Perceptual and Motor Skills, 1981, 53, 842.

REMINISCENCE—PSYCHOMOTOR LEARNING: A REPLY TO COPPAGE AND PAYNE

C. D. FRITH AND H. J. EYSENCK
MRC Clinical Research Centre *Institute of Psychiatry*

It is gratifying to read a serious study of motor skill learning after so many years of neglect. Coppage and Payne (1) have carried out a very thorough experiment which purports to distinguish between various theories of reminiscence in motor skill learning. However, at least in regard to that of Eysenck and Frith (3) there are two major aspects of their study which cast doubt on their conclusions. The first concerns the measure of reminiscence used. Coppage and Payne (1) use the traditional measure, i.e., the difference between the last prerest trial and the first post-rest trial. This measure does not allow for differences in post-rest upswing. In terms of Eysenck's earlier three-factor model of reminiscence (2) this was appropriate, since post-rest upswing was supposed to reflect the extinction of conditioned inhibition and was thus an important component in the model. However, Eysenck and Frith (3) on the basis of a thorough review of the literature, concluded that post-rest upswing reflected the reacquisition of a short-term set and was therefore not part of the learning process. It is clearly very important that the effects of interfering tasks on this short-term set should be distinguished from their effects on learning and consolidation. An interfering task carried out just before the resumption of practice on the target task might well interfere with short-term set and thus produce an initial decrement in performance followed by a greater post-rest upswing. From this point of view a better measure of reminiscence would be given by the difference between post-rest performance at the top of the upswing curve and prerest performance. These speculations could easily be confirmed had Coppage and Payne provided their complete learning curves rather than just the traditional reminiscence scores.

The second problem concerns the choice of task for the experiment. Although the theories under consideration had been developed on the pursuit rotor, Coppage and Payne (1) used a version of mirror drawing as their target task, and the pursuit rotor as the interfering task. Clearly, if the theories under examination are of any value they should generalize beyond the pursuit rotor, but we would argue that mirror drawing in particular is a rather different kind of task to pursuit rotor learning. Using a computerized version of the pursuit rotor, Frith and Lang (4) found that, if the path followed by the target was unpredictable, then no learning occurred. This implies that the visuo-motor coordination part of such a task is already learned from previous everyday experience, i.e., the subject does not need to learn how to convert a visually perceived discrepancy between stylus and target into an appropriate corrective movement of the hand. All he has to learn in such a task is how to make movements which correctly anticipate those of the target. It seems to be this kind of learning that is associated with reminiscence. Clearly for a mirror-drawing task, at least in the early stages, the principal skill to be learned is the 'visuo-motor coordination' since what the subject has learned from his everyday experience is inappropriate. In such a task learning should occur *even when the path followed by the target is unpredictable.* Thus since a very different kind of learning is involved from that in the pursuit rotor, it is clear that investigation of a mirror-drawing task does not provide an appropriate test for our model of reminiscence.

REFERENCES

1. COPPAGE, S. J., & PAYNE, R. B. An experimental test of current theories of psychomotor reminiscence. *Perceptual and Motor Skills*, 1981, 52, 343-352.
2. EYSENCK, H. J. A three-factor theory of reminiscence. *British Journal of Psychology*, 1965, 56, 163-181.
3. EYSENCK, H. J., & FRITH, C. D. *Reminiscence, motivation and personality.* New York: Plenum, 1977.
4. FRITH, C. D., & LANG, R. Learning and reminiscence as a function of target predictability in a two-dimensional tracking task. *Quarterly Journal of Experimental Psychology*, 1979, 31, 103-109.

Accepted October 27, 1981.