

Table 1

Length of half-span	Dominant		Non-dominant	
	Group A	Group B	Group A	Group B
1	0.98	1.00	0.47	0.95
2	1.83	1.95	0.09	1.80
3	2.42	2.90	0.05	2.15
4	2.82	3.63	0.09	0.95

'Webcor' stereophonic tape recorder. These were played back to the subject through Edison (Model 30) earphones.

Table 1 presents the average number of correct responses made to both the 'dominant' (that is, the first half-span recalled) and the 'non-dominant' (that is, the second half-span recalled) series by both groups.

In accordance with Broadbent's suggestion that the second half series recalled is typically the one which has passed through the *s*-system it can be seen from the results that there is a significant difference ($P < 0.01$) between the lengths of the non-dominant spans recalled by the two groups. The average score made by group A is in each case lower than that made by group B.

If the present finding is confirmed by further research, it appears that while the orthodox digit span is the same for both groups, dichotic spans are clearly different. This method may permit the rapid, early detection of impairment of the storage process.

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¹ Broadbent, D. E., "Perception and Communication" (Pergamon Press, 1958).

² Inglis, J., *J. Abnorm. Soc. Psychol.*, **59**, 210 (1959).

Construct 'Reactive Inhibition' in the Interpretation of Age Changes in Performance

WE have become interested in the possibility of extending the theory of ageing by interpreting age changes in performance within the framework of general behaviour theory. It seems to us that the Hullian concept of 'reactive inhibition'¹ might be particularly useful in this respect in that the assumption that reactive inhibition is generated more rapidly and dissipated more slowly as the age of an organism increases is compatible with many of the accepted changes which occur with age, and leads to predictions regarding changes which as yet have not been observed.

If this assumption is found to be valid, then older organisms may have to be regarded, after Eysenck², as more extraverted than younger ones. This definition of one aspect of personality of older organisms, if it is found to be valid, may be useful in the general study of personality changes which occur with age, a field of study which, in the past, has been somewhat lacking in a theoretical basis which encourages experimental investigation. Broadbent³ has discussed the existing evidence that older persons are more or less extraverted than younger ones and, while concluding that the evidence is inadequate and that no valid inference may as yet be drawn, he

appears to favour the idea that they become, in fact, more introverted. Braun and Geiselhart⁴ report that it is more difficult to establish conditioned responses as age increases. Although these authors do not interpret their results in the way we have suggested, it is possible that the more rapid generation of reactive inhibition may be responsible for the behaviour of older subjects which they observe. The existing evidence is incomplete. The issue appears to be a real one and to merit further experimental investigation.

In order to test our hypothesis more directly we have studied the responses of forty university students between the ages of 18 and 25 years and of twenty-five retired professional men and women between the ages of 63 and 86 years in reporting the after-effect of movement seen after fixating the centre of a rotating Archimedes spiral. A short after-effect is associated, according to Eysenck, with extraversion, and the theoretical explanation put forward to account for this is as follows: the stimulation arising from fixation generates reactive inhibition as well as the excitatory state it sets up simultaneously, and the length of the after-effect is reduced partly by the amount of inhibition generated during fixation and partly by the amount generated during the after-effect itself. The test is regarded as being a good index of extraversion, and short after-effects have been demonstrated to be characteristic of hysterics in contrast to dysthymics (Eysenck, H. J., personal communication), and to be induced by depressant (so called 'extraverting') drugs².

In our experiment all subjects fixated the centre of a four-throw spiral drawn in black on a white card of 10 in. diameter which revolved at 78 r.p.m. At the end of 40 sec. the rotation ceased and subjects reported when the after-effect could no longer be observed. The spiral was then again rotated, this time for 30 sec. and at its cessation an accurate record was made of the duration of the after-effect. The mean duration of after-effect after the second rotation was 10.9 sec. in the case of younger subjects (*S.D.* = 6.3 sec.), and 4.0 sec. in the case of older subjects (*S.D.* = 4.3 sec.). The value of *t* associated with the difference between these means is a little higher than 5.2, demonstrating the observed difference to be very significant indeed. This result, we believe, supports the hypothesis that reactive inhibition generates more rapidly in older organisms than in the young.

Further predictions from the hypothesis are being tested: these include predictions that older subjects will show a greater decrement than younger ones in the performance of vigilance tasks, and that older subjects will show greater reminiscence after massed practice than younger ones. Consideration is also being given to the possible adaptive function of the apparently greater rapidity with which reactive inhibition is generated by older organisms as compared with younger ones.

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¹ Hull, C. L., "A Behaviour System" (Yale Univ. Press, New Haven, 1952).

² Eysenck, H. J., "The Dynamics of Anxiety and Hysteria" (Routledge and Kegan Paul, London, 1957).

³ Broadbent, D. E., "Perception and Communication" (Pergamon Press, London, 1959).

⁴ Braun, H. W., and Geiselhart, R., *J. Exp. Psychol.*, **57**, 386 (1959).