

# VISUAL FEEDBACK IN THE SOCIAL LEARNING OF THE SUBNORMAL

D. F. CLARK, M.A., A.B.Ps.S.

Senior Clinical Psychologist, Leicester Area Psychological Service

## I. Introduction.

The application of the principle that behaviour can be modified and that learning can be effected by a relaying back to the subject of information about his performance so far has been fairly widely used both in industry and the Forces. The example of the pilot's position in relation to his landing glidepath being fed back to him in the form of a dot-dash auditory signal immediately springs to mind. A search of the literature, however, reveals very little evidence, if any, of any application of this technique to the more complex social learning of individuals within groups, or in particular of the social learning of the mentally subnormal.

With the flush of optimism, largely supported by research, which has been seen in the past decade or so about the hitherto unsuspected potential for social and industrial rehabilitation in mental defectives from the grade of imbecile up, there has come an intensified realisation that no longer are passive nursing and the prevention of physical disease the sole aims of those professionally concerned with such persons. On the contrary, there has been a profusion of studies, all stressing the need for active therapy planned to bring about the effective re-entry into open society of the diagnosed subnormal. These researches, largely psychologically and socially rather than genetically or biologically oriented, have recently culminated in a valuable publication edited by A. M. and A. D. B. Clarke (1), themselves pioneers in this area of research, and Gunzburg, one of the main contributors to this volume, goes so far in a previous paper (7) as to state that "the feebleminded youth . . . is primarily a social problem case," and, moreover, he points out how the modern therapeutically oriented hospital "provides a social framework within which one learns the lessons of living in the community," and how a fairly permissive atmosphere requires of the subnormal a "better grasp of social living" than either the subnormal had shown so far or than the old custodial type of hospitalisation demanded.

A number of papers, such as those of Tizard and O'Connor (16) and Lawrence (9), and one by the writer dealing with non-ascertained subnormals (2), all stress the greater relative importance of emotional or social stability than of intelligence in determining a favourable rehabilitation. Much time and experimental ingenuity have also gone into study of the effects of, for example, incentives on the performance of subnormals. Outstanding in this respect are the papers of Gordon, O'Connor and Tizard (6), O'Connor and Claridge (14) and Walton and Begg (17). All of these writers have been unanimous in pointing out that, contrary to the views of Lewis (10) and Kallman (8), there is no real difference between normal people and subnormals, even imbeciles, in their response to incentive conditions. Furthermore, O'Connor and Claridge's results suggested that so far as incentives are concerned, a mere striving after a goal by itself did not significantly increase performance level unless it was accompanied by "social approval of work and encouragement." Walton and Begg then went on to suggest that competition and encouragement seem to provide superior motivation conditions than does goal striving, and they endorse the view expressed elsewhere (11) that the factor of self-esteem is of great importance in determining and maintaining an improvement in performance. This, too, is in perfect keeping with what one would expect in normals.

Nowhere, however, has the notion that knowledge of results might be used to facilitate the learning of some aspects of social behaviour been much tested, and

the present study is an attempt to gauge its usefulness in the setting of a small hospital unit.

## II. Population.

The experimental population comprised the total complement of from 50 to 70 adolescent boys housed as a separate unit of the Glenfrith Hospital, Leicester. This unit consists of a large country house about ten miles west of Leicester, together with its own craft workshops, gymnasium, gardens and playing fields, and since its opening two years ago there has been an attempt to conduct it on rather more permissive lines than has been customary in most hospitals of this type. The staff are particularly relaxed in their relationships with the boys, and discipline is maintained on the whole without using strong sanctions. The atmosphere is more one of a therapeutic community with a very positive aim of resocialisation and training. Group therapy and individual counselling is carried out by the psychologist who, since his other commitments enable him to visit only periodically, has a unique role of being neither "one of the lads" nor "one of the staff." Much could be written about this itself, but suffice it to say that rapport with both "lads" and "staff" is very good, and both have shown remarkable flexibility throughout the experiment.

The age range of boys is from 13.0 to 21.3, with a mean age of 17.3,  $\sigma = 1.97$ . Some have previous experience of institutional life but others, referred from Courts and Local Authorities, have none. The mean I.Q. of the group is 58.65, with a range of from 30 to 90. In view of the comments of so many workers in the field that I.Q. does not necessarily reflect social competence, it is interesting to note that on the Vineland Social Maturity Scale the mean S.Q. is 71.94,  $\sigma = 29.12$ , and range from 15 to 115. Mitchell (12) and others point out that social skills and employability are much more closely related to Social Quotient than to I.Q. at this level, and this fact was borne in mind when later the validation of a criterion of performance became necessary.

The wide scatter in both I.Q. and S.Q. is due to the fact that relatively few criteria of selection for this unit apply beyond sex and age. The view is taken that practically all patients, other than those requiring full nursing care or who are grossly physically handicapped, can benefit to some extent from this sort of regime and atmosphere. Consequently there are some Mongols and disturbed schizoid imbeciles at one end of the scale and some relatively intelligent inadequate or aggressive psychopaths at the other.

## III. Method.

The aim of the project undertaken in this setting was to attempt, in conjunction with a busy training programme, to improve one particular aspect of the boys' social competence, namely, effective and valid judgment of their peers. This is, of course, something one does implicitly in normal living, but it seemed to the writer that the poor social adjustment of many subnormals was due not so much to bad judgment as to the fact that no judgment was really made at all, their actions following only on impulse rather than on assessment. In considering this problem in social learning, it seemed that much of the difficulty lay in the process of cue selection. Dollard and Miller (4) have already pointed out that "the importance of cues in the learning process becomes apparent from an examination of cases in which learning fails through the absence of cues." This is a case in point. In any social situation the cues triggering off appropriate behaviour may be at least implicitly available, but the subnormal cannot select these unless they are separated out, as it were, from the relative confusion of his total perceptual input. An attempt was made, therefore, to isolate appropriate cues by showing all the boys weekly ratings in terms which would be meaningful to them of their own behaviour and of that of all the other boys.

Merit rating schemes of this sort are, of course, well known in industry, but in common with one such reported by Davis (3) most of these permit only indirect feedback of information to the ratee in the form of bonus payments for example, and the data of such ratings are generally kept well out of sight of the ratee and certainly of his co-workers. Such a system in the setting being discussed would lose its whole point and, furthermore, would certainly result in an unhealthy growth of paranoid feelings amongst the boys. Anxieties about rejection or the favouritism of others would be stimulated rather than reduced. The ratings of every boy were therefore pinned up on a board where that boy and any others could review them from week to week. The raters, of whom there were five, and who might be male nurses or craft supervisors, and who varied as the boy moved from one section to another to eliminate rater bias, were encouraged to explain to any boy the specific reason why a high or low rating had been given. This enables the sub-normal with his "concrete" type thinking to see directly how certain specific actions are valued socially. The main hypothesis to be tested was that if this were done the boys' capacity for making valid social assessments of each other would increase. This is a first step toward gaining social competence—"picking your company wisely" and making more objective and less subjective judgments about those in the community about one.

If attention were to be maintained and interest continued in these cues or rating scales, then some form of reinforcement would be required. To quote Dollard and Miller (5) again, "If a generalised response is not rewarded, the tendency to perform that response is weakened. By the reward of the response to one pattern of cues and the non-reward or punishment of the response to a somewhat different pattern of cues, a discrimination may gradually be established. The process of discrimination tends to correct maladaptive generalisations. It increases the specificity of the cue response connection." Consequently, to meet this requirement and those of researches into incentives referred to above, a system of graduated goal setting was established. This had two aspects. First, it motivated the boys to score as highly as possible on the rating scales, and second, it put a premium on the capacity to make effective judgments of social competence.

The main change instituted involved a reorientation of the social organisation of the unit. A prefect scheme was set up and certain responsibilities were shifted from the hands of staff to those of the prefects. These included, for example, the maintenance of discipline in dormitories and the routine cleaning of these, the care of low grade patients and the solving of minor squabbles and difficulties. Prefects are elected on the basis of high ratings, the four boys with the highest consistent quantified composite score on the rating scale over a 16-week period being automatically chosen. Prefectship brings with it prestige and increased parole rewards, and, further, a successful holding of the role of prefect selects a boy for a later goal, discharge to licence and work at a hostel from where, if successful, final discharge into the community takes place. So much for the motivation to be rated highly.

The technique used to force the boys to make social judgments was related to this system in that the prefects were then put in charge of teams of about 15 boys each, each team to use a separate dormitory and each under its own prefect to be relatively autonomous as regards domestic duties and discipline, etc. Since each team had to do work efficiently, maintain its own inner harmony and relationships with other teams and solve its own problems, it became an advantage for each prefect to select for his team the most socially desirable boys. This selection was carried out as follows. All boys were assembled in one room by the psychologist. The four prefects were nominated in rank order (by rating scores) and were asked to pick whom they wanted for their teams in sequence from the residue of the boys. In other words, the top scorer chose first, and his choice was therefore assigned

rank order of 5, second highest scorer chose next from the remaining boys, his choice having rank order 6, and so on until all the boys were allocated to teams, and the psychologist had taken discreetly a ranking of the boys by themselves in terms of social desirability. It should be added that this was not simply a ranking compiled by four judges, because as soon as the prefects had picked someone for their team the next choice became the subject of discussion between the existing team members. The final ranking then became a sort of distillation of the social perceptiveness of all the boys, modified only by the element of dominance which, it turned out, was generally evenly distributed over the terms.

This procedure was repeated at 16-week intervals over a period of twenty months. It was thought, on purely empirical grounds, inadvisable to shuffle groups more frequently than this lest instability due to disrupted loyalties and too frequent changes of behaviour pattern might ensue. A week or two was generally required before a new set of teams settled down properly and got used to each other. Another point was that too closely spaced self-rankings of this sort would suffer from halo effect from previous ranking rather than from the current cues available in rating scale form. In order to get some sort of control ranking, however, the first time the boys were brought together for team selection, they were told what the purpose of the prefect system was and how they would be required to work together, but no ratings had previously been shown—or indeed made. On this occasion the psychologist deliberately made the boys use their own criteria simply by saying to the assembly: "Who are the best four boys here?"—getting a consensus of opinion and then having the boys rank the first four by the technique of paired comparisons. The ranking procedure was then continued as outlined above.

Details of the Rating Scale used will be described more fully in a later paper, but it should be fully acknowledged here by the writer how much he owes to Dr. Gunzburg at Monyhull Hospital in this respect. The scale is in point of fact a slightly modified version of one which has been in use on an ad hoc basis at Monyhull for some time.\* On the modified version a split half reliability of 0.90 using the Spearman-Brown prophecy formula has been established, but the high inter-correlations of some of the subscales suggest that the scale could be substantially curtailed without reducing reliability. Each subscale is rated on a five-point basis and focuses attention on various aspects of workshop and general behaviour, personal appearance, working capacity and quality. A total rating score is calculated by averaging separate subscale scores, and each point position relates to a definite criterion such as: Rating 1="Up to standard expected for Licence," down to Rating 5="Definitely not good enough." Scores, therefore, range from 1.0 to 5.0, and when multiplied by 10 for convenience these became the criterion in the experiment. The validity of these scores was established by correlating them with boys' social quotients as measured by Doll's Vineland Social Maturity Scale, the informant who was used in completing this scale being the Deputy Chief Male Nurse, who as it happens had nothing to do with the Rating Scales. When this was done ( $N=59$ ) a validity coefficient of 0.90 after correction for attenuation was obtained.

On survey of average staff rating scores over all four sixteen-week periods during which this has been assessed so far, it was found that by and large there were relatively small individual variations within individuals as compared with

---

\*An example of the rating scale used before it was modified for the purpose of this paper is illustrated on page 343 of the volume edited by the Clarkes (1958). The main differences in rating scale used here are that the sub-scales concerned with "Time-keeping" and "Care of Tools and Materials" were omitted. For purely statistical reasons other sub-scales could also have been omitted, but they were in fact retained for good psychological reasons.

between individuals. Analysis of variance on data for 37 cases actually checked is in Table 1.

In view of this, the criterion against which the boys' self ratings was to be judged was held to be the average rating score each boy had obtained over the whole period of the experiment. This appeared to measure in this population, as has been shown, the same sort of social competence as the Vineland Scale and also reflected the information about the boys actually being fed back to them by their inspection of the rating scales. Accordingly, the more specific hypothesis became possible that if the process of feed-back was to have any effect on the accuracy of the boys' judgment of each other, then the rankings they would make would on successive occasions approach more and more closely to their ranking on the basis of criterion scores.

#### IV. Results.

It was first thought that rank order correlations would serve this purpose, but it soon became apparent that, because of the fluid population due to departures on licence and to new patients, the total numbers ranked on different occasions would probably vary. In fact they were on the five occasions 50, 51, 54, 62 and 55 respectively. This meant of course that a boy ranking, say, 30 on the first occasion and on the last had improved, or was being seen as more socially useful in a way not indicated by his rank order. Hull's method of converting rank orders to scores on a scale of 1—100 was therefore employed and Product-moment correlations were used, the criterion scores being left as they stood and not being converted to rank orders.

The scores obtained from the boys' successive self-rankings were therefore correlated with the criterion score and the results are shown in Figure 1.

Perhaps the first point worthy of comment about these results is the unexpectedly high correlation achieved by the boys under the control conditions before feedback was available. Scrutiny of the actual ranking list does show, however, that on this occasion the significantly high correlation was less a prediction of future rating scale results than an effect of the teams being formed of small groups of boys who already associated for a variety of reasons such as football team membership or homosexual attractions rather than for their social usefulness and skill. These and other influences were no doubt indirectly related to social grading later to be stressed. At this stage it seemed unlikely, therefore, that dramatic increases in correlation could be brought about by any means, so that the sudden and highly significant increase to 0.83 after the first four months of feedback was all the more remarkable and suggested the possibility of a "Crespi effect" or "elation" response to incentive commented on by O'Connor and Claridge (15).

In none of these correlation coefficients was correction for attenuation initially made, since it was their relative differences which were of interest rather than their absolute value. The significance of the differences of each of the "feedback" coefficients from the Control coefficient was then checked using Fisher's "z" transformation, and the probabilities that the differences are due to chance factors have been inserted above the columns in Fig. 1.\*

Later, however, so that a better notion could be gained of the "intrinsic" relationship between the two variables when account was taken of the unreliability

---

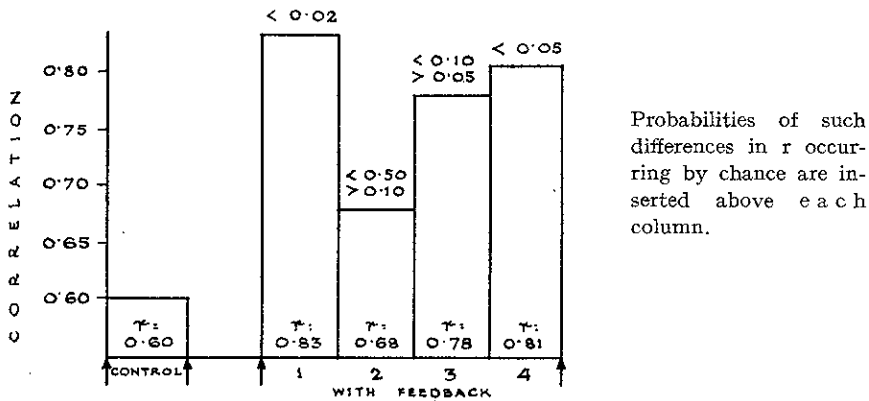
\*The difference between obtained correlations which is significant at, for example, the 1% level (i.e.,  $P=0.01$ ) is one which could be expected to be due to chance factors only once in a hundred times, and it would therefore appear to be due (as the experimenter hopes) to elements in the experimental design. Usually, where a difference is found to be probably due to chance factors more than five times in a hundred instances it is not considered statistically significant. This is not to say, however, that no heed should be paid to it.

**Table 1.** Analysis of variance.

Source	df	Sum of squares	Variance
Between groups	2	241.98	120.99
Within groups	108	97380.82	901.67

∴ F=0.13 N.S.

**Fig. 1.** Correlations between criterion and successive Ranking Scores without and with Feedback.



**Table 2.** Correlations between Criterion and Ranking Scores when corrected for Attenuation.

Correlation (r) between	Obtained r	Corrected r	Fisher's z	N	Significance of Difference from Control r
Criterion Control Ranking	0.606 ± 0.006	0.72	0.9077	50	
Criterion 1st F-B Ranking	0.833 ± 0.029	0.99	2.6465	51	P < 0.01
Criterion 2nd F-B Ranking	0.684 ± 0.049	0.81	1.1271	54	P between 0.5 and 0.1
Criterion 3rd F-B Ranking	0.781 ± 0.034	0.93	1.6586	62	P < 0.01
Criterion 4th F-B Ranking	0.814 ± 0.031	0.97	2.0924	55	P < 0.01

of the measures, correction for attenuation was made.\* This procedure simply involved dividing each correlation coefficient by a common factor (0.843) comprising the root of the product of the two reliability coefficients concerned. It is pointed out at the same time, however, that  $r$  corrected in this way gives a theoretical rather than an obtained value and gives an estimate of the relationship to be expected when both measures are more effective than they actually are in the present instance. In Table 2 obtained and corrected values of  $r$  are shown together with  $z$  equivalents.

## 5. Discussion.

While it is quite apparent from Fig. 1 and Table 2 that the general process predicted by the hypothesis has been confirmed, and indeed the individual differences in correlation coefficients, with one exception, have been shown to be statistically highly significant, the rather unexpected pattern of these results warrants some comment. In particular it was expected that a trend toward higher correlations would be gradual, progressive and decelerating—eventually reaching asymptote. The immediate sudden increase to 0.83 (Fig. 1) was therefore surprising.

One of the most plausible explanations for this is that the necessity of having to complete ratings each week for every boy in his charge involved the nurses and supervisors much more consciously in more careful, attentive and detailed relationships with the boys. The therapeutic effect of this would almost certainly improve the stability of each boy to a significant degree, with the result that his powers of social discrimination might well have been improved. It is important to remember, however, that without having seen ratings, the boys could have no idea of quite how to rate each other except in terms of their own socially immature or mistaken frames of reference. Further, this element of attention by supervisors and nurses was held constant throughout the experiment, so that it does not wholly explain the changes in correlations.

The second explanation has been mentioned earlier, and is that the sudden leap in  $r$  with the first impact of feedback techniques is a "Crespi" effect due to a change in the "work" situation characterised by the relatively sudden institution of encouragement and incentives. This "elation" response as described by O'Connor and Claridge (15) normally disappears and the boys settle down to a more gradual improvement after initial drop in performance. This apparently happened in the situation here.

If it is accepted that the initial high  $r$  of 0.83 was in fact the effect of visual feedback, then of course two further possible lines of argument arise. The first is that the correlations of the criterion with FB1, FB3 and FB4 represent the true effects and that the one with FB2 is the anomaly; the second that the correlation of criterion with FB1 is the anomalous one and the others represent the true process. To deal with the second argument first, it has already been to some extent supported by the arguments above, and is further supported by the possibility that the introduction of feedback in the form of showing all ratings was such a novelty to the boys that in the first subsequent ranking they tended to discard their own judgments

---

\*If psychometric measures were perfect and no random elements affected them, then a "Correction for Attenuation" of any coefficient of correlation would be unnecessary. Unfortunately, various chance or accidental errors in scoring or answering tests can reduce the reliability of these tests (i.e., can cause the same person to get slightly different scores on separate occasions) and this adversely affect the correlation between them. When the correction for attenuation is made, the correlation coefficient obtained is the true one which would be obtained if the measures were perfectly reliable.

in favour of estimates based almost wholly, either at a conscious or unconscious level, on the ratings. Later they were influenced by their own estimates based on other cues as well as by the ratings, and gradually the influence of the ratings became more and more indirect as the boys introjected standards set by these into their own judgments. A growth process of this sort appears to be more consistent with the context of the experiment rather than the sudden shift from one "fixed state" to another "fixed state" implied by the first argument.

The only factor supporting the first view is that when the actual boys' ranking lists on the occasion of FB2 were studied, it was found that one of the prefects choosing (N.A.) was a good worker, co-operative and sociable but a notoriously submissive character and a poor judge of others. He had systematically chosen other boys rather like himself, and as they discussed the next choice, so the error multiplied, with the result that one team was very unbalanced in terms of social competence vis à vis the other three. On the whole a given boy's rank order did not vary excessively from time to time, but on this occasion the boys in N.A.'s team were seen to have quite different rank orders from those they had held before or subsequently. Not unexpectedly, N.A. failed as a prefect but continued to rank reasonably highly in the group as a whole. It would seem, therefore, that the correlation between criterion and FB1 is probably spuriously increased to a certain degree by a combination of factors, "Crespi" effect, novelty, and so on; while the correlation between criterion and FB2 is probably spuriously reduced by the systematic error described.

Relevant to this complicating eventuality, it should be said that in the course of the whole experiment there were in fact thirteen different judges (i.e., 21% of the fluid population) who in fact consulted the various members of their teams as they picked. (There were four judges on each of five occasions, but almost inevitably sometimes the same boy was a prefect on more than one occasion.) The criticism that the feedback was only influencing the four judges can therefore safely be discarded.

An aspect of the validation of the criterion which was not commented on earlier was the necessity to validate the work ratings given the boys by staff, not only as accurately reflecting social competence but also in order to eliminate the possible reverse effect to that which it was hoped to bring about. In other words, instead of the boys learning to adjust standards from the ratings it had to be ensured that the staff were not learning to adjust ratings from those standards accepted by the boys. In a close-knit community like the one in question this is an effect which must be seriously considered because the unconscious modification of standards, to possibly irrational criteria, tends to be fostered by the permissive atmosphere and rather relaxed interpersonal relationships which hold. Incidentally, the correlation of the criterion with intelligence as measured by Goodenough D.A.M. Test scores (0.48 plus or minus 0.089) was significantly lower than the validity coefficient of 0.90 obtained against the Vineland Social Maturity Scale. Intelligence has therefore played a much smaller part than might be thought in determining either rating scores or rankings.

The relationship between social maturity and intelligence is one which would certainly reward further study in a context such as this. One aspect of this is that there is some evidence, from a scrutiny of rankings, that where S.Q. and I.Q. are divergent there is a tendency to inconsistency of estimate by others, whereas where the two are reasonably consistent there is in turn more consistency of estimate by others. More work requires to be done, however, before this can be sufficiently followed up.

While neither boys nor staff have found the methods outlined here in any way

cumbersome to apply and have indeed found them helpful, some difficulty has arisen from this very fact. This emerged most forcibly when an attempt was made to cut off feedback by doing away with ratings for a period in order to study the effects of this. One week after no ratings had been shown, the psychologist was met on his usual visit, before he had even got out of his car, by a deputation of boys demanding that "marks" should be put up again "because we don't know where we are." On the same day three staff members also commented independently that they missed the rating forms because it helped them to assess more accurately how a boy was doing from week to week. This danger of over-dependence on the method was one which was foreseen but was not expected to manifest itself so strongly, and it gives rise to some doubt about how permanent an introjection of standards it can bring about in boys of the type under discussion when once it is removed. For, after all, that is the eventual aim, to enable boys to make social judgments of a more objective and accurate sort, not only in a sheltered but in the wider community. It may be that a final weaning from such feedback of information could be gradually effected in a hostel context, or by reducing the frequency of ratings or by shifting the onus of rating on to prefects and boys ready to emerge into the industrial world. Future developments will be aimed at establishing this, but meanwhile the preliminary aim of supplying an educative influence in a non-didactic way has been met and shown to be effective. The staff, after all, can solve their difficulties by continuing to fill in their rating forms even if they don't pin them up! The boys, on the other hand, need the aid of all our resources if they are to be helped on even to a sort of second-hand maturity.

## VI. Summary.

A technique is described for assessing the effects of knowledge of results shown visually, on the quality and accuracy of social discrimination among mentally subnormal adolescent boys. This technique has had both clinically and statistically significant results in the population to which it is being applied, and the criterion by which the effect has been judged has been shown to be reliable and valid. The relationship of such a technique to the incentives and motivational structure obtaining has been described, and the results of the procedure, its advantages and disadvantages, are discussed.

## VII. Acknowledgments.

The writer is much indebted to Dr. A. A. Valentine, Medical Superintendent of the Glenfrith Hospital, for the freedom and support he has been given in this project, and to Mr. K. Lamont, Chief Male Nurse, and all other nurses and craft supervisors at "Glengate," whose open-minded co-operation and critical discussion have been greatly appreciated. That the experiment developed from rating scales originally devised by Dr. H. C. Gunzburg has already been acknowledged in the text.

## References.

- (1) Clarke, A. M. and Clarke, A. D. B. (1958). "Mental Deficiency—The Changing Outlook." London: Methuen & Co.
- (2) Clark, D. F. (1958). The Industrial Rehabilitation of the Mentally Subnormal. *Occupational Psychology*, 32, 2, 89-101. Also in *J. Midl. Ment. Defic. Soc.* 1956), II, 3, 47-57.
- (3) Davis, N. M. (1953). A Study of a Merit Rating Scheme in a Factory. *Occ. Psych.* 27, 2, pp. 57-68.
- (4) Dollard, J. and Miller, N. E. (1950). "Personality and Psychotherapy." New York: McGraw-Hill. P. 34.
- (5) Dollard, J. and Miller, N. E. (1950). "Personality and Psychotherapy." New York: McGraw-Hill. P. 53.

- (12) Mitchell, A. C. (1955). Social Competence of Institutionalised Retarded Children. *Amer. J. Ment. Defic.*, 60, 2, 354-362.
- (13) O'Connor, N. (1953). The Occupational Success of Feeble-minded Adolescents. *Occ. Psych.*, 27, 3, 157-163.
- (14) O'Connor, N. and Claridge, G. S. (1955). The Effect of Goal Setting and Encouragement on the Performance of Imbecile Men. *Quart. J. Exp. Psychol.*, 7, 37-45.
- (15) O'Connor, N. and Claridge, G. S. (1958). A "Crespi Effect" in Male Imbeciles. *Brit. J. Psychol.*, 49, 1, 42-48.
- (16) Tizard, J. and O'Connor, N. (1952). The Occupational Adaptation of High Grade Mental Defectives. *Lancet*, Sept. 27, 620-623.
- (17) Walton, D. and Begg, T. L. (1958). The Effects of Incentives on the Performance of Defective Imbeciles. *Brit. J. Psychol.*, 49, 1, 49-55.
- (6) Gordon, S., O'Connor, N. and Tizard, J. (1954). Some Effects of Incentives on the Performance of Imbeciles. *Brit. J. Psychol.*, 45, 277-287.
- (7) Gunzburg, H. C. (1957). Therapy and Social Training for the Feeble-minded Youth. *Brit. J. Med. Psychol.*, XXX, 1, 42-48.
- (8) Kallman, F. J. (1951). Recent Progress in Relation to the Genetic Aspects of Mental Deficiency. *Amer. J. Ment. Defic.*, 56, 375-381.
- (9) Lawrence, E. S. (1954). Social Adjustment: An Area for Psychological Research in Mental Deficiency. *Amer. J. Ment. Defic.*, 58, 3, 500-505.
- (10) Lewis, E. O. (1948). Mental Deficiency and Social Medicine. *J. Ment. Sci.*, 94, 258-265.
- (11) Loos, F. M. and Tizard, J. (1955). The Employment of Adult Imbeciles in a Hospital Workshop. *Amer. J. Ment. Defic.*, 59, 395-403.