The British Journal of Mental Subnormality
Vol. XXXIII, Part 2, JULY 1987, No. 65

THE PRAGMATIC PRACTITIONER: PIAGETIAN AND BEHAVIOUR TECHNIQUES IN THE TRAINING OF MENTALLY RETARDED ADULTS

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The Advances

Over the past twenty years, there has been a dramatic change in the treatment of mentally retarded adults. After more than half a century of research, behaviourist techniques are now applied systematically to training mentally retarded students. Such techniques have been instrumental in helping these people to help themselves. Behaviour modification has been used to teach everything from occupational skills to appropriate social behaviour. The optimism engendered by the 'new' techniques has been matched by a growing community consciousness of the existence and rights of mentally retarded people. Mentally retarded people should be treated like everyone else. 'Normalization' has become a watchword.

This fresh new optimism has rippled through the caring professions and the wider society. The optimism, itself, has led to advances reminiscent of the phenothiazine revolution. Suddenly, lifelong residents of the old institutions are living in small, community group homes. They are becoming an accepted part of their own communities. They are passing real lives as real people in real homes. The movement of mentally retarded adults into the community has placed new demands on caretakers. Some behaviour, acceptable in the institution, is not tolerable in the community. Behavioural specialists must produce more and better techniques for eliminating such behaviour. Nor is it any longer acceptable for mentally retarded adults simply to be placed in the community. They must do things that other people do, increase their independence, lead productive lives. The behavioural specialists are again being charged, this time to provide effective training to realize the opportunities offered by the community.

Behavioural Techniques

Behavioural techniques vary widely and are often at theoretical odds with one another. Some techniques, such as classical and operant conditioning, are strictly behaviourist, allowing little cognitive inference. Others, such as modeling and imitation, allow more cognitive interference but focus upon the behavioural outcome. The need for effective technologies to train mentally retarded people has produced a relatively pragmatic and atheoretical breed of behavioural technicians. Effective techniques require practitioners who can solve problems, not pontificate upon them.

For all its pragmatism, the behavioural approach retains characteristics which mark it off from other approaches. Indeed, these characteristics set this approach in staunch opposition to others. The characteristics of the behavioural approach relate to its theoretical origins (Martin & Pear 1983). Although different practitioners may delineate them differently, the behavioural techniques usually involve most of the following characteristics:

1. The subject's problem is defined by observed behaviour and assessment data are collected on that behaviour (Matson & Olinger 1985). Few mental inferences are made about the subject or the behaviour. The subject's problem is measured according to standards of behavioural deficit,

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behavioural excess, or behavioural inappropriateness (Martin & Pear, 1983).

2. Techniques are individually and systematically applied in order to bring about more or less permanent changes in behaviour or learning (Martin & Pear 1983, Matson & Olinger 1985).
3. Behavioural data are collected during and following intervention and evaluated according to previously defined behavioural criteria for success (Matson & Olinger 1985).

These characteristics make behaviour modification systematic and goal-directed. This systematic, goal-directed approach originates with the behaviourists' concern for a 'scientific' pursuance of their subject. Behaviourists try to avoid 'mentalistic' inferences. Instead, they centre upon observable and measurable behaviour. The method has been productive. There are problems, however, and it is to these problems that this paper is directed.

Mental retardation is a disorder of intellect (Hallas, Fraser & MacGillivary 1983). Intellect is the power of thought or understanding (Oxford English Dictionary 1980). The statements may seem self-evident, yet the implications are often overlooked. Behaviourists direct attention away from thought and focus, instead, on behaviour. The term 'handicap', with its physical implications, is coming to replace the term 'retarded' and its association with development (Heaton-Ward & Wiley 1984). The focus on 'intellect' has changed to a focus on 'functioning' (Hallas, Fraser & MacGillivary 1983). An individual's level of functioning is defined in terms of adaptive behaviour, yet there is little or no adequate description for adaptive behaviour. This change of emphasis never properly finds its way back to the definition of the disorder. That definition has not changed, mental retardation is still a disorder of intellect.

This paper will not call for the abandonment of behaviour modification techniques, however. They have proved their rightful place in training. Instead, it will attempt to extend the pragmatism of the behavioural technicians. It is now the practical problems of behavioural modification, itself, that stand in the way of technological advancement. The purity of various learning theories was sullied by the pragmatic need of behavioural technicians to solve problems. Where behaviour modification techniques have failed to solve new problems, harried practitioners must begin to look elsewhere for answers.

The Cognitive Developmental Approach

The approach advocated here is not new at all. It was developed by the psychologist and epistemologist, Jean Piaget, beginning in the early 1920's. Since the late sixties, it has been used in some form by primary schools and childhood specialists throughout the industrialized West (Heaton-Ward & Wiley 1984, Maier 1969, Furth & Wachs 1975, Bryant 1982). It has been heavily researched (Bryant 1982, Flavell 1970). Indeed, it is frequently used in the education of mentally retarded children. However, the approach has rarely been used in the care and training of mentally retarded adults. If this paper offers anything new, it is the argument that a consideration of cognition, of intellect as well as behaviour, should underpin the care and training of mentally retarded adults.

The Problems of Behavioural Technologies

The first step in designing any behavioural programme is to define the problem. Behavioural techniques offer little help in deciding whether there is a problem. Implicit in every behaviour programme is the belief that the practitioner, or some-

body, knows why a skill is being trained. From an immense number of **possible** skills for which a mentally retarded person might be trained, someone decides what **will** be trained. Behavioural technology provides little guidance in that decision. In fact, the criticism is one that goes right to the heart of behaviourism. The behavioural technician may provide a most effective training for a complicated skill that serves the most trivial of purposes. In so doing, the technician may even be satisfied that he or she has performed according to his or her mandate. The pragmatic utilitarianism that has been so effective in furthering behavioural technology is thrown out of the window.

The problem with the behavioural approach is that it provides no framework for deciding the next logical step after reaching criterion behaviour. It views the organism as a machine. After the machine has all the necessary equipment to wash dishes, one could get an add-on dish-drier or one could get an add-on floor-mopper. The choice is arbitrary. It may be possible to evaluate the dish washing effectiveness of the dish-washing routine with a fair degree of precision. It may also be possible to give a fine appraisal of the floor-mopping attachment. The technology provides no assessment of the utility of the floor-mopping bell against the dish-drying whistle. While in this example it may not be important to decide between the two skills, the example does illustrate the lack of coherent direction implied by the behavioural technique.

The general problem illustrated by the example is that behavioural technology provides no way of evaluating the progress of the person except along behavioural criteria that are arbitrarily defined by the technician. It is piecemeal. If a mentally retarded person can dress himself and if he can cook for himself, has he progressed to a higher level than someone who cannot? Using only these two behavioural measures, the person with the skills has progressed to a higher level than the person without them. However, at the end of the last century, much of the industrialized upper middle class did not possess just those skills. Without running to class inferences, it should be possible to make a systematic evaluation of the whole person which can easily distinguish between mentally retarded people and the Victorian upper middle class. What is more, such an evaluation should be able to distinguish the general progress of the **person** from arbitrarily chosen behavioural **skills.** If such an evaluation is possible, it might also suggest a rational evolution for personal progress and new means by which progress might be made

In the foregoing example, the behaviourist would, quite rightly, argue that the error in evaluating people using only two behavioural criteria is that one may be left with precisely the paradoxical result illustrated. It is necessary to sample and measure both the range and complexity of all the acquired skills. However, the technology doesn't provide anything more than arbitrary or intuitive criteria for sampling or evaluating the range and complexity of one person's skills against another's. While there may still be room for purists to argue their psychological theories, the time has come to broaden a pragmatic behavioural technology to a proper psychological technology. Such is particularly the case in the care and training of mentally retarded adults.

Piaget

Children develop into adults, that is, they progress from a physically and mentally less mature state to a more mature state. While mentally retarded youngsters may develop to physical maturity, they do not usually reach ultimate mental maturity. Their mental growth is retarded. It lags behind the development of their age peers. While physical signs and physiological characteristics may

define particular syndromes associated with mental retardation, the ultimate diagnostic criterion for mental retardation is delay in the mental development of the child. A developing child passes through a number of stages. Different theoreticians have demarcated different stages, but the most widely researched and broadly accepted delineation is that of the Swiss psychologist, Jean Piaget.

While Piaget's work has had a profound influence on our understanding of mentally normal and retarded children, it's implications for adults have been less widely accepted. Research has tended to concentrate upon the adolescent and pre-adolescent years. Piaget's cognitive characteristics (for Piaget's theory is a cognitive theory) of the adult have been relatively ignored. Because comparatively little attention has been given to Piaget's view of mature thought, his theory has been more or less irrelevant to practical work with adults. By the time that the child reaches twelve or fourteen, technologies derived from Piaget assume much less importance in his or her life. Because mentally retarded children develop less quickly, Piagetian methods sometimes persist until the child leaves school. Legal adulthood brings the inevitable end to the use of Piagetian technologies, even where they are used with the mentally retarded. Whereas the developmental approach is often dropped much earlier than the legal majority of the student, it is only rarely used beyond legal majority. Does the cognitive developmental approach become irrelevant at the age of legal majority?

The child's intellect develops from infancy through childhood to adulthood. If, for some reason, the child does not intellectually progress through these stages at the same rate as other children, they may reach legal adulthood before they have reached intellectual maturity. Final intellectual maturity may not be possible for some people, but is further intellectual maturation not possible beyond legal adulthood? If the intellectual development of mentally retarded people is delayed, is there not reason to hope that their development might be pushed further in the years following normal intellectual maturity?

The Story of R: The Expanded View in Action

R is a moderately retarded young man of 24. His parents died when he was an infant. He spent most of his life in community care but has never lived in a large institution. About a year and a half ago, R moved into a new community care facility. At that time, he could speak fluently, but often mispronounced words and used incorrect grammatical structures. He could read but had poor reading comprehension. He could write single words but could not construct sentences and had difficulty with vowels, some consonants and uncommon digraphs. He could count and do very simple addition and subtraction. He tended to neglect his personal cleanliness, but he was quite able to dress himself and, if prompted, he knew how to clean his teeth, wash himself and bathe. R was very poorly motivated. If left to himself, he stayed awake much of the night and slept a lot of the day. His only apparent interests were cigarette smoking and music. Although only rarely violent, R was extremely destructive. When frustrated, he broke anything from crockery to fixtures and fittings. Sometimes this behaviour was overt, sometimes covert. Probably as a result of his antisocial behaviour, R had been prescribed a fairly heavy dose of a major tranquilizer and an antiparkinson drug. He refused to apply himself to virtually all his set tasks. He showed little interest in cooking or food and usually ate with reluctance.

Soon after he arrived at his new residence, R was taken off all psychotropic medication and was placed on a token economy. Although his token economy was applied to some very specific behaviours, it also incorporated a structure for the

evaluation and reinforcement of generalized programme tasks. This generalized structure allowed the nature and difficulty of programme tasks to evolve, while retaining the same reward structure. In this way, the problem of when to withdraw the economy was avoided. No negative reinforcement was included in the economy, that is, it was not possible for R to have tokens removed except by direct expenditure. He could purchase all manner of items, including cigarettes and music cassettes, with his tokens.

For the first two or three months of its operation, the token economy did not appear to motivate R very well. He would work until he had sufficient tokens to buy a cigarette, after which he would stop working until he wanted another one. Later, however, he began to respond. His programme work improved. At the same time, and perhaps for other reasons, his destructive behaviour began to reduce in frequency.

From the beginning of his stay, R was expected to take part in programme work each weekday from 9 a.m. to midday and 1 p.m. to 4 p.m. His programme work included literacy; numeracy; social skills; prevocational skills; practical work, such as gardening and stacking wood; and life skills, such as shopping, menu planning and budgeting. Outside his programme time, he was expected to cook; to keep himself and his clothing clean; to do housekeeping chores; and to participate in various social and recreational activities.

After seven months, R was able to write in full sentences but had difficulty with verb endings and still confused 'a' and 'e'. His reading comprehension had improved and he had started to read in simple phrases. He could do most arithmetic carrying and borrowing, use dollars and cents, use a calculator and do simple mental arithmetic. He could do additive multiplication. R independently attended to his own hygiene.

At this time, R was tested on simple conservation tasks. Although he appeared able to conserve matter, he was unable consistently to conserve continuous volume.

Conservation is a Piagetian concept through which the child gains stability in his mental construction of the world. Conservation of matter is best represented by the physical law, 'Matter cannot be created or destroyed'. Children normally acquire this concept at between eight and ten years. Conservation of volume, on the other hand, is not acquired until after 12 years. It requires that a child understand that transformation of the dimensions of an object does not transform its volume.

Conservation of continuous volume is well-illustrated by a problem first set by Piaget. R was required to say when two identical glasses were equally filled with water. The water in one of the glasses was then poured from that glass into another empty one of different dimensions. R was then asked to say if there was still the same amount, or volume, of water in each filled glass. If he was able to answer unequivocally and consistently that both glasses had equal volumes, then he was considered to have conserved volume. Young children are unable to see that changes in one dimension are accommodated by opposite changes in another dimension. Because they fixate on only one dimension at a time, they erroneously assume that a change in that dimension has resulted in a change of volume.

Over the following five months, R's programme work was broadened to include mapping and map reading; health and hygiene; passive reading and artwork. He was never instructed in conservation of volume. He was exposed to water play where he was given cups of coloured water or water colours and was encouraged

to mix them. He was also required to measure quantities when he was preparing his meals. He worked with numbers and quantities every day and was provided with a variety of aids, including an abacus and a set of Cuisinaire rods. R was encouraged to use a pencil and paper in order to group pencil marks for multiplication and division. His mathematical work was always directed to helping him discover the abstract concepts behind his work. Hence, for example, he was given exercises that illustrated, but did not articulate, the reversability of arithmetic operations. At the end of five months, R was able unequivocally to conserve continuous volume.

The improvement in R's ability to conserve did not easily lend itself to a behaviourist explanation. Even had there been an easy behaviourist explanation, it would have had little utility or pragmatic value. Yet, using Piagetian criteria, a major advance had taken place. That advance was related, not to a simple ability to transfer training, but to an advance in R's ability to construe his own world and, hence, act efficiently within it. There was an **intellectual** advance which improved the **utility** of R's ability to act within the world. This new achievement also implied the next logical step in his intellectual development, the logical and mathematical manipulation of the principles of continuous volume.

R's intellectual achievement in volume conservation was intuitively supported by informal assessments of his intellectual advances by both his caretakers and others who knew him. There seems little doubt that R's token economy, a behaviourist intervention, was largely responsible for motivating R to participate in intellectually enriching activities. That the activities became, of themselves, reinforcing, was evidenced latterly by R's desire to carry on some of the activities outside his programme time and without token reinforcement.

R's achievements may be a little anachronistic. Prior to his move to his new residence, he had often experienced inconsistent treatment and expectations of him that were beyond his abilities. It is possible that his intellectual potential was considerably greater than his abilities had suggested. Hence, his exposure to an appropriately enriched environment may be interpreted as an opportunity for him to 'catch up' to his potential, rather than to push forward his natural intellectual boundaries. Reference to Piaget would suggest that the argument may be irrelevant. He argues that intelligence is, in any event, the product of adaptive interaction between the organism and its environment. Piaget sees adaptation as the process by which the organism assimilates the environment into itself and accommodates to the environment. If the person is not exposed to the appropriate environment, then he or she cannot develop intelligence, no matter with what biological propensity he or she has been endowed.

More of the Expanded View: The Story of S

S is a severely to profoundly retarded man of 38. He was institutionalized from age 7 until he was 36, when he moved into a new community home. After a little more than six months in the first community home, S and his two fellow residents moved from the first home to a small, new second home. In the first home, S's loud screaming had presented a problem. Much attention was given over to it. Perhaps because of his screaming, perhaps because of his institutionalization, S had only limited skills when he moved into the second community home. He could put a face cloth to his face when given a signal prompt to wash, but he required hand-over-hand direction to carry out all other self care. He was doubly continent. He knew how to make his bed, but required hand-over-hand direction. He would take his medication (anticonvulsants, phenothiazines and night sedatives) at a

signal prompt. He had no floor washing skills. At the dinner table, S could use a fork without prompting, but required hand-over-hand direction to use a knife. In restaurants, he was messy, bolted his food and screamed. In stores, he screamed and attempted to eat the displays. When out walking or doing physical training, he wandered aimlessly, screamed and ate nearby leaves and berries. His measured attention to caretakers was extremely limited. Apart from screaming, S made no verbal sounds apart from a wet, blowing noise that he made through his closed lips when he appeared happy. He had a limited understanding of primitive action verbs such as go and come (which he confused) and a few nouns. He seemed to know his name.

Although he has now spent a year and a half in the second home, S has continued to scream as a sign of frustration but does so less frequently than before. Five different behavioural methods have been tried in order to eliminate the behaviour. S also assaults one of the other residents occasionally. The assaults and screaming are a source of irritation, but S cannot be described as a serious behavioural problem.

During the past year and a half, S has undertaken intensive scheduled programme activities each weekday. The activities begin when he gets up in the morning and run to the early evening. These activities have included strictly structured behavioural imitation programmes. They have also included less structured life skills programmes intended to teach such things as independent self care and household chores. Several low-structure enrichment programmes have been used. These latter programmes are structured play and include use of such equipment as a Lite Brite toy, wooden puzzles, wheeled toys and building blocks. With some success, S has been encouraged to participate in co-operative play.

S is now able to carry out his own self care, including some shaving, with little more than a verbal or signal prompt. He now makes his bed on his own without prompting. He will get out a mop and bucket on a verbal or signal prompt and fill up the bucket and mop the floor without a prompt. He still speaks no words, but his understood vocabulary has increased and he makes a variety of speech-like conversational sounds. S can now use a knife to cut and block, although he occasionally requires help in cutting meat. He goes into stores and restaurants and, apart from carrying his hands at odd angles and grimacing (possibly tardive dyskinesia, a permanent side effect of phenothiazine tranquilizers), he behaves appropriately. His phenothiazine tranquilizers have been discontinued and he rarely uses night sedatives. He takes part in and enjoys a variety of physical recreational activities.

Up to a few months ago, S did not search for anything that had been removed from his immediate vicinity. The problem may have been strictly behavioural, that is, S didn't look because he had not been taught to do so. Alternatively, it might have been that S had not acquired the cognitive structures for object permanence. Each possibility would suggest an entirely different solution. Because each solution is different, simply drawing up and implementing a programme might be a waste of time.

Following Piaget, infants and young children do not invest an object with permanence. The object exists only so long as they can see it. When it disappears, they simply assume that it no longer exists and turn to something else. If an infant or a young child has not acquired object permanence, then they cannot predict if or where an unperceived object will reappear. They do not have sufficient under-

standing to search for an unseen object. Before they can be taught to search effectively, they must first discover object permanence. On the other hand, if the young child or infant has discovered object permanence, then it should be a relatively simple task to learn how to search for an object.

If S was to learn to put on his own clothes, then he would have to learn where he had put them. It was decided to test him for object permanence. Reinforcement trials had established that S loved jelly beans and would work for them. He was placed at the kitchen table and a caretaker sat opposite him. He was shown a jelly bean, then the jelly bean was placed under one of three empty boxes on a tray immediately in front of the caretaker. The tray was then pushed towards S. S invariably searched the box in which the jelly bean had been placed. In later trials, the jelly bean was placed in one of six cups and the cups were moved (as in the shell game). S would invariably go directly to the correct cup to get the jelly bean. If three cups were logically excluded as potential hiding places for the jelly bean while three others were logically possible hiding places, S would search for the jelly bean in only the logically possible hiding places.

S had obviously attained a fairly high level of object permanence. He could easily be taught to retrieve his own clothes from his own drawers, simply by first getting him to place his own clothes in his own drawers. Similarly, he quickly learned where to get the table crockery, by teaching him first to put it away in the appropriate places. S soon began spontaneously to search for personal items that he, himself, wanted.

Conclusion

The examples of R and S are not provided as an assertion of the ascendency of cognitive theory over behaviourist nor as a scientific validation of either theory. They are given as an illustration of how the pragmatic use of technologies, thrown up by two competing branches of psychology, can provide complimentary tools for the practitioner. As their two stories show, both S and R have, by whatever measure, made great gains. Although the stories of S and R were used, the authors could equally have chosen others.

At the present time, there is little pragmatic use of nonbehavioural technologies in the care and training of mentally retarded adults. Social policy and professional guidelines, as well as clinical practice, seem to have excluded consideration of intellect as a valid source for technologies that are, after all, directed to an intellectual problem. If practitioners are to build upon the recent gains in the care of mentally retarded adults, then they must go beyond more ingenious, even more cognitive, behavioural techniques. They must begin to consider applications of purely cognitive theories. The developmentalists probably offer the most fertile and relevant 'new' technologies because their problems parallel the problems of the technologists working with mentally retarded adults. There will be others, however.

In their review of the subject, Zigler and Balla (Zigler & Balla 1982) have gathered good evidence that intellectual development proceeds in the same way, but at a different rate, in both normal and retarded children. Balla and Zigler are most interested in the theoretical points of the controversy they examine. The **practical** implications of their argument is that technologists might fruitfully examine the applicability of developmental and classroom techniques to the care and training of mentally retarded adults. Pragmatic reference to developmental techniques might provide fruitful, 'new' alternatives for practitioners faced with real problems in a real world. In so saying, it would be as foolish to abandon the proven

technologies of behaviourism as to ignore the equally powerful cognitive techniques.

Theoretical arguments can safely be entrusted to the theoreticians. The need of practitioners is for anything that **works.** Neither clinical practice nor social policy can any longer afford the luxury of a comfortable theoretical position. Both must begin to address the real problems of the real world.

Acknowledgment

The authors gratefully acknowledge the dedication and assistance of their former staff in the preparation and application of the techniques described in this paper.

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