

the total of 203 patients available, six declined to give a blood sample so that chromosome observations were made on the remaining 197. We found that twelve had a chromosome abnormality; seven had 47 chromosomes and an *XY* sex chromosome constitution, one had 48 chromosomes and an *XXYY* sex chromosome constitution, and one was an *XY/XXY* mosaic. The remaining three had structural abnormalities of the autosomes; one had 45 chromosomes and a translocation between two chromosomes in group 13-15, one had 46 chromosomes with a reciprocal translocation between an autosome number one and an autosome number 16, and one had an apparent deletion of part of the long arm of an autosome in group 21-22.

The most important finding in this group is that eight individuals have an additional Y chromosome. Very little is known about the *XY* male, as only a few cases have so far been described, and these refer to a heterogeneous group of children and adults from whose description no clear picture of the *XY* male has emerged<sup>3-7</sup>. However, the finding that 3.5 per cent of the population we studied were *XY* males must represent a marked increase in frequency by comparison with the frequency of such males at birth. On theoretical grounds *XY* males at birth must be less common than *XXY* males, who form approximately 0.2 per cent of the new-born male population<sup>8</sup>. We have examined 266 randomly selected new-born male babies without finding an *XY* individual, and we have also examined 209 randomly selected adult males, again without finding one with an *XY* constitution. In addition, we have examined the chromosomes of approximately 1,500 males for a variety of reasons and only one of these was found to have an *XY* sex chromosome constitution.

Further clinical investigations have yet to be undertaken on these abnormal patients, but it is already apparent that they are unusually tall. Among the 197 men we studied the difference between the mean height of the males with one Y chromosome (67.0 in.) and that of those with two Y chromosomes (73.1 in.) is highly significant ( $P < 0.00001$ ). In fact in this particular group a man more than 72 in. in height has an approximately 1 in 2 chance of having an *XY* constitution.

At present it is not clear whether the increased frequency of *XY* males found in this institution is related to their aggressive behaviour or to their mental deficiency or to a combination of these factors. We are attempting to elucidate this problem.

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PATRICIA A. JACOBS  
MURIEL BRUNTON  
MARIE M. MELVILLE

Medical Research Council,  
Clinical Effects of Radiation Research Unit,  
Western General Hospital,  
Edinburgh, 4.

R. P. BRITTAİN  
W. F. McCLEMONT

State Hospital,  
Carstairs.

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## PSYCHOLOGY

### Tactile-vision: Thermal and Texture Cues in the Discrimination of Black and White

TEMPERATURE and texture have both been suggested as possible normal explanations of the 'skin-vision' phenomenon<sup>1</sup>. Neither of them explains Russian claims of perception at a distance (claims not supported by Barrett and Rice-Evans<sup>2</sup> using a low level of illumination); however, they do provide potential cues in situations where touch is involved. Colourants may give surfaces with characteristic textures and the colour of a surface will affect the amount of heat it absorbs. Recently, Buckhout<sup>3</sup> found that, even with illumination provided by a 40-W bulb (a good source of infra-red radiation), out of 80 subjects not one could distinguish between 10 colours in 90 presentations. He controlled texture by covering the colours with a thin layer of plastic. In the experiment reported here I investigated what part both texture and temperature might play in a very simple situation: that of a black-white discrimination.

The apparatus used was a 9 in. × 7 in. × 20 in. light-proof box comprising two compartments separated by a sheet of frosted glass. In one was a 60-W lamp and in the other a stack of 72 stimulus cards: 24 each of black, white, and half black and half white photographs of size 2.5 in. × 3.5 in. With one hand inside the box the subject went through the pack of cards, feeling each in turn and then guessing its type. After each guess he posted the card out through a chute in the side of the box, providing himself with knowledge of results. The subjects were given two sessions: one with the light on and one with it off. They were not aware of this difference and the order of the two conditions was alternated between them. The cards were shuffled in between sessions.

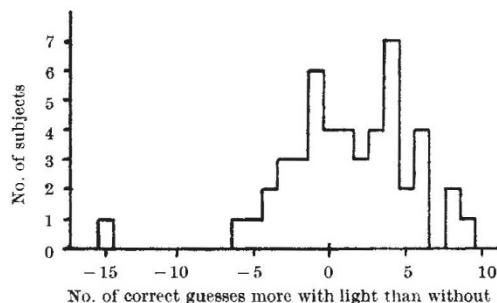


Fig. 1

Forty-eight students were tested. The mean number of correct guesses expected by chance is 24/72 for each condition. The observed means were 25.3 for light on and 24.2 for light off. Clearly texture was not used as a cue. Subtracting the dark from their corresponding light scores gave the results shown in Fig. 1. A Wilcoxon matched-pairs signed-ranks test gave a significance of  $P = 0.014$ , which can be seen to be due not to a few high scorers but rather to the group as a whole: discriminative ability being spread thin among the subjects. Under the hypothesis black and white is the easiest colour discrimination task, and yet subjects score only one or two correct guesses more than is expected by chance. It remains possible that with a lengthy series of trials this skill could be developed: subjects often reported holding a number of different hypotheses one after the other, and it might be that here they find difficulty in selecting the relevant aspects of their sensations.

C. N. FRENCH

Department of Psychology,  
University of Aberdeen.

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