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THE EFFECT OF PHOTOFIT-TYPE FACES

ON RECOGNITION MEMORY

A thesis presented in partial fulfillment

of the requirement for the degree

of Master of Arts in Psychology

at Massey University

Hilary LaMontagne

1989

Dedicated to the memory of my

deceased father

Kirby Damian LaMontagne

27.9.33 to 29.9.87

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ABSTRACT

Two attempts were made to replicate the results of Ellis, Davies, and Shepherd (1978) who showed that the addition of simulated photofit lines and randomly placed lines on photographs of faces caused a decrease in recognition memory for those faces. In the first experiment, three groups of subjects were shown 20 slides each of faces with no lines, photofit-type lines or random lines. Immediately afterwards they were shown the same faces mixed with 20 distractors, their task being to indicate whether a face had been previously seen. The addition of lines had no statistically significant effects on memory. In the second study, the number of faces initially shown was increased from 20 to 35 and subjects had to identify the previously seen faces from a set of 70 faces either immediately or following a three week delay. Again, the addition of lines to the faces produced no significant decrements in recognition rates, but there was a main effect for delay. However, trends seen in the recognition measures used for both studies suggested that the addition of lines may have a small effect on recognition memory but not enough to always reach statistical significance in single studies. The implications of the results for the use of the photofit-kit in recognition memory studies are discussed.

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INTRODUCTION

Identification of faces is an important attribute in our society being absolutely essential for our day to day living. Misidentification can result in a variety of lost opportunities and in embarrassment when we fail to identify correctly friends, fellow workers and acquaintances.

The consequences of failing to recognise a person, or misidentifying a person, can be more serious than mere embarrassment. For example, face recognition and identification play a vital role in the criminal justice system both for law enforcement and the witnesses of crime. Also, traumatic family upheavals, or even the break-up of the family, may occur when a person suffers from prosopagnosia. This is a neurological disorder whereby the sufferer is unable to recognise familiar faces of friends, relatives, children, spouse, and in some cases, even the self (Bruyer, 1989). As Loftus (1979) points out, misidentification can result in the conviction of an innocent person (or the acquittal of a guilty person) in the criminal justice system, perhaps with the ensuing loss of freedom and social stigma attached to having been implicated in criminal activity. Therefore, research into how we recognise or identify a face has important practical implications.

There has been a wide variety of research on faces. Examples include research on recall (Davies, 1981, 1986), emotion (Salzen, 1981), developmental aspects (Carey, 1981), training (Malpass, 1981; Woodhead, Baddeley, and Simmonds, 1979), neuropsychology of face recognition (Benton, 1980; Hecaen,1981) and social factors

in face recognition (Shepherd, 1981). The present study was limited to recognition studies done inside the laboratory.

TYPICAL RECOGNITION STUDY

A typical face recognition study is divided into two phases: the study (or inspection) phase and the recognition (or test) phase. In the study phase, subjects view a series of faces called target faces. The number of target faces has been varied between one (e.g., Davies, Ellis, and Shepherd, 1978a) and 100 (Light, Kayra-Stuart, and Hollander, 1979). However, the number of targets used is typically about 20 (Shepherd, 1983). Subjects may be told to try to memorise the targets because they have to recognise them later (e.g., Shepherd and Ellis, 1973), or this instruction may be omitted (Brigham, Maass, Snyder, and Spaulding, 1982). The inclusion or omission of such instructions does not seem to make a difference to the outcome of the study (Courtois and Mueller, 1981).

In the recognition phase, the target faces are randomly interspersed with new faces, called decoys or distractors. The subject's task is to choose which faces are old (previously seen) or new (not previously seen). The number of faces shown in the recognition phase varies from study to study. For example, Baddeley and Woodhead (1982) showed 50 faces at study and 50 at test whereas Davies, Shepherd, and Ellis (1979) showed their subjects 10 faces at study and 24 at recognition. While it is true to say that the number of faces shown in both the study and recognition phases varies widely, it is usually the case that the number of targets and distractors are kept equal.

The period between the study and recognition phase (delay period or retention interval) can be minutes, hours, days, or even months. For example, a retention interval of 10 minutes was used by Gehring, Toglia, and Kimble (1976), 48 hours by Chance, Goldstein, and McBride (1975), seven days by Chance and Goldstein (1987), five weeks by Shepherd and Ellis (1973), and 11 months in a study by Shepherd, Ellis, and Davies (1982). However, most studies use relatively short retention intervals of up to eight weeks (Shepherd, 1983).

Delay is used primarily to study the rate of decay of the facial engram over time. Short retention intervals of 20 minutes (Yarmey,1971) and 48 hours (Chance et al., 1975) showed little or no deterioration in facial memory whereas two week delay periods show mixed results. For example, Deffenbacher, Carr, and Leu (1981) reported no decline in face memory after two weeks whereas Podd (in press) found that the same delay did produce a small effect. Yarmey (1979) and Shepherd and Ellis (1973) noted a decrease in recognition accuracy after 30 and 35 days respectively and Egan, Pittner, and Goldstein (1977) found that hit rate remained the same after eight weeks but false alarms (reporting a face as a target when it is a distractor) increased markedly. Shepherd et al. (1982) found no significant decrease in recognition accuracy from one week to 90 days, but hit rate decreased after 11 months. The topic of delay will be further discussed later, but the few studies mentioned here serve to illustrate that recognition memory for faces under laboratory conditions seems remarkedly resilient to deterioration.