chiasma distribution, some of the factors accounting for this variability have been indicated by the analysis of *Delphinium*¹⁰ and other plants⁹. An interesting observation in this connexion is that not always the presence of univalents elicits a response from the bivalents in the pollen mother cells. Inbreeding was found to be an effective method for inducing univalent formation in the pollen mother cells of *Delphinium*; when such plants were analysed, there was no evidence of compensatory increase in chiasma frequency as in the material from X-ray-treated seeds. Obviously a genotypically determined decline in chiasma frequency operates at the level of the nucleus as a whole, leaving little scope for interchromosome effects. Finally, while no triploids of *Delphinium* were available for observation, it is well known that chiasma frequency in such organisms registers an increase over the corresponding diploid as shown by Darlington¹².

The observations described above thus show that the 'Schultz-Redfield' effect operates for interchromosome distribution of chiasmata also. The observations reported here in a way supplement the earlier analysis of White and Morley¹³, who found that pericentric arrangements of chromosomes in grasshoppers lead to compensatory formation of chiasmata at intrachromosome-level. These findings and the observations of Brown and Zohary referred to earlier provide additional support for interpreting chiasmata as being associated with genetic recombination.

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PSYCHOLOGY

Information Load and Discriminability

It is clear that subjects take longer to differentiate between two stimuli if they are closely similar than if they are widely separated along some continuum of difference^{1,2}. Conditions such as poor contrast or dim illumination which tend to obscure differences between complex stimuli may be expected to have the same effect. Recent models for discrimination and recognition^{3,4} entail the assumption of some interaction between a factor of discriminability and the number of items to be differentiated. While data on reading-speed for various English vocabulary-sizes under dim illumination⁴ may be taken as support for this, a situation in which subjects make responses to complex stimuli presented one at a time has not been manipulated to demonstrate directly such an interaction. The two experiments summarized here show such interactions between size of stimuli, illumination-level, and the number of items between which discriminations are made.

(1) *Size and information load.* Four packs of forty white playing card blanks were made up. Each card bore a single letter of the alphabet stencilled in indian ink as follows: pack 2S, the letters A or Z appeared in equal numbers in a face 3 mm high; pack 2L, the same, in letters 22 mm high; pack 8S, the letters A, B, C, D, E, F,

G and H appeared in equal numbers in a face 3 mm high; pack 8L, the same, in letters 22 mm high.

Twenty subjects with 20/20 uncorrected vision (Royal Navy ratings aged 18-32 years, mean 23.7) were trained to sort these packs into piles according to the letters stencilled on the cards. Packs 2S and 2L were sorted into two piles and packs 8S and 8L into eight piles. Subjects held the packs face-downward in their non-dominant hands and turned cards over singly, dealing them on to the appropriate piles as quickly as possible. The overall sorting time for each pack was taken with a stopwatch. Subjects sorted the packs in random order, each man sorting each pack fifteen times over three experimental sessions. Results presented in Table 1 are derived from the mean sorting times for the last five trials on each pack.

Table 1. MEAN SORTING TIMES (SEC) FOR TWO-CHOICE AND EIGHT-CHOICE PACKS WITH LARGE OR SMALL TYPE-FACE

Two-choice large type	38.7
Two-choice small type	39.5
Eight-choice large type	56.6
Eight-choice small type	60.6

An analysis of variance shows the interaction between type size and information load to be significant ($P < 0.001$). It is thus apparent that a reduction in size of the symbols used affects performance more in the eight-choice than in the two-choice situation.

(2) *Level of illumination and information load.* The 2S and 8S packs described here were sorted by a second group of subjects also having 20/20 uncorrected vision (undergraduates aged 19-23, mean 21.3) under two conditions of illumination. Cards were sorted either in normal daylight illumination, or in dim illumination. In the latter condition subjects sorted cards after forty minutes' adaptation in a lightproof cubical illuminated by a dimmed tungsten lamp allowing 0.1 ft.-lamberts to be reflected from the surface of each card. This measurement was carried out with an S.E.I. photometer in the absence of a subject.

Ten trials were given on each pack under each of the conditions described, nine subjects beginning in the dim, and nine in the normal condition. Conditions were tested in separate experimental sessions. The results described in Table 2 are again based on the means for the last five trials on each pack.

Table 2. MEAN SORTING-TIMES (SEC) FOR TWO-CHOICE AND EIGHT-CHOICE PACKS IN NORMAL AND DIM ILLUMINATION

Two-choice in normal illumination	37.4
Two-choice in dim illumination	40.5
Eight-choice in normal illumination	58.9
Eight-choice in dim illumination	65.3

An analysis of variance performed on the data shows that both two-choice and eight-choice packs take longer to sort in dim than in normal illumination ($P < 0.001$). The interaction between illumination and information load is significant ($P < 0.01$).

It must be concluded that dim illumination reduces efficiency more in the eight-choice than in the two-choice situation.

The extremes of choice between theoretical models for decision processes of this type are taciturnity on problems of discriminability⁵ and an attribution of the entire effects of information load to problems of discrimination as the number of items to be distinguished increases². The present results may further a more decent eclecticism. It is at least satisfactory that their practical implications are important and obvious.

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