Learning Faces with Biographical and Multiview Information

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Introduction

- **Learning faces with a name and occupation** enhances recognition through meaningful semantic association.[1] Familiarity is established when an encoded face activates the related face recognition unit.[2] Hence face recognition is potentially improved learning faces from **multiview,** as a deeper average facial representation is built into face recognition units.[3]

- While evidence suggests additional information may influence accuracy on a face recognition task, it has not been researched **whether findings differ for individuals with high and low face recognition ability**, investigated in the present study. Previously, individuals with high face recognition ability benefitted less than poor face recognisers, using deeper facial encoding strategies.[4] Research is important to **optimise face recognition** using the most effective learning strategies.

Research questions: Does Learning Additional Information About a Person Affect Our Ability to Recognise Faces? Will This Differ in Individuals with High and Low Face Recognition Ability?

Learning condition is hypothesised to influence performance on a face recognition task and interact with face recognition ability.

Method

Design

- Faces memorised in a learning phase were seen in five conditions: face from one (F), two (FF) and three angles (FFF), from two angles with a name (FFN), and with an occupation and name (OFN).

- Task accuracy = % faces correctly recognised in a testing phase.

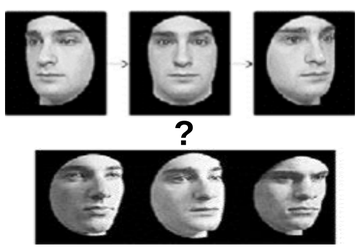
- **Face recognition ability** was categorised as high or low using a median split, based on the Cambridge Face Memory Test (CFMT).

Participants

40 BU Psychology students (mean age 20).

Procedure

Procedure lasted **one hour maximum, involving two computer-based face recognition tasks:**



Cambridge Face Memory Test (Figure 1)

Measured accuracy recognising **faces learnt from three angles amongst two distractor faces.**

Figure 1: CFMT (Duchaine & Nakayama, 2006)

Figure 2: Learning Phase Stimuli

Old-New Face Recognition Test

- 5 learning conditions, seen twice per block, for six seconds each (Figure 2).
- 5 learning blocks each followed with a test phase (Figure 3) - keypress distinguishing 'old' and 'new' faces (**10 identities** viewed in learning phase; **10 distractors).**

Figure 3: Testing Phase Stimuli

Results

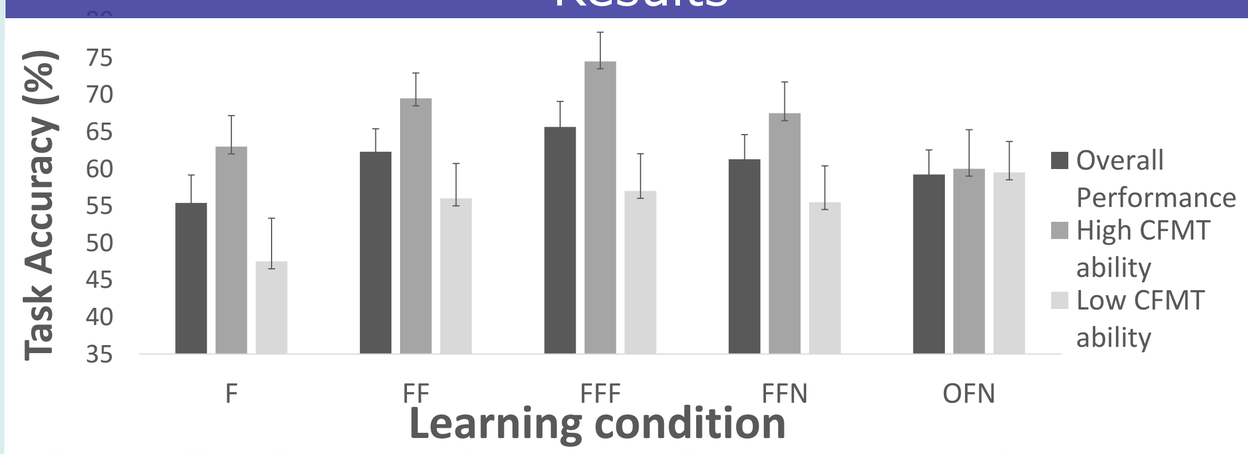


Figure 4: Face Recognition Accuracy as a Function of Learning Condition

Results from an Analysis of Variance (ANOVA) statistical test :

- **Main effect of learning condition** (medium effect size): more accurate learning from three views (FFF) than one (F) (Figure 4) – close to statistical difference in follow-up *t*-tests.

- **Large effect of CFMT ability**: higher CFMT group > low group.

- Learning condition did not interact with CFMT ability – but high CFMT ability benefit most learning FFF and least from a face, name and occupation (OFN); whereas low CFMT group benefit most learning OFN and least from F.

Discussion

Expected findings show that learning condition influences face recognition. Novel findings reveal differences between individuals with high and low face recognition ability, although a non-significant interaction effect.

- Faces learnt from multiview enhanced face recognition - consistent with a **face averaging model.**[3] More features are incorporated into face recognition units for **fuller average representations** - increases chance of an **encoded facial representation activating the relevant facial recognition unit** for familiarity.[2]

- Non-significant effects of biographical information are inconsistent with previous findings[1], attributed to methodological differences, (shorter learning phase and lack of engagement with biographical information).

- **Biographical information potentially helps those with low face recognition ability to create meaningful associations with a face (through deeper level of encoding)** but impairs those with high recognition ability (do not require additional cues to activate facial representations).

Future Directions

- **Larger sample sizes tested on a wider population -** psychology students were most accessible, although may not represent the **wide range of individual differences** which exist in atypical populations.

- Practical implications: witnesses to view suspects' faces from multiview in **police lineups** to increase **eyewitness testimony accuracy;** name labels for **teachers learning their students' faces;** improved **person identification and social interaction.**

Contact information

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References

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