

## REACTIONS OF LOW-GRADE MENTAL DEFECTIVES TO PAIN

By

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IN an earlier study (Stengel *et al.*, 1955), reactions of various types of mental patients to eleven different painful and noxious stimuli were described. Two groups of 54 females and 43 male low-grade defectives were included in the original investigation, but it was felt at that time that the results needed further amplification before they could be usefully commented upon. In this earlier investigation only one of us actually carried out the tests, the reliability of which, therefore, was not clearly established. Furthermore, in the original testing of low-grade defectives no assessment of "Overt Reactivity" was made. As the relationship between this factor and pain reactivity in the other patient groups constituted an important finding of the study, we came to the conclusion that it would be necessary to retest some of the low-grade defective patients with these points in mind. This seemed all the more desirable as it is widely assumed that mental defectives in general, and especially low-grade mental defectives, are grossly deficient in sensitivity to pain.

*Experimental Procedures.* The differences from the experimental procedures set out in detail in the first publication (*Journal of Mental Science*, 1955, 101, 52), to which the reader is referred, are as follows:

Ten of the original male and 10 of the original female low-grade defectives who had first been tested in February, 1952, were each retested by two of us (E.S. and A.J.O.) and by Dr. F. Letemendia in April, 1955, using the same tests, namely:

1. Pin pricks to right and left palms
2. Pin pricks to right and left cheeks
3. Pin pricks to right and left thighs
4. Clap "tests" on right and left sides

As in the original investigation the movement and wincing responses were scored on a scale ranging from 0 to 4. As distinct from the original investigation, the three observers independently scored each patient's responses, but one of us (A.J.O.) actually applied the test stimuli in each case. The order of the four tests given, and of the right and left applications, were randomized for each patient instead of being kept the same. In addition, each of the three observers

made independent assessments of the patient's "Overt Reactivity" from the ward sister's report of each patient's behaviour over the preceding twenty-four hours. As in the original work, "Overt Reactivity" (O.R.) was assessed on a three-point scale, i.e.:

1. Increased O.R.; patient grossly hyperactive and/or tense.
2. Decreased O.R.; patient markedly hypoactive and/or apathetic.
3. Intermediate O.R.; cases not classified (1) or (2) above.

In this way it was intended to check the reliability with which the scoring system could be used, and to ensure that scores for a particular test were not systematically influenced by the preceding tests. (In particular, it was noted in the earlier paper that the almost complete agreement then between the right and left scores was probably spurious.)

### RESULTS

1. *The Three Assessors.* The scoring by the three doctors was in good agreement. Their average scoring levels agreed closely, showing that there was no tendency for one doctor to score higher than the others. But more than this, in over 40 per cent. of the scoring of the painful tests the three doctors agreed completely and in the same number of cases two agreed and the other differed by one unit. In only 6 per cent. of the cases did all the doctors differ, and even then practically always by at most two units. The general level of agreement for scoring the clap tests was very similar, although the percentage of complete agreement was just under 30 per cent. The reason for this difference from the painful tests was that for 30 per cent. of the latter, all three doctors scored the highest possible score, 4, which did not occur for the clap test.

It follows that reactions to these painful and noxious stimuli can be assessed by different doctors in a reliable manner, a point which had not been established in the earlier investigations.

2. *Test-Retest Results.* The agreement of different assessors in scoring the same responses is of course not enough to establish the whole test procedure as a reliable one in the usual sense. It may be that although the responses can be judged consistently they are not in any way themselves consistent, e.g., from one occasion to the next, either because the administration of the stimulus is not done in a sufficiently controlled manner, or simply because the responses to such stimuli are not consistent.

However, the test-retest results discussed in the earlier paper showed that this is not the case, and this finding has been extended by the fact that the results obtained now for the 20 low-grade defectives agreed very closely with those obtained for them when they were tested 38 months previously. For example, the average scores on the three painful tests varied in only 3 out of the 20 cases by more than 1 unit from the previous results.

In all the work so far the test stimuli have been administered by the same doctor (A.J.O.), so that it is not yet known what consistency of response can be achieved when the stimuli are administered by different persons.

3. *Right and Left Administration.* One feature of the earlier results which seemed to have a dubious validity was the comparison of the responses when each test was administered first on the right and then on the left. Each pair of scores had, in almost every case, been identical, and this could well have been a spurious finding as the right and left stimuli were applied consecutively. However, even with the randomized design adopted close agreement was found. Thus,

well on half the pairs of right and left scores were identical, and such differences as were observed usually did not exceed 1 unit and showed no tendency to favour either the right or the left. Each of the three doctors scored right different from left in a similar number of cases, and there was even some tendency for them to score right and left agreements or differences in the same cases. It follows that small but true right and left differences in response may have occurred, though if they did, they may of course have been due to the administration of the stimuli or to a fluctuating responsiveness of the patient rather than to any more fundamental difference in reaction.

4. *Movement and Wincing Responses.* Two modes of response, namely, Withdrawal Movement (M) and Wincing (W) were assessed for each of the four tests. For the three Pin-Prick Tests and the M responses tended to be on average  $\frac{1}{2}$  to  $\frac{1}{2}$  unit higher than those for W, but on the Clap Test there was no such difference. This small average difference was not a general one but was mainly due to 5 patients whose average M scores were more than 1 unit higher than those for W. But it may be noted that for the medium-grade defectives of the earlier study a similar difference was found for the comparable Pin Prick Tests.

5. *Individual Differences.* Different patients varied greatly in their responses to the tests, all scores from 0 to 4 in fact being used, and whilst some patients had average scores as low as  $\frac{1}{2}$ , others were given scores of 4 for all or practically all responses. This latter feature shows that there may be scope for improving and extending the assessment of responses at the upper end of the present scale.

On average, female patients scored lower than the males by about  $\frac{1}{2}$  unit. Because of the large individual differences this result is highly unreliable but should perhaps be mentioned, because differences in the same direction were found in every diagnostic group in the previous study.

6. *Test and Group Differences.* The results of three Pin Prick tests were on the whole very similar, but differed from those for the Clap Test. Thus the average scores (right and left, male and female, all patients) for the Palm, Cheek and Thigh Tests were 2.6, 2.8, and 2.6 units respectively, whereas that for the Clap Test was 1.4 units. Because of the very large individual differences and the relatively small number of patients tested, these average scores cannot be thought of as indicating the average level of response for low-grade defectives generally. And the fact that the average score on the Palm Test was higher than for any of the other diagnostic groups in the earlier study must also be interpreted with reserve. Nevertheless, it is clear that the low-grade defectives responded as much if not more to painful pin pricks as did our other defective and psychotic patients. Furthermore, whereas the overall scoring level of all the tests is subject to large variation, the difference between the two types of test, i.e., painful (Pin Prick) and threatening (Clap Test) is much more reliable. Thus the average difference between the Palm and Clap Test here was 1.2 units, as compared with consistent differences of about 0.3 units for the same two tests for all the diagnostic groups in our previous study. The inference that the low-grade defectives reacted less strongly to threatening than to painful stimuli is thus inescapable.

7. *Overt Reactivity.* As found previously for all the diagnostic groups there was a definite relationship between "Overt Reactivity" and the test scores. The average differences in scores between the hyper- and hypo-reactives was 1.3 units, as may be seen from Table I.

TABLE I

	Overt Reactivity		
	+	0	-
No. of patients .. .. .	8	10	2
Average test score .. .. .	2.9	2.1	1.6

8. *Aetiological Grouping of Low-Grade Defectives.* An attempt was made to classify the 97 low-grade defectives of our original study into aetiological groups by a careful study of the case-material available. A very large number of aetiological factors were assembled for many cases while in some patients no such factors were found. The picture was complicated by the fact that in a number of cases several different aetiological factors appeared to co-exist, such as congenital malformations and acquired organic cerebral disease, so that composite groupings had to be made. When these were compared with the patients' test responses no evidence of any association was forthcoming.

9. *Low-Grade Defectives with a Propensity to Self-Injury.* In our earlier study a number of low-grade defective patients were noted persistently to injure themselves and in doing so they showed no outward indication of feeling pain, rather some evidence of pleasure. The degree of self-injury sustained by these patients was roughly classified on a two-point scale, + slight with only superficial self-inflicted wounds, and ++ severe with deep and extensive self-injuries. The number of such patients observed is shown in Table II. Of all the male and female low-grade defectives tested by us therefore, just under one quarter were subject to this type of behaviour.

TABLE II

	Total No.	No. of "Masochists"	
		+	++
Female patients .. .. .	54	8	2
Male patients .. .. .	43	7	5

When the test responses of these "masochistic" patients were scrutinized it was found that those graded + scored on average  $\frac{1}{2}$  unit lower, while those graded ++ if anything more than  $\frac{1}{2}$  unit lower than the "non-masochistic" patients. The evidence, so far as it goes therefore, tends to indicate that these "masochistic" low-grade defective patients responded slightly less to painful and threatening stimuli than those not subject to such masochistic tendencies.

#### DISCUSSION

Most of the results speak for themselves and do not require special comment. The test procedure employed in this group, which presented a refinement on the techniques employed in the earlier study, revealed slight differences between the reactions to stimuli applied on the right and left side of the body, but these appeared to be in the nature of individual variations, rather than due to a more general difference in reactivity. Low-grade mental defectives showed the same tendency to marked individual differences in the degree of reactions as was found in all other types of patients suffering from abnormal mental states.

The low-grade mental defectives tested in this research reacted to the Clap Test, which is both an auditory and a threatening stimulus, much less than to the painful stimuli, while patients belonging to the other diagnostic groups had

reacted only slightly less. This seems to suggest that low-grade defectives are less responsive to threatening stimuli which are not associated with pain. Clinical observation seems to bear this out. However, the difference in the reactions to those tests may be partly due to conditioning by the ward environment which tends to be much more permissive with regard to noise and motor activity than with regard to infliction of pain.

This investigation clearly demonstrated that the average low-grade mental defective reacted to pain inflicted from outside in the same way as other subjects, i.e., there were considerable variations which were related to individual differences in psychomotor behaviour. E. Popper's (1920) suggestion referred to in our first publication, that the apparent diminished pain sensitivity of mental defectives might be related to their torpidity and apathy was thus confirmed. Possibly, some of the conditions observed by earlier psychiatrists were institutional artefacts produced by excessive sedation and greater restriction of activity than are the rule today. Such factors might often have reduced psychomotor activity and reactivity to pain.

The most striking result of this investigation was the finding that low-grade mental defectives who indulge in self-injuries tended to react to pain inflicted on them from outside only slightly less than other subjects. They displayed, therefore, a marked discrepancy in their reactions between self-inflicted and other painful stimuli. The motivation of their impulse to self-injury remains obscure. The satisfaction which many appear to derive from inflicting pain on themselves is suggestive of an underlying masochistic gratification, although no manifest sexual excitement accompanying the self-infliction of pain was observed in any patient. At any rate, the difference between the reactions to painful stimuli and those administered by others is of fundamental significance from the psychological and physiological points of view. There are other examples of such discrepancies in animal and human behaviour: the one nearest to that described here is perhaps the difference in the reactions to tactile stimuli which are experienced as tickling when administered by another person and devoid of this quality when self-administered.

Insensitivity to pain was not observed in any of the patients of this series. This behaviour pattern has occasionally been noted in mental defectives of various grades though not as a rule associated with a tendency to self-injury and mutilation. It has, of course, also been observed in non-defective subjects. The tendency to self-mutilation cannot therefore as a rule be based on insensitivity to pain congenital or acquired.

#### CONCLUSIONS

Low-grade mental defectives tested for their reactions to painful and other noxious stimuli showed a range of variability similar to that of other subjects, except that they tended to react to a stimulus which was threatening and auditory less than to painful stimuli. The degree of their reactions showed a positive correlation to the degree of Overt Reactivity. Low-grade defectives with a propensity to self-injury reacted to pain inflicted from outside only slightly less than other subjects.

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