibility and aimless hyperactivity ensue. The gap between pre-school or kindergarten and first or second grade is not yet being bridged satisfactorily for the culturally disadvantaged child. The steps in the learning requirements are too big. For the middle-class child the transition from home to school is clearly a much less radical change from the activities and demands of the home.

Language Deficiencies

By far the greatest and most handicapping deficiencies of the culturally disadvantaged child are found in the realm of language. But the term language is here used in a much broader and psychologically more profound sense than is generally appreciated by teachers of English, speech therapists, and the like. The immediately obvious aspects of the language of the culturally disadvantaged—the lack of genteel English, incorrect grammar, poor pronunciation, use of slang, etc.—are psychologically the most superficial and the least important from the standpoint of intellectual development. This is not to minimize the social, economic, and occupational advantages of good oral and written English. It is simply important to realize that the language deficiencies of lower-class children have a much more detrimental psychological effect than the obvious social disadvantages of their language habits. Because the eschewal of certain lower-class language habits by the middle-class is

perceived by some persons as undemocratic snobbery, there has grown up another utterly erroneous notion that lower-class language is just as good as any other kind of language, in the same sense the English, French and German, though obviously different from one another, are all equally good languages, as far as one can tell. Thus, social class differences in language habits are viewed as desirable or undesirable only according to one's acquired tastes, values and standards, and—to paraphrase the argument—who is to say that middle-class values are any better than lower-class values? This line of thinking can be quite discredited in terms of our growing understanding of the functions of language. Language not only serves a social function as a means of interpersonal communication but is also of crucial importance as a tool of thought. It is in this latter function that lower-class language deficiencies are most crippling psychologically.

General language characteristics

With respect to language functions, Metfessel (in Frost and Hawkes, 1966, p. 46) has listed the following general characteristics of culturally disadvantaged children:

1. Culturally disadvantaged children understand more language than they use. Even so, by second grade the comprehension vocabulary of such children is only approximately one-third that of normal children, while by sixth grade it is about one half.
2. Culturally disadvantaged children can use a great many words with fair precision, but not those words representative of the school culture. It has been estimated that something less than half the words known by middle-class pre-schoolers are known to slum children. Even such common name words as *sink*, *chimney*, *honey*, *beef* and *sandwich* are learned by culturally disadvantaged children one or two years later than by other children.
3. Culturally disadvantaged children frequently are handicapped in language development because they do not have the concept that objects have names, and that the same objects may have different names.

4. Culturally disadvantaged kindergarten children use fewer words with less variety to express themselves than do kindergarten children of higher socio-economic status.
5. Culturally disadvantaged children use a smaller proportion of mature sentence structures, such as compound, complex, and more elaborate constructions. This is limited to the non-English-speaking child, but occurs among most children who come from a disadvantaged background.
6. Culturally disadvantaged children learn less from what they hear than do middle-class children. Part of this deficiency has been attributed to the fact that disadvantaged children come from a milieu in which radio, television, and the sounds of many people living together in crowded quarters create a high noise level, which the child eventually learns to shut out psychologically, so that verbal stimuli generally become less salient.
7. Culturally disadvantaged children are less likely to perceive the symbolic and conceptual aspects of their environment; the verbal means of abstraction and analysis are relatively undeveloped.
8. Culturally disadvantaged children frequently end the reading habit before it is begun; the cycle of mastery which demands that successful experiences generate more motivation to read, which in turn generates higher levels of skill sufficient to prevent discouragement, and so on, often never gets under way. These children, of course, have poor adult models for reading behaviour.

In general, it has been found that throughout the entire sequence of language development, from the earliest stages of speech in the first two years of life, there is retardation among culturally disadvantaged children (Bereiter and Englemann, 1966; Jensen, in press; McCarthy, 1946, pp. 557-9). Furthermore, this retardation should not be thought of entirely as the disadvantaged child's merely lagging behind the middle-class child, with the same level of development merely being attained somewhat later. The characteristics of the language habits that are being acquired and the kinds of functions the language serves in

the child's experience, actually shape his intellectual development, especially the development of the ability for abstraction and conceptual learning. Poor development of this ability places a low ceiling on educational attainment.

The most detailed analysis of social class differences in language characteristics, important to the development of cognitive abilities, has been made by Basil Bernstein (Bernstein, 1961). Except for minor details, his findings and conclusions seem to be applicable to social-class differences in the American culture as well as in the British, since social class differences in language behaviour of the type that concerns him are probably even more pronounced here than in England. It is especially important that Bernstein's type of socio-linguistic analysis be applied to some of the various American low socio-economic-status subcultural groups.

In characterizing social class differences in language behaviour, Bernstein distinguishes two main forms of language, which he refers to as *public* and *formal*. In formal language, the variations of form and syntax are much less predictable for any one individual, and the formal possibilities for sentence organizations are used to clarify meaning and make it explicit. In *public* language, on the other hand, the speaker operates in a mode which individual selection and permutation are grossly restricted. In formal language the speaker can make highly individual selection and permutation. Formal language, therefore, can fit the speaker's purposes with much greater subtlety and precision and does not depend to any marked degree upon inflection, gestures, facial expressions, and a presupposed prior mutual understanding of the main gist of the communication, as expressed in the highly frequent use of the phrase 'you know what I mean' in lower-class speech. While middle-class persons can understand and use public as well as formal language, lower-class persons are more or less restricted to public language. Public language is almost completely limited to the single function of social intercourse within a community of tacit common understandings and values. It is not designed for expository functions, for detailed representation of past events or future plans, or for manipulating aspects of one's experience abstractly and symbolically. In public language, the quantity of

speech is not reduced, but the variety of functions which speech can serve is limited. This becomes especially important in the realm of private or internal speech, where the person must use language to recall, review, structure, or otherwise mentally manipulate his past or his anticipated experiences, aims, plans, problems, and so on. Bernstein lists the following characteristics of public language:

1. Short, grammatically simple, often unfinished sentences with a poor syntactical form stressing the active voice.
2. Simple and repetitive use of conjunctives (so, then, because).
3. Little use of subordinate clauses to break down the initial categories of the dominant subject.
4. Inability to hold a formal subject through a speech sequence; thus, a dislocated informational content is facilitated.
5. Rigid and limited use of adjectives and adverbs.
6. Infrequent use of impersonal pronouns as subjects of conditional clauses.
7. Frequent use of statements where the reason and conclusion are confounded to produce a categoric statement.
8. A large number of statements/phrases which signal a requirement for the previous speech sequence to be reinforced: 'Wouldn't it?' 'You see?', 'You know?', etc. This process is termed 'sympathetic circularity'.
9. Individual selection from a group of idiomatic phrases or sequences will frequently occur.
10. *The individual qualification is implicit in the sentence organization: it is a language of implicit meaning.*

In contrast, the following are characteristics of formal language:

1. Accurate grammatical order and syntax regulate what is said.
2. Logical modifications and stress are mediated through a grammatically complex sentence construction, especially through the use of a range of conjunctions and subordinate clauses.

3. Frequent use of prepositions which indicate logical relationships as well as prepositions which indicate temporal and spatial contiguity.
4. Frequent use of the personal pronoun 'I'.
5. A discriminative selection from a range of adjectives and adverbs.
6. Individual qualification is verbally mediated through the structure and relationships within and between sentences.
7. Expressive symbolism discriminates between meanings within speech sequences, rather than reinforcing dominant words or phrases, or accompanying the sequence in a diffuse, generalized manner.
8. It is a language use which points to the possibilities inherent in a complex conceptual hierarchy for the organizing of experience.

Robert Hess, of the University of Chicago, has found considerable evidence of these two modes of language behaviour in the parent-child interactions of lower-class and middle-class Americans observed in situations in which the mother is required to instruct her child in learning a simple task (Hess and Shipman, 1965). The language of the lower-class mother does not provide the child with cues and aids to learning to the same extent as the language of the middle-class mother. Since children tend largely to internalize the language of their home environment, mainly that of the parents, the low socio-economic-status child acquires an inferior set of verbal techniques to apply on his own in learning and problem-solving situations.

Verbal mediation of cognitive functions

From the standpoint of the development of intelligence, the most important aspect of language is its relationship to a variety of processes listed under the general heading of *verbal mediation* (Jensen, 1966).

We have hypothesized, and some supporting evidence is already available (Jensen, in press), that one of the crucial psychological differences between low and middle socio-economic-status children is in the spontaneity of verbal mediation, especially in ostensibly non-verbal learning or problem-solving situations. In short, low socio-

economic-status children are much less likely than middle socio-economic-status children to talk to themselves as an aid to 'thinking'. On ostensibly non-verbal tests and learning tasks, which nevertheless require private verbal mediation, culturally disadvantaged children perform especially poorly. This is the main reason that so-called non-verbal intelligence tests are not by any means 'culture free' or 'culture fair'.

Several main processes of verbal mediation, that is, covert language, can be identified.

1. *Labelling*

In middle-class children the habit of labelling, or naming objects and events in the environment, becomes automatic and unconscious. It is practically impossible to look at, say, a chair or a book, or any object, without these stimuli eliciting a verbal (usually covert) response of naming. Perception and verbalization are more or less unified, so that one cannot see a chair without thinking 'chair', at least when the chair is the focus of one's attention. At first, in very young children, this naming tendency is overt; it gradually becomes covert. Most middle-class children enter school with this particular form of verbal equipment already fairly well developed. Lower socio-economic-status children do not. Apparently the conditions under which the lower-class child spends his pre-school years are insufficient to instil the habit of naming or labelling. Experimental evidence has shown conclusively that verbal labelling greatly facilitates learning, retention, and problem solving. Furthermore, this type of verbal mediation is learned in a particular environment; it is not an innate aspect of learning ability. It is a form of behaviour which must become habitual and automatic in children, if they are to develop their educational potential.

2. *The Associative Network*

Words in context acquire associations. These verbal associations have other associations, and so on, to form an elaborate, ramifying verbal associative network. This network is thought to act, more or less automatically and unconsciously, as a broad source of transfer for conceptual learning and retention. It is the psychological background or 'net' which enmeshes the child's

experiences in the classroom. Word association experiments on children indicate that low socio-economic-status children have a less rich associative network. Even the words they know and use have, in this sense, less associative meaning to them, and the associations are not as structured in terms of hierarchical characteristics that facilitate categorization, conceptual analysis, and the like. The quality of the child's verbal environment is the chief determinant of the richness and structure of his associative network. All children who can speak have an associative network, but the network of associations of culturally disadvantaged children is more like that of middle-class children who are two or three years younger (Entwisle, 1966).

3. *Abstraction and Categorization*

Conceptual learning, which includes much of school learning, involves the ability to abstract and to categorize things in terms of various abstracted qualities. For example, plates, wheels, doughnuts, and pennies, have in common the abstract property of being *round*. Young middle-class children and old culturally disadvantaged children are not likely to perceive anything in common among these disparate objects; in short, the objects as stimuli do not arouse abstract associations, and consequently the number of ways the objects can be grouped will be limited or entirely idiosyncratic, depending upon the child's particular experiences with the objects, such as the fact that his mother may have served him *doughnuts* on a *plate*. The ability to disassemble what is registered by the senses into various conceptual attributes is an important ingredient of educability, and it is greatly facilitated by, if not wholly dependent upon, verbal behaviour, either overt or covert.

4. *Syntactical Mnemonic Elaboration*

The ability to respond to one's experiences on the verbal level in a way that makes use of the structuring and ordering properties inherent in the syntactical aspects of language, greatly facilitates learning, comprehension, retention and retrieval of, and reasoning involving various kinds of experience, both verbal and non-verbal. Language imposes its structure upon raw experience and structures and organizes it in ways

that the subject is able to recall for use at a later time. This ability is limited for the person who either has not acquired or does not habitually use the logical and structural properties contained in formal language.

Compensatory education for the disadvantaged

The most radical, yet probably most successful, of the pre-school programmes for the culturally disadvantaged is being conducted at the University of Illinois by Carl Bereiter and Siegfried Engelmann (Bereiter, 1965; Bereiter and Engelmann, 1966). It focuses intensively on training disadvantaged children to use the language in ways that facilitate learning and thinking.

The Bereiter programme is based on the premise that it would be practically impossible to make up every environmental disadvantage that slum children have experienced, and that we must therefore concentrate all our efforts only on those which are most crucial to the development of educability in a normal school setting. These crucial skills, Bereiter maintains, are concerned with the use of language as a tool of thought. His programme consists of drilling the kinds of language habits we have described into children by methods that produce high motivation, unanimous participation, and maximal concentration and effort on the child's part, with a minimal waste of time. The specific techniques have been described in greater detail elsewhere, and Bereiter and Engelmann have a book on their methods for use by pre-school teachers of the disadvantaged (Bereiter and Engelmann, 1966).

Bereiter correctly maintains that disadvantaged children must learn at not a normal but a superior rate in order to compete successfully with middle-class children. Otherwise they will never catch up to grade-level.

The Bereiter programme attempts through direct and intensive training to remedy lacks in the following types of language skills, which Bereiter and his colleagues believe to be most crucial to early academic learning. This list is far from exhaustive, consisting only of the most basic language tools.

1. Ability to use both affirmative and 'not' statements in reply to the question, 'What is this?': 'This is a ball. This is not a book'.

2. Ability to handle polar opposites ('If it is not....., it must be.....') for at least four concept pairs; e.g. big-little, up-down, long-short, fat-skinny.
3. Ability to use the following prepositions correctly in statements describing arrangements of objects: *on, in, under, over, between*. Example: 'Where is the pencil?' 'The pencil is under the book'.
4. Ability to name positive and negative instances for at least four classes, such as tools, weapons, pieces of furniture, wild animals, farm animals, and vehicles. Example: 'Tell me something that is a weapon'. 'A gun is a weapon'. 'Tell me something that is not a weapon'. 'A cow is not a weapon'.
5. Ability to perform simple 'if-then' deductions. Example: The child is presented a diagram containing big squares and little squares. All the big squares are red, but the little squares are of various other colours. 'If the square is big, what do you know about it?' 'It's red'. (This use of *if* should not be confused with the antecedent-consequent use that appears in such expressions as, 'If you do that again, I'm going to hit you', which the child may already be able to understand.)
6. Ability to use 'not' in deductions: 'If the square is little, what else can you say about it?' 'It is not red'.
7. Ability to use *or* in simple deductions: 'If the square is little, then it is not red. What else can you say about it?' 'It's blue or yellow'.

Other Intervention Programmes

Other systematically developed intervention programmes for culturally disadvantaged pre-schoolers are more or less typified by those of Martin Deutsch in New York City, and Susan Gray in Nashville, Tennessee (George Peabody College). These programmes cover a broader spectrum of activities and experiences than the Bereiter programme, though the emphasis is still on stimulating cognitive development. It is generally agreed that the traditional middle-class nursery curriculum, with its emphasis on personal-

social adjustment, is inappropriate and inadequate as a means of pulling lower-class children up to the developmental level of his middle-class age-mates. The Deutsch and Gray programmes are described in articles by these investigators (Deutsch, 1962; Gray and Klaus, 1965).

Unfortunately, as of this date, the evidence regarding the efficacy of any of these programmes is still meagre. It is insufficient merely to report gains in IQ, especially when this is based on retest with the same instrument or an equivalent form of the test, and when there is a high probability that much of the gain in test scores is the result of highly specific transfer from materials and training in the nursery programme that closely resemble those used in the test. For example, the writer has noticed that in one pre-school programme, some of the nursery materials consisted of some of the identical equipment used in the Stanford-Binet IQ test, and IQ gains resulting from children's spending several weeks in the programme were based on pre- and post-training with the Stanford-Binet! Such unwitting self-deception must be guarded against in evaluating the effects of pre-school programmes.

The most important evidence for the efficacy of such programmes, of course, will be based on the child's performance in the elementary grades, especially his progress in reading. Probably the most significant predictor of satisfactory progress in the educational programme, as it now exists in the public schools, is reading ability. If a child can surmount the reading hurdle successfully, the prognosis for satisfactory educational progress is generally good. It is also at this early point in the educative process—the introduction of reading—that so many culturally disadvantaged children meet a stumbling block, and head down the demoralizing path of educational retardation. Pre-school programmes for the disadvantaged should concentrate, as does Bereiter's, on the development of cognitive skills basic to reading. In many cases this will probably require a greater attention to the development of perceptual-discriminative skills than is found in the Bereiter programme.

The motivational aspects of reading and reading-readiness are much less clear, but most teachers who are experienced with the disadvantaged believe there are social-class differences

among children's attitudes towards reading that affect their desire to learn to read. The best guess is that this motivational component of reading has its origin in early parent-child interaction in reading situations. Social-class differences in this respect apparently are enormous. Can anything be done about it?

This brings us to the question of parent involvement in intervention programmes. Unfortunately, it has been the common experience that low socio-economic-status parents are difficult to change with respect to child-rearing practices. If these parents are not reached long before their children are four or five years of age, much valuable time is lost in terms of the development of the child's educational potential. The child will come to Head Start or to kindergarten without ever having looked at a book, without ever having been read to, and without ever having seen an older child or adult engaged in the act of reading. Some unknown, but possibly large proportion of the determinants of reading failure among low socio-economic-status children may be attributable directly to this set of conditions. Since it is unlikely that the majority of mothers of the most severely disadvantaged children can be reached by any feasible means that could create lasting changes in their mode of child-rearing, we should look elsewhere for practicable means of bringing appropriate influences to bear on culturally disadvantaged children early in their development.

One possible approach would be to require junior and senior high school girls to work with culturally disadvantaged children between six months and four years of age. It would be regarded as a practical course in the psychology of motherhood for all school girls, especially those from a low socio-economic-status background, extending from about the 8th or 9th grade through the 12th. Each girl would spend at least an hour a day with a child, either in a nursery or in the child's own home. Instruction and supervision would, of course, accompany the girls' activities in working with young children. Much of the activity would consist of types of play thought to promote cognitive development. Children would, for example, be read to regularly from about one year of age. There should be sufficient consistency of the relationship between the child and the student for emotional rapport to

develop. In many cases, of course, low socio-economic-status high school girls will have to be taught and coached in detail about how to interact with infants and children in ways that promote cognitive development. They must be made to realize that these activities are probably the major hope for realizing the educational potential of low socio-economic-status children. An experiment essentially very much like this was carried out on a small scale by Skeels and Dye (1939) some twenty-five years ago, with extremely encouraging results, substantiated by follow-ups over a twenty-five-year period (Skeels, 1966). Such a programme on a large scale would, of course, constitute a major educational undertaking, involving considerable expenditure of funds for additional personnel, facilities, and efforts to gain widespread public acceptance. It could first be tried experimentally on a modest scale to test its feasibility.

Finally, it must be emphasized that all educators who have worked with the disadvantaged are agreed that pre-school intervention without adequate follow-up in the first years of elementary school is inadequate, because the culturally disadvantaged child does not go home after school, as does the middle-class child, to what is essentially a tutorial situation. Middle-class parents take a greater interest in their children's school work and offer them more help than do low socio-economic-status parents. The educational system should make some provision for the lower-class child's opportunity for a tutorial relationship with an older child or an adult, at least throughout the elementary grades.

We are gradually having to face the fact that, in order to break the cycle of poverty and cultural deprivation, the public school will have to assume for culturally disadvantaged children more of the responsibilities of good child-rearing—responsibilities universally regarded among the middle-class as belonging wholly to the child's own parents. The brutal fact is that for culturally disadvantaged children, these responsibilities are not being met, for whatever reason. Whether or not the public school system should intervene where educationally important environmental lacks exist is, of course, strictly speaking, not a psychological or scientific question, but one of social policy.

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