

# SYMPOSIUM ON THE TRAINING AND EDUCATION OF THE SEVERELY SUBNORMAL

## I. LEARNING AND TRANSFER IN THE SUBNORMAL: SOME IMPLICATIONS FOR EDUCATION

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In the early part of this century, the study of the subnormal child was largely concerned with identifying him, and making arrangements for his educational and medical treatment. Research was largely concerned with intelligence testing, and other forms of assessment and classification. Much less attention was paid to educational questions, such as how subnormals learn, whether their learning is different in kind, as well as in rate, from that of normal children, whether they have specific and unique difficulties, and so on. This was not through ignorance, or indifference; Binet, in France, had discussed these issues, and in our own country Cyril Burt had also given them much thought. Nevertheless, such problems were rather left on one side, partly for reasons which are essentially social and political, and partly because the techniques required, and the workers to apply them, were not yet available. However, the last fifteen to twenty years have seen quite a change in this field; a number of researches have been reported which are concerned, both directly and indirectly, with the characteristics, as well as with the development, of the learning processes of subnormal children and adults.

The new insights that have been developed in the course of these researches are slow to reach the teacher in his classroom or training centre, and this may not be such a bad thing: it would be very rash to change one's whole approach and methods at every shift in the breeze! Still, enough has now been done for it to seem worthwhile to draw together the results of the more significant experiments and to make some suggestions as to their practical application in the teaching situation.

### 1. WHEN TO START AND HOW TO PROCEED

(a) **Early education.** Teachers often complain that the children do not reach them early enough. They come to the special class or centre with a history of failure and frustration, established already in bad habits that make new learning much more difficult. They have lost the freshness, spontaneity and self-confidence of the younger child. If only diagnoses could be made early, the children could be put into the right environment straight away. So runs the argument. But it is not a sound one, depending as it does on the assumption that subnormality is an essential characteristic of the child, which he is born with, and that identifying this is our only problem. But many children may only be subnormal as the end result of a series of pathogenic events occurring after a normal start in life (see Davis, 1961). Beginning early with them could only mean starting as soon as possible after the 'acute' phase of their illness is over—before the illness began, no special educational measures were indicated.

However that may be, there are some quite straightforward questions to be asked. Is it worth starting proper training with a five year old mongol, should E.S.N. schools be expected to do anything much with children who are not yet seven, and so on? There is now sufficient evidence to allow us to answer these questions affirmatively, but it is important to see clearly what kind of 'education' or 'training' we can usefully provide, and what goals we are hoping to attain.

Kirk (1960) has shown that early education is of real benefit to the retarded child. He has studied the effects of 'pre-school' (i.e., nursery) education on children from poor family backgrounds, and on those in institutions. He concludes that "the rate of mental development is partially dependent upon early environment **including school experience.**" Not only do they learn, but their rate of learning, that is their intelligence level, rises. There is other evidence to support this claim, some of it rather exaggerated, but even a cautious person would now agree that there is definite benefit to be gained from education and training, starting at quite a young age.

We now recognise two aspects of environmental damage to the young child. He may be adversely affected by unpleasant, stressful experiences, either physical or mental; but in addition to these extreme situations, there are the more insidious effects of the sheer lack of the conditions for healthy development, even where there are no positively distressing circumstances. Thus, children who spend long periods in institutions or hospitals are often retarded by comparison with similar children who remain at home and have the chance to develop a secure and stimulating relationship with their mother, or some other person who can devote time and attention to them. This is important at quite an early stage—even in the first year of life, as Blank (1961) has recently shown.

(b) **Type of teaching.** We can agree, then, that early education is invaluable, but we need to examine in more detail what we mean by the word 'education' in this context. Obviously, it would be silly to sit a six year old retarded child down at a desk and expect to be able to give him a history lesson; but it may be almost as foolish to let him spend all his time in unorganised 'free play,' and call this education. Nevertheless, if we are to err on either side, the error will be less if we concentrate on play methods in the early stages. Experimental evidence for this has been provided by Brandon and Slomson (1960), and by Tizard (1960). Both found that in a 'nursery-class' type of régime subnormal children improved greatly in their social and emotional behaviour and particularly in speech.

There are two aspects of this kind of learning situation. First, it provides the child with far better opportunities to form relationships with the teacher and the other pupils at the level at which he needs them at any particular time. Secondly, the child can learn at his personal rate. On the other hand, in the more formal class-teaching situation, the kind of relationship possible, and the rate of learning, have to be determined largely by the teacher and this is often not in the child's best interests. Teachers nearly always feel that they have a duty to push their children up from rung to rung of the ladder of learning, and that if the child is not patently learning something new, they are failing as teachers. But this is not often the case, and particularly when dealing with subnormal and disturbed children the teacher's role must lie as much in the fields of social and emotional as of intellectual learning.

We must, however, go further. We have suggested that the learning situation should be informal and by this we mean that a large proportion of the children's time should be spent in exploring their environment, and in learning from the materials provided for them, and from each other. The teacher's job is very much more difficult and complex than in the formal teaching situation. What she has

to do in addition to satisfying the child's social and emotional needs is to provide materials and suggest activities that are relevant for the child's particular stage and rate. She must have the right equipment, and preferably be able to improvise some of it herself, but much more important, she must be able to study and analyse carefully the thought processes and progress of the child. This is a much higher skill than the ability to "put things across" to children. An excellent illustration of this kind of analysis has been given by Woodward (1960). She describes the different stages in a subnormal child's learning to put together the toy which consists of a series of nesting beakers, and she distinguishes at least three stages. At an early stage the child will put the beakers together in a jumbled order, realise that they are wrong, then take them out and start again. At a later stage the child realises, as soon as he has put one wrong beaker right in, that it will not do and replaces it immediately. Later on, he can decide that a beaker will not fit before he has even left go of it. What the teacher needs to know is what stage the child is at, what is the next stage he will have to pass through, and what he will have to learn, or perhaps even unlearn, to make the next stage possible. That is the kind of study and analysis that the teacher should be trying to make in many different contexts.

(c) **Learning-habits and attitudes.** One of the questions that have exercised those who have been concerned with subnormals is that of the characteristics of their learning processes. Do they learn differently from normal children, or are they merely slower, going through exactly the same sequences but in a kind of photographer's slow-motion? But in fact, if this means anything at all, it must mean that the child spends longer at each stage because he needs more repetitions to reach a given level. Zazzo (1960) has suggested that this in itself increases the subnormal's difficulties, because if he spends too long at one stage, it is harder for him to leave it behind even when he is ready for the next one. This is rather like the experience of the normal person learning to play tennis. The more he practises a bad stroke, the harder it is to learn a better one, even when timing and ball control have improved.

However, the slow-learning description is a very incomplete one; and it may be more helpful in many cases to suppose that the child needs many repetitions before he reaches a satisfactory standard, not because of his learning processes, but because he is unable or in some sense unwilling to assimilate the new knowledge. This is surely the kind of explanation we need for the familiar case of the child whose teacher tells you, "You know, when we've been through it for half an hour John knows his colours (or his numbers, or his letters), but by the next morning you'd think he'd never heard of them." We must reluctantly conclude that no matter how willing John seemed, his teacher probably should not have been teaching him his colours.

Another frequently quoted characteristic of the subnormal is his rigidity. Once he starts an activity he perseveres in it even after it has become inappropriate. He does not seem able to change his approach. For instance, if he is sorting by colours he cannot change to shapes, and vice versa. This is often true, but it is only a partial description of the subnormal's learning, and we could explain it in terms of his passiveness and lack of the willingness to change, rather than as a purely intellectual characteristic.

These two characteristics—slowness and rigidity—reflect both learning-habits and typical attitudes to learning. But they are too general, and they are descriptions of behaviour-patterns rather than explanations. What would be more helpful would be a much more precise analysis of how subnormals learn, and we shall try in the next two sections to show how this is being done.

## 2. LEARNING AND GENERALISING

(a) **Transfer of training.** If we had to learn separately every facet of any new experience in life, we should be in a state of continual bewilderment. When we walked into a strange room we should have to be told which were the chairs, if they were at all different in shape, size or colour from those we were used to already. We might not know that an object before us was a book unless it precisely resembled books we had already seen. Similarly, every time we saw a word whose letters were of unusual shape, size or colour, we should have to learn to read it from scratch. In real life, however, none of this happens. If you were suddenly handed a book that was four foot square with leather pages, covered in large green letters, you would immediately know that it was a book and be able to read it. This is because we have learnt by experience what the essential, defining qualities of an object are, and how to recognize them, even in quite unfamiliar surroundings. We may call this the ability to generalise; and when we teach children a skill or give them some information, which we expect them to be able to use in more than one situation, we are expecting "transfer of training."

However, it is important to see that this is not the same as "training the mind." Modern psychologists have found no support for the suggestion that, for instance, learning Latin teaches people to think logically, or that learning poetry by heart improves memory, or that practising any activity for long periods at a stretch improves concentration. What does seem to be the case is that learning one kind of activity can prepare the ground for learning a similar activity, **particularly if the pupil is made aware** of the ways in which the two activities are similar. This kind of transfer seems to come particularly naturally to children who are intelligent and alert. Subnormal children may be especially handicapped in this respect. To put it differently, the subnormal child often seems to make less use of the knowledge he has than the more intelligent child. A further point which has been elaborated by Clarke and Blakemore (1961) is that transfer takes place more easily with younger children, even after allowance has been made for mental age. This means that if we take an older subnormal and compare him with a younger subnormal, both say at the mental age of seven, the younger child may show better transfer than the older one. But this work is still at an exploratory stage, and we cannot yet draw firm conclusions.

(b) **Mental age comparisons.** We have just mentioned one of the more fruitful ways of looking at the special difficulties of the subnormal. If we compare a normal fifteen year old with a severely subnormal child of the same chronological age, we shall find the subnormal inferior intellectually in almost all respects, so that it is not possible to pinpoint the mechanisms that are particularly at fault in the subnormal's mental make-up. If, however, we compare our subnormal fifteen year old with a normal seven year old, we are looking at two children who are at roughly the same stage of development. But we know that in a short while the normal child will have begun to draw away from the subnormal. In two years' time the normal child will have a mental age of nine, whereas the subnormal's mental age will still be less than eight.

What we would like to see is what in particular the subnormal is doing, or failing to do, that affects his ability to make progress. He is often very lacking in normal motivation, and in some cases this is itself sufficient explanation, but in many cases we feel that this is not enough. It is here that an analysis of disabilities in associating and generalising seems particularly relevant. Preliminary experiments by this writer suggest that it is relatively easy to make a task appear harder for some subnormals if one repeats it in an unfamiliar manner or in an unfamiliar context. Solving the same jigsaw puzzle may be harder for a subnormal if the colours are changed, though everything else remains the same.

(c) **Learning sets.** Harlow (1949) carried out a long series of experiments with monkeys, which have made an important contribution to our understanding of the phenomena of transfer. He found that two important stages could be distinguished. In the first, and longer, stage the animal was 'learning to learn,' or as we should call it, forming appropriate learning sets. What the monkey was doing was finding out slowly what was expected of him, and what kind of things were likely to happen in the learning situation. This was a long process, but once it was over subsequent learning took place at a tremendously fast rate. This was in spite of the fact that it is not possible to talk to a monkey, and tell him that the new situations will be essentially the same as the earlier ones! Nevertheless, once the monkey had got the point he showed surprising flexibility in new learning.

This work has two implications for our understanding of human subnormals. First, the subnormal's apparent inability to perform a new task successfully may be due to his need to spend much longer than the normal child in 'getting the hang' of it, that is, acquiring the appropriate set. But once he has passed through this stage he may be able to make full use of the technique he has now acquired. In practical terms this means that it is especially necessary for the subnormal to achieve very full command of a skill before he is expected to use it in more complicated situations. The second point is that we should not too readily assume that a subnormal child will never succeed in an activity just because he is very poor at it in the earliest stages.

O'Connor and Tizard (1956) are among those who have shown how misleading early performances are in predicting the eventual level which subnormals may reach. One of the important factors may be the way the child is helped in the early stages of learning something new, and in particular the kind of verbal instructions used. We shall have more to say about this in the next section.

So far we have only hinted at the reasons for the subnormal's unusual learning difficulties. In fact, we are not yet able to provide any very definite explanations, but we can mention at least one of the likelier hypotheses. The subnormal child has often suffered severe psychological damage. He may also have a damaged, or malformed brain. In either case he is likely to reach the centre, or school, with a long history of failures and disappointments, even if he is still quite young; very often, too, the circumstances which have caused, or contributed to, his backwardness are still operating. His learning difficulties often reflect the adjustment he has made to his environment as he has found it. One of the obvious responses to unbearable circumstances is flight, or withdrawal. The child has withdrawn from learning, and particularly from new learning. The result is that he is unwilling to make any assumptions about situations which he does not immediately recognise. He is not willing to risk further failure. So our chief task is to help him to see how he may use what he already knows when he ventures into the unknown, but only to do this where we are fairly confident that he will succeed.

### 3. SPEECH AND THE OTHER MODALITIES

(a) **The role of speech.** Luria (1957) has stressed the importance of speech development in young children's learning. In fact, the child's ability to generalise is due in large part, if not entirely, to his ability to make proper use of language. By the time a child can use a word like "doggy" correctly he has learnt to apply a series of rules to objects that come into his experience, and he will usually know whether a new animal is a dog or not, even if it is an unusual breed. On the other hand, while he is still learning to use the word one can see him passing through various stages. He may at first call any moving object "doggy;" soon he uses the word for living things only, but may still apply it to a horse or a mouse; and eventually he learns to limit it to its proper use.

At this point it is worth noting two reasons why many subnormal children may be slow in achieving linguistic skill. First, if they have not the curiosity and enthusiasm of the normal child they are much less likely to spend the hours and hours experimenting with language, finding out its rules and applications, which is so characteristic of bright youngsters. As we have said, the subnormals' learning is often passive—they wait for the experiences to come to them. Secondly, many of these children come from homes where little conversation is to be heard, and they lack the sheer opportunity of learning to use language. For these reasons it is very important for the teacher to give the child every chance to speak and to listen, even if the child shows little signs of understanding. A simple running commentary on the child's and the teacher's actions can be immensely helpful.

There is, however, another aspect of speech which Luria has emphasised. This is its directive and self-regulating function. Children often talk to themselves when performing actions, particularly if they are complex, and Luria has noted how instructions spoken aloud help the child to control his actions. Even adults sometimes use this technique, though they do not speak the instructions aloud. Hermelin and O'Connor (1960) have enlarged on this point. They show also that subnormals are not much helped by general verbal instructions. They need to have the instructions repeated regularly throughout a task; otherwise their effect is soon lost.

McCarthy and Kirk (1961) have examined linguistic ability in some detail. They point out that there are many facets of linguistic skill, and they have devised a series of nine tests which yield a profile that is surprisingly different from child to child. To take a crude example, there is obviously a great difference between the child who is quite good at understanding speech, but almost completely unable to communicate, and the child who can talk fluently and sensibly but is so poor at making sense of what is said to him that one almost suspects deafness. These tests are still at an experimental stage, but when they have been more fully developed they could prove indispensable not only for understanding the nature of a child's disabilities, but also for making specific plans to help him.

(b) **Learning through other sense modalities.** Hermelin and O'Connor have discussed the subnormal's use of language. They have also carried out a series of experiments into different forms of learning, making use of touch, sight and kin-aesthetic perception (i.e., the sense of movement). Two aspects of this work are of interest to us. First, subnormal children differ, as do normals, in their ability to learn through the different modalities. Some children learn better visually and others tactually. In fact, in some cases subnormals have been found to surpass normals (perhaps in the same way as blind people sometimes have a more highly developed sense of touch than sighted people). Secondly, Hermelin and O'Connor have found that subnormals may learn much better when they have to respond in a different modality from the one in which material is presented. For instance, in a tapping game their performance was worse if the adult tapped and the child then had to tap in answer, than if a tap by an examiner was a signal for the child to count aloud, or vice versa. In the first case the subnormal tended just to copy the examiner rather than to observe the rules of the game. But when he was forced to respond in a different modality, his response had to be different from the examiner's, and so he was forced to "think" before responding.

#### 4. SOME CONCLUSIONS

(a) **Detailed study and the planned approach.** We have stressed throughout this paper the importance of the detailed study of the individual child. If we are to help a child to grow mentally, we have to be aware of his problems, of his characteristic behaviour-patterns, and of his personal rate of learning. We also need to know

what is the next stage through which he must pass in learning and consolidating his skills, and what experiences will be most helpful to him at any one moment. It is a pity that the work of Piaget in this field is still not very well known in this country; we still lack a simple exposition of his method of child study, though Woodward's work in this field, to which we referred earlier, is most helpful (see also Woodward, 1959). Nathan Isaacs (1955) has also some interesting things to say about Piaget's method, although his chief interest is in normal children. A different contribution has been made by Bartlet and Shapiro (1956) in an article which should be read by all teachers of subnormal children. They explain how they made a detailed analysis, using sophisticated methods, of the specific disabilities of just one child. Knowing the individual characteristics of every seriously subnormal child and planning a systematic programme for him will not of course guarantee a complete "cure," or bring him up to a normal level. But it might take him much further along this road than he would otherwise go, and would in the long run be much less wasteful of the teacher's, and pupil's, time than many present procedures.

(b) **Direct and indirect approaches.** There are of course many ways of approaching the educational problems posed by the subnormal child. Duncan (1942) advocates concentration on tasks of a practical nature, often outside the classroom, because he believes in an appeal through the child's natural interests. He argues that children will come back to learning skills like reading and number when they have been in situations where the need for these skills is a real one for the individual child—say, if he has to read the labels on seed packets when gardening. He also argues that subnormals are less handicapped in 'non-verbal' than in 'verbal' intelligence. But this is dubious, and in any case many situations outdoors, say on a farm, call for far more intelligence than typical routine work in many factories. de Havas (1962) goes further than Duncan in some ways; he argues that the subnormal is often so handicapped verbally, that attempts to push him in this area will only confuse him more. Again, Bartlet and Shapiro (1956) after analysing the disabilities of the child mentioned above, tackled his difficulties by planning the re-education around his strong points, rather than making a direct attack on the weak areas.

These workers all believe that it is better not to press a child in areas where he has repeatedly failed, and not to push him into learning situations which he finds distasteful. They hope that as the child achieves success in one field, this will compensate for other failures; and that he may, in fact, return later to the weak areas with renewed confidence. In this article an attempt has been made to go a little further, and to suggest that if we analyse the child's problems accurately and organise his experience skilfully enough, there are no fields in which we cannot hope for some progress. We must be patient, and not expect results too quickly, but we may be confident that they will come.

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