Children making faces: enhancing children’s facial recall and composite construction

Thesis

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for

Children Making Faces: Enhancing Children’s Facial Recall and Composite Construction

Thesis submitted for the Degree of Doctor of Philosophy

by

Carina Bridget Paine
B.Sc (Hons).

Department of Psychology
Faculty of Social Sciences
The Open University, UK

2004
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http://news.bbc.co.uk/hi/english/uk/england/newsid_1594000/1594071.stm


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Vd: Summary form used to input visual prompt choices into E-FIT in Experiment 5

Ve: Composite images constructed in experiment 5

Vf: Images of targets used in Experiment 6

Vg: Instruction sheet used Experiment 6

Vh: Response Sheet used in Experiment 6

Vi: Target calculations for Experiments 6 and 7

Vj: Line-ups used in Experiment 7

Vk: Instruction sheet used in Experiment 7

Vl: Response sheet used in Experiment 7
APPENDIX I: DETAILED METHODOLOGICAL INFORMATION AND THE PRINCIPLE RESULTS OF EACH EXPERIMENT REPORTED IN THE THESIS

<table>
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<tr>
<th>Study</th>
<th>Participants</th>
<th>Method / Measure</th>
<th>Stimuli</th>
<th>Results</th>
</tr>
</thead>
</table>
| 1     | 53 E-FIT operators* | Questionnaire-based survey sent to E-FIT operators registered with Aspley Ltd. | Questionnaire-based survey (Appendix I) consisting of 7 sections including questions on operators experiences and opinions of producing composites with child victims and witnesses. Each section included a variety of question styles | Main practical issues:  
Most frequently reported problems with children: **language** (describing or understanding) and **timing / concentration**.  
Other issues: **materials** (no standardised format within or across forces) and **training** (no training for producing composites with children) |
| 2     | 8 Adults     | Participants provided a free written description followed by a prompted written description of four unfamiliar composite faces, presented individually | Facial Stimuli 16 (E-FIT) composites | 16 E-FITs reduced to 10 E-FITs for use in Exp 2. |

---

*The questionnaire was sent to 277 registered E-FIT operators in UK. 72 operators returned questionnaires. Of these, 53 were constructing composites with children.
<table>
<thead>
<tr>
<th>2</th>
<th>Exp 2</th>
<th>30 children (6-, 8-, 10-yrs)</th>
<th>Following a practice task, participants provided a verbal free description and verbal prompted description of two unfamiliar facial composites, presented individually. Participants then made a verbal comparison description of the two composite faces presented together.</th>
<th>Practice Stimuli</th>
<th>2 images of houses</th>
<th>Facial Stimuli</th>
<th>10 (E-FIT) composites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Content of descriptions</td>
<td>A number of patterns emerged across all age groups. For the majority of facial features, children's descriptions did not match existing E-FIT (adult) terms and a low percentage of children who provided descriptions used E-FIT terms. The comparison task increased configural descriptions.</td>
<td>Prompt: low number of free descriptions; significantly more prompted descriptions.</td>
<td>Comparison description</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Quantity: comparison description section increased total number of new descriptions provided.</td>
<td>Additional observations: Nearly all participants used non verbal descriptions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Experiment 3 (Exp3)

**Participants**
- 38 Adults

**Procedure**
- Participants selected both the visual and verbal prompts for the two target photographs. Set of prompts and target photographs were presented one at a time.
- Photographs remained present throughout selection.

**Facial Stimuli**
- One photo of each of the two targets captured from each one minute video sequences used in Exp 4

**Prompts**
- Visual and Verbal

**Results**
- Adults' selection of the prompts were used to create a measures of accuracy and inaccuracy to be used in Experiment 4.

---

### Experiment 4 (Exp 4)

**Participants**
- 90 Children (6-, 8-, 10-yrs)

**Procedure**
- Participants viewed a video sequence of one target.
- One day later, participants provided a verbal free description, followed by the selection of both the verbal and visual prompts (presented individually).
- Finally, participants were asked to identify the target from a target present photographic array of nine faces.

**Facial Stimuli**
- Two, one minute video sequenced (featuring two close-up full face poses of 15 secs and 10 secs)
- 2 different male targets used

**Prompts**
- Visual and Verbal

**Identification**
- 9 person target present photographic array for each target

**Results**
- **Quantity of descriptions**
  - Age: 8- and 10-year-olds provided significantly more descriptions than 6-year-olds
  - Prompts: very few free descriptions; significantly more prompted descriptions (visual and verbal); significantly more visual than verbal descriptions

- **Content of descriptions**
  - Age: 8- and 10-year-olds provided significantly more **accurate** descriptions than 6-year-olds
  - 10-year-olds provided significantly less **inaccurate** descriptions than 6-year-olds
  - Prompts: significantly more **accurate** when selecting visual than when selecting verbal prompts; significantly less **inaccurate** when selecting visual than when selecting verbal prompts.

- **Time taken to select prompts**
  - On average time taken was less than 9 minutes
  - Age: Children significantly faster at selecting prompts with age.
  - Prompts: children significantly faster when selecting visual than when selecting verbal prompts; significant Age by Prompt interaction due to small time difference between age groups when selecting visual prompts and large time difference between age groups when selecting verbal prompts.

---

*As based on the accuracy calculations using adult participants responses described in Section 7.2.3*
| Exp 5 | 20 Adults 60 Children (6-,8-,10-yrs) | Participants viewed a video sequence of one target.  
One day later, participants selected either the verbal or the visual prompts. Participants then created a composite image with an ‘operator’ using the E-FIT composite system. Finally, participants were asked to identify the target from a target present photographic array of nine faces. | Facial Stimuli  
Five, one minute video sequenced (featuring two close-up full face poses of 15 secs and 10 secs)  
5 different male targets used  
Prompts: Visual and Verbal  
Identification:  
9 person target present photographic array for each target | Identification:  
Percentage of correct identifications at least over 50% for all age groups; No significant relationship between overall identification result and age; Even participants who did not make a correct identification still scored well in terms of accuracy of prompt selection.  
Additional Observations:  
Verbal “not sure” used more than the visual ‘?’; Majority of children preferred visual prompts | Time taken to select prompts:  
On average time taken was less than 9 minutes  
Age: findings replicated Experiment 4 findings  
Prompts: findings replicated Experiment 4 findings  
Significant Age by Prompt interaction due to all age groups of children selection of the visual prompts being faster than selection of the verbal prompts whereas adult participants faster when selecting verbal prompts.  
Identification:  
Percentage of correct identifications at least over 30% above chance for all age groups; Percentage of correct identifications for all age groups of children less than percentages from Experiment 4; No significant relationship between overall identification result and age; 8- and 10-year-olds performed at the same level as adults.  
Additional Observations:  
Use of the “not sure” and ‘?’ prompts replicated the trends found in Experiment 4. |

*As based on the inaccuracy calculations using adult participants responses described in Section 7.2.3*
| Exp 6 | 25 Adults | Participants provided a ranking score (from 1 to 4) and a rating score (from 1 to 10) for 32 (E-FIT) composites (16 composites for two targets presented individually) from Exp 5 | Facial Stimuli 80 (E-FIT) composites created in Exp 5 photographs captured from 1 minute video used in Exp 5, 3 different views captured per target | **Ranking**  
Age: composites constructed by adult participants ranked as significantly better likenesses than composites constructed by children; Composites constructed by 10-year-olds ranked as significantly better likenesses than composites constructed by 6-year-olds; Composites created by all ages ranked amongst best likenesses  
**Prompts:** no significant effect of Prompt  
**Rating**  
Age: composites constructed by adult participants rated as significantly better likenesses than composites constructed by children; Composites constructed by 10-year-olds rated as significantly better likenesses than composites constructed by 6-year-olds; Composites created by all ages rated amongst best likenesses (however only composites created by adults received a score of 10/10).  
**Prompts:** no significant effect of Prompt |
|---|---|---|---|---|
| Exp 7 | 20 Adults | Participants 'matched' 40 composites (in two sets of 20) from varying age groups, prompt conditions and targets, from a photographic array. | Facial Stimuli 80 (E-FIT) composites created in Exp 5 Identification A 10 person (5 targets and 5 distractors) photographic array | **Age:** significantly more correct matches made for composite created by adults than by children;  
No significant difference between composites created by children of different ages  
**Prompts:** no significant effect of Prompt  
**Identification:** No effect of identification on ranking, rating or matching data. |
APPENDIX II: QUESTIONNAIRE SURVEY FROM STUDY 1

Children & Composites Questionnaire

Forensic Psychology Research Group
The Open University
Walton Hall
Milton Keynes
MK7 6AA

The Open University
Dear composite user,

I am part of the Forensic Psychology Research Group at the Open University in Milton Keynes and I have recently started a full time Ph.D. working with Helen Westcott, Nicky Brace and Graham Pike. My research is looking at the ability of children to produce facial composites of unfamiliar faces.

Please find attached a brief questionnaire asking for your experience and views of using composite software with children. I have tried to keep the number of questions I ask you to a minimum. Completing the questionnaire should only take a short amount of your time and will be invaluable to my research. All results will be presented to the ACPO Working Group.

I would greatly appreciate it if you could return the completed questionnaire to me as soon as possible, preferably by 30th April 2002. The questionnaire is entirely anonymous and your name will not be entered into any database.

**QUESTIONNAIRE INSTRUCTIONS**
Please answer all of the questions in the space provided or tick the box or boxes which most reflect your experience and views.

If possible, I would be very grateful if you could attach copies of any forms, questionnaires, or other materials you use when interviewing a witness, specifying whether you use them with adults, children or both.

Please feel free to add any further information you wish to. If you run out of room please continue on a separate sheet of paper.

If you have never interviewed a child witness in order to construct a composite please answer side 1 of the questionnaire (opposite) and return it (details below).

*When you have completed the questionnaire, please return it, along with any other materials, in the SAE provided.*

Please feel free to contact me if you have any comments or queries or if you would be willing to take part in further discussions.

Carina Paine  
PhD Research Student  
Forensic Psychology Research Group  
Faculty of Social Sciences  
The Open University  
Walton Hall  
Milton Keynes  
MK7 6AA  
Telephone: 07799384038  
Email: c.b.paine@open.ac.uk
PERSONAL DETAILS

• Please state your:
  - Job title (and rank):

• Sex: Male ☐ Female ☐

• Date of birth: ____ / ____ / 19____

• How long have you been a composite operator?
  ________________________________________ (Years)

• Which composite package(s) are you currently using?
  ________________________________________

• What experience do you have interacting with children:
  - As part of your job with the police?

  ________________________________________
  ________________________________________
  ________________________________________

  - In general (including parent / guardian, previous work experience)?

  ________________________________________
  ________________________________________
  ________________________________________

CHILDREN & COMPOSITES

• On average, how many composites do you construct in a year?

____________________________________

• On average, how many of these are with children?

____________________________________
- If none, please specify why (for example, the need has never arisen, you do not think children can produce accurate composites, you have been told not to by a requesting officer):

________________________________________________________________________

________________________________________________________________________

- Please give an approximation of the number of composites you have constructed with children who are aged:

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 years</td>
<td>______</td>
</tr>
<tr>
<td>5-6 years</td>
<td>______</td>
</tr>
<tr>
<td>7-9 years</td>
<td>______</td>
</tr>
<tr>
<td>10-12 years</td>
<td>______</td>
</tr>
<tr>
<td>12-14 years</td>
<td>______</td>
</tr>
<tr>
<td>14 years &amp; above</td>
<td>______</td>
</tr>
</tbody>
</table>

- What was the age of the youngest child you have interviewed in order to construct a composite?

________________________________________________________________________

________________________________________________________________________

- Who or what determines at what age a child can construct a composite (e.g. your own decision or the decision of a superior officer)?

________________________________________________________________________

________________________________________________________________________

- Please rank (by ticking) on a scale of 1 - 5 what this decision is based on. Where 1 indicates Low Importance and 5 High Importance:

<table>
<thead>
<tr>
<th>Importance of reason</th>
<th>Low 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability of child to remember face accurately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability of child to describe face accurately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability of child to be questioned fairly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability of child to understand what is required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- If Other please specify: ________________________________
• In general, what is the youngest age at which you think children can construct an accurate composite?

• In your experience, what types of crime do children construct composites for?

- In your opinion, does this differ from adults? If yes, how?

---

**TRAINING**

• Please tick all training you have received for composite production. If appropriate please give the approximate Date and Length of training:

<table>
<thead>
<tr>
<th>Training</th>
<th>Approx. Date</th>
<th>Approx. Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-taught</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From other users (cascade)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Aspley Ltd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From your police force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Training Centre (Durham) course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scottish Police College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- If Other please specify _____________________
• Please detail any training you have received specifically for producing composites with children (if none please state 'None' in the space provided):

• Please tick all training you have received specifically for interviewing Adults and Children. If appropriate please give the approximate Date and Length of training:

<table>
<thead>
<tr>
<th>Memorandum</th>
<th>Adults</th>
<th>Children</th>
<th>Approx. Date</th>
<th>Approx. Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- If Other please specify:

• Please detail any less formal training you have received, or sought, for interacting with children (e.g. self help books, child development courses, videos):

• In what ways, if any, do you treat children differently to adults in relation to your training or experience?

---

**TIME**

• Of the time you spend producing a composite with a child witness please estimate the average time you spend in each of the following stages. Please indicate (by ticking) whether this is Shorter, the Same or Longer than the average time you spend with an adult witness:

  Rapport building Stage (i.e. before begin interviewing)?

  Shortest _______    Average _______    Longest _______
- How does this compare with adults?

Shorter □  Same □  Longer □

*Interview stage* (i.e. before begin entering description for composite)?

Shortest □  Average □  Longest □

- How does this compare with adults?

Shorter □  Same □  Longer □

*Producing composite stage* (i.e. from entering initial description to printing final version)?

Shortest □  Average □  Longest □

- How does this compare with adults?

Shorter □  Same □  Longer □

- Do you think that the whole process is too long:

  - For children?
    
    Yes □  No □  Don't know □

  - If yes, how long do you think the whole process should take? 

  - For adults?

    Yes □  No □  Don't know □

  - If yes, how long do you think the whole process should take? 

**INTERVIEW STAGE**

- For each of the following interview components, please rate:
  - *Frequency* (how often you use each one with a child witness). Where 1 indicates Low Frequency and 5 High Frequency.
  - *Effectiveness* (how useful a technique you think it is for a child witness). Where 1 indicates Low Effectiveness and 5 High Effectiveness.
Free recall
(i.e. say everything)

Context reinstatement
(i.e. think back to event)

Imagery Techniques
(i.e. picture in minds eye)

asking child to close eyes/look away

Open Questions
(e.g. please describe suspect)

Specific questions
(e.g. what colour was his hair?)

Closed questions
(e.g. did he have a beard?)

Questions not relating to face
(e.g. clothing)

- Please specify how, if at all, any of these differ when interviewing an adult:

- Please indicate how much more Useful or False / Incorrect information you think you gain by conducting the interview with a child witness (compared to just asking for a description):

<table>
<thead>
<tr>
<th>Information which is:</th>
<th>Useful</th>
<th>False / Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A bit more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No more</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- If any problems occur in the interview stage, with children, what do they tend to be?

- Please describe any materials you use during the interview (for example size / spacing charts, scales, list of descriptors)
  - With adults:
If possible, I would be very grateful if you could attach a copy of these materials, specifying whether they you use them with adult witnesses, child witnesses or both.

CONSTRUCTION STAGE

- Do you show the feature description boxes to:
  - Adult witnesses?
    Yes [ ] No [ ]
  - If Yes, please specify why: _______________________________________

- Child witnesses?
  Yes [ ] No [ ]
  - If yes, please specify why: _______________________________________

- For each of the following construction components, please indicate:
  - Frequency (how often you use each one with a child witness). Where 1 indicates Low Frequency and 5 High Frequency.
  - Comparison with adults. Whether this is Less, the Same, or More than you use each one with adults.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Frequency</th>
<th>Comparison with adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature searching</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>Feature moving</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>Feature resizing</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>Feature tone (brightness)</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>Adding accessories (e.g. hat, scars)</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
<tr>
<td>Changes in paint package</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
<td>[ ] [ ] [ ] [ ] [ ]</td>
</tr>
</tbody>
</table>
• If any problems occur with children in the construction stage, what do they tend to be?


---

YOUR OPINIONS ABOUT CHILD WITNESSES

This section concerns your experience and opinions about child witnesses. Obviously there are huge individual differences and varying circumstances between child witnesses. Please try to answer the following questions in a general way rather than as specific cases.

• Do you think that the current procedure you use to obtain descriptions from children is optimal?
  
  Yes □  No □  Don't know □

  - Please explain your answer: ____________________________________________

  ____________________________________________

  - What changes do you think could or should be made? ________________________

  ____________________________________________

  ____________________________________________

  ____________________________________________

  ____________________________________________

• Which features, if any, do children appear to be particularly good at remembering? __________

  ____________________________________________

  ____________________________________________

• Which features, if any, do children appear to be particularly poor at remembering? ______

  ____________________________________________

  ____________________________________________

  ____________________________________________

  ____________________________________________

• Do you think the process of constructing a composite changes a child's memory of the suspect's face?
  
  Yes □  No □  Don't know □

  - Please explain your answer: ____________________________________________

  ____________________________________________

  ____________________________________________
- Do you think that this is more problematic for children than adults?

Yes ☐ No ☐ Don't know ☐

- Please explain your answer: ____________________________________________

- Do you think that composites produced by children are Less, the Same or More accurate than those produced by adults?

Less ☐ Same ☐ More ☐ Don't know ☐

- Please explain your answer: ____________________________________________

- Please outline your preferred method of producing a facial image with a child, including information such as whether you: interview as you go through the composite system / complete a full interview before turning on the computer / use pre interview information to complete the description options or go over these with the witness. (Please continue on a separate sheet if necessary)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

- If there is any additional information you would like share with me please use the space overleaf, or continue on a separate sheet.

Thank you very much for your time and patience.
APPENDIX IIIa: COMPOSITE IMAGES USED IN EXPERIMENTS 1 AND 2

Composite images 1, 3, 4, 6, 7, 8, 9, 12, 13 and 16 were used with child participants in Experiment 2.
APPENDIX IIIb: PRACTICE IMAGES USED IN EXPERIMENT 2
APPENDIX IIIc: CATEGORISATION OF CHILDREN'S DESCRIPTIONS IN EXPERIMENT 2

Categorisation of Low, Medium and High:

- **N. of descriptors**: Low = less than 10 descriptions, Medium = 10-20 descriptions, High = over 20 descriptions
- **% of descriptors matching E-FIT terms**: Low = 0 % to 39%, Medium = 40-60%, High = over 60%
- **% of E-FIT terms used**: Low = 0 % to 39%, Medium = 40-60%, High = over 60%
- **N. of children providing descriptors**: Low = less than 5 children, Medium = 5-6 children, High = over 6 children
- **% of children providing descriptors who use E-FIT terms**: Low = 0 % to 39%, Medium = 40-60%, High = over 60%
- **N. of remaining descriptors**: Low = less than 10 descriptions, Medium = 10-20 descriptions, High = over 20 descriptions
- **Variation of remaining descriptors**: Low = less than 10 descriptions, Medium = 10-20 descriptions, High = over 20 descriptions

<table>
<thead>
<tr>
<th>Feature Element</th>
<th>6-years</th>
<th>8-years</th>
<th>10-years</th>
<th>6-years</th>
<th>8-years</th>
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<td>3/36</td>
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<td>2/20</td>
<td>5/25</td>
<td>10/24</td>
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<td>2/5</td>
<td>3/5</td>
<td>2/9</td>
<td>4/10</td>
<td>5/10</td>
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<td>7/19</td>
<td>14/24</td>
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<td>2/4</td>
<td>3/4</td>
<td>4/5</td>
<td>6/8</td>
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<td>13/24</td>
<td>17/31</td>
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<tr>
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<td>----------</td>
<td>---------</td>
<td>---------</td>
<td>----------</td>
<td>---------</td>
<td>---------</td>
<td>----------</td>
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<tr>
<td>Eyebrow Size</td>
<td>2/3</td>
<td>7/13</td>
<td>4/7</td>
<td>2/3</td>
<td>2/3</td>
<td>2/3</td>
<td>2/2</td>
<td>6/6</td>
<td>3/5</td>
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<tr>
<td>Eyebrow Colour</td>
<td>0/2</td>
<td>0/0</td>
<td>2/7</td>
<td>0/3</td>
<td>0/3</td>
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<tr>
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<td>6/23</td>
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<td>4/8</td>
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<td>2/16</td>
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<td>1/5</td>
<td>1/9</td>
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<tr>
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<td>2/8</td>
<td>6/18</td>
<td>0/3</td>
<td>1/3</td>
<td>1/3</td>
<td>0/5</td>
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<td>5/7</td>
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<td>0/3</td>
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<td>Nose Size (length &amp; width)</td>
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<td>11/28</td>
<td>12/29</td>
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<td>2/5</td>
<td>2/5</td>
<td>5/6</td>
<td>7/10</td>
<td>5/10</td>
</tr>
<tr>
<td>Mouth Size (Width)</td>
<td>0/11</td>
<td>0/4</td>
<td>1/9</td>
<td>0/3</td>
<td>0/3</td>
<td>1/3</td>
<td>0/6</td>
<td>0/2</td>
<td>1/6</td>
</tr>
</tbody>
</table>

- **N° of descriptors provided matching E-FIT terms/ N° of descriptors provided**
- **N° of E-FIT terms used by children / total possible n° of E-FIT terms**
- **N° of children using E-FIT terms / N°. children providing descriptors**
<table>
<thead>
<tr>
<th>Feature Element</th>
<th>6-years</th>
<th>8-years</th>
<th>10-years</th>
<th>6-years</th>
<th>8-years</th>
<th>10-years</th>
<th>6-years</th>
<th>8-years</th>
<th>10-years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth Lips</td>
<td>1/10</td>
<td>2/13</td>
<td>5/14</td>
<td>1/5</td>
<td>1/5</td>
<td>2/5</td>
<td>1/5</td>
<td>1/6</td>
<td>3/5</td>
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<td>17%</td>
<td>60%</td>
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<td>0/21</td>
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<td>0/3</td>
<td>3/7</td>
<td>0/10</td>
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<td>Ear Shape</td>
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<td>8/10</td>
<td>2/2</td>
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<td>2/4</td>
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<td>6/8</td>
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<td>100%</td>
<td>50%</td>
<td>33%</td>
<td>75%</td>
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</tr>
<tr>
<td>Ear Setting</td>
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<td>0/6</td>
<td>0/12</td>
<td>0/3</td>
<td>0/3</td>
<td>0/3</td>
<td>0/3</td>
<td>0/6</td>
<td>0/7</td>
</tr>
<tr>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<td>0%</td>
<td>0%</td>
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</tr>
</tbody>
</table>
APPENDIX IVa: VISUAL PROMPTS (USED IN STUDY 3 AND STUDY 4)
1.1 Eyebrow Shape

1

2

3

4

5
1.2 Eyebrow Size (shape 1)
1.2 Eyebrow Size (shape 3)
1.2 Eyebrow Size (shape 4)
<table>
<thead>
<tr>
<th>Eyebrow Colour</th>
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<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

1.3 Eyebrow Colour
2.1 Eye Shape
2.2 Eye Size (shape 1)
2.2 Eye Size (shape 2)
2.2 Eye Size (shape 3)
3.1 Nose Length
3.2 Nose Breadth
3.3 Nose Tip
4.1 Lips

1. 

2. 

3. 

4. 

5. 

6.
4.2 Mouth Shape

1

2

3

4

5
4.3 Mouth Size
(shape 1)
4.3 Mouth Size (shape 3)

1

2

3

4
4.3 Mouth Size (shape 4)
5.1 Ear Shape
5.2 Ear Size (shape 2)
7.1 Face Shape

1

2

3

4

5

6
6.1 Hair Thickness / Length
6.2 Hair Brushing / Style
6.4 Hair Colour Chart

1  2  3  4  5  6
1.4 Eyebrow Spacing
2.4 Eye Spacing
8.1 Eye & Eyebrow Spacing (Fig. 4)

1

2

3

4
### 9.1 Nose, Mouth & Chin Spacing

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Example 1" /></td>
<td><img src="image2.png" alt="Example 2" /></td>
<td><img src="image3.png" alt="Example 3" /></td>
<td><img src="image4.png" alt="Example 4" /></td>
</tr>
</tbody>
</table>

- **1. Straight**
- **2. Curved**
- **3. Arched, half a circle**

**Comments:**
- 2. Medium, reddish, browny
- 3. Dark, browny, black
- 4. Greying, bit of grey
- 5. Grey
- 6. Not sure?
### APPENDIX IVb: VERBAL PROMPTS (USED IN STUDY 3 AND STUDY 4)

<table>
<thead>
<tr>
<th>1.1 Eyebrow Shape</th>
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<tbody>
<tr>
<td>1. Straight</td>
<td></td>
</tr>
<tr>
<td>2. Curved</td>
<td></td>
</tr>
<tr>
<td>3. Arched, half a circle</td>
<td></td>
</tr>
<tr>
<td>4. Peaked, pointy</td>
<td></td>
</tr>
<tr>
<td>5. Not sure?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 Eyebrow Thickness</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Thin, a line</td>
<td></td>
</tr>
<tr>
<td>2. Average, Normal</td>
<td></td>
</tr>
<tr>
<td>3. Thick, fat</td>
<td></td>
</tr>
<tr>
<td>4. Not sure?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3 Eyebrow Colour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Light, blondey</td>
<td></td>
</tr>
<tr>
<td>2. Medium, reddy, browny</td>
<td></td>
</tr>
<tr>
<td>3. Dark, browny, black</td>
<td></td>
</tr>
<tr>
<td>4. Greying, bit of grey</td>
<td></td>
</tr>
<tr>
<td>5. Grey</td>
<td></td>
</tr>
<tr>
<td>6. Not sure?</td>
<td></td>
</tr>
</tbody>
</table>
| 2.1 Eye Shape              | 1. Narrow, like closing  
|                            | 2. Oval  
|                            | 3. Round, wide opened  
|                            | 4. Not sure?  
| 2.2 Eye Size              | 1. Small  
|                            | 2. Average, normal  
|                            | 3. Large, big  
|                            | 4. Not sure?  
| 2.3 Eye Colour            | 1. Light, grey, blue, green  
|                            | 2. Dark, brown  
|                            | 3. Not sure?  

| 3.1 Nose Length                      | 1. Short                        |
|                                    | 2. Average, normal              |
|                                    | 3. Long                         |
|                                    | 4. Not sure?                    |
| 3.2 Nose Breadth                   | 1. Narrow, thin                 |
|                                    | 2. Average, normal              |
|                                    | 3. Wide, big, fat               |
|                                    | 4. Not sure?                    |
| 3.3 Nose Tip                       | 1. Upturned, can see all of nostrils |
|                                    | 2. Straight, can see a bit of nostrils |
|                                    | 3. Down turned, cannot see nostrils |
|                                    | 4. Not sure?                    |
| **4.1 Mouth Lips** | 1. Very thin, pressed together  
2. Thin, flat  
3. Average, normal  
4. Thick  
5. Very thick, fat  
6. Not sure? |
|-------------------|--------------------------------------------------|
| **4.2 Mouth Shape** | 1. Upturned, sort of smiling  
2. Straight, not smiling  
3. Down turned, down  
4. Lop-sided, down on one side  
5. Not sure? |
| **4.3 Mouth Width** | 1. Narrow, thin  
2. Average, normal  
3. Wide, big, fat  
4. Not sure? |
| 5.1 Ear Shape                      | 1. Rounded, round  
|                                   | 2. Pointing, pointy  
|                                   | 3. Not sure?  
| 5.2 Ear Size                      | 1. Small, short  
|                                   | 2. Average, normal  
|                                   | 3. Large, long  
|                                   | 4. Not sure?  
| 5.3 Ear Setting                   | 1. Close to head, back  
|                                   | 2. Average, normal  
|                                   | 3. Protruding, sticking out  
|                                   | 4. Not sure?  |
| 6.1 Hair Thickness / Length                     | 1. Bald, no hair |
|                                               | 2. Almost bald, a little bit of hair |
|                                               | 3. Receding, going bald |
|                                               | 4. Very short |
|                                               | 5. Short |
|                                               | 6. Collar Length, long |
|                                               | 7. Long, very long |
|                                               | 8. Not sure? |

<p>| 6.2 Hair Brushing / Style                      | 1. Brushed forward |
|                                               | 2. Brushed backwards |
|                                               | 3. Spiky, brushed up |
|                                               | 4. Parting, brushed apart |
|                                               | 5. Not sure? |</p>
<table>
<thead>
<tr>
<th>6.3 Hair Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Straight</td>
<td></td>
</tr>
<tr>
<td>2. Slightly waved, a bit wavy</td>
<td></td>
</tr>
<tr>
<td>3. Wavy</td>
<td></td>
</tr>
<tr>
<td>4. Curly</td>
<td></td>
</tr>
<tr>
<td>5. Frizzy, very curly</td>
<td></td>
</tr>
<tr>
<td>6. Not sure?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.4 Hair Colour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Light, blondy</td>
<td></td>
</tr>
<tr>
<td>2. Medium, reddy, browny</td>
<td></td>
</tr>
<tr>
<td>3. Dark, browny, black</td>
<td></td>
</tr>
<tr>
<td>4. Greying, bit of grey</td>
<td></td>
</tr>
<tr>
<td>5. Grey</td>
<td></td>
</tr>
<tr>
<td>6. Not sure?</td>
<td></td>
</tr>
</tbody>
</table>
7.1 Face Shape

1. Round
2. Oval
3. Triangular, pointy
4. Angular, like a diamond
5. Square, straight
6. Not sure?
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
</table>
| 2.4 Eye Spacing                              | 1. Close, close together  
2. Average, normal  
3. Apart, far apart from each other  
4. Not sure? |
| 1.4 Eyebrow Spacing                          | 1. Close, close together  
2. Average, normal  
3. Apart, far apart from each other  
4. Not sure? |
| 8.1 Eyes & Eyebrow Spacing                   | 1. Close, close together  
2. Average, normal  
3. Apart, far apart from each other  
4. Not sure? |
| 9.1 Nose, Mouth & Chin Spacing               | 1. Close, close together  
2. Average, normal  
3. Apart, far apart from each other  
4. Not sure? |
APPENDIX IVc: RESPONSE SHEET USED IN EXPERIMENTS 3, 4\textsuperscript{f} AND 5\textsuperscript{f}

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<td>1.3 Brow Colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Eye Shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Eye Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Eye Colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Nose Length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Nose Breadth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Nose Tip</td>
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<td></td>
</tr>
<tr>
<td>4.1 Mouth Shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Mouth Width</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3 Mouth Lips</td>
<td></td>
<td></td>
</tr>
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<td>5.1 Ears Shape</td>
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<td>5.2 Ears Size</td>
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<td>5.3 Ear Setting</td>
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<td></td>
</tr>
<tr>
<td>6.1 Hair Thickness / Length</td>
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<td></td>
</tr>
<tr>
<td>6.2 Hair Brushing / Style</td>
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<td></td>
</tr>
<tr>
<td>6.3 Hair Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4 Hair Colour</td>
<td></td>
<td></td>
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<tr>
<td>7.1 Face Shape</td>
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<tr>
<td>1.4 Brow Spacing</td>
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</tr>
<tr>
<td>2.4 Eye Spacing</td>
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<td></td>
</tr>
<tr>
<td>8.1 Eye &amp; Brow Spacing</td>
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</tr>
<tr>
<td>9.1 Nose, Mouth &amp; Chin Spacing</td>
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<td></td>
</tr>
</tbody>
</table>

Preference?

\textsuperscript{f} For Experiment 4 the sheet included rows for responses to the practice and identification tasks.

\textsuperscript{f} For Experiment 5 the sheet included rows for responses to the practice task.
Target 1
APPENDIX IVe: TARGET AND PROMPT ORDER CALCULATIONS FOR EXPERIMENT 4

(1) Effect of Target on the Quantity of Descriptors

A 2x3x3 mixed ANOVA design was employed. The between participants factor Target had two levels (Target 1 and Target 2). The within participants factor Description, had three levels (Free, Visual and Verbal). The between participants factor Age had 3 levels (6-, 8-, and 10 years). The dependent variable was the quantity of descriptors provided.

Results showed a statistically non-significant main effect of Target \[ F(1,84)=0.016, p=0.899 \]; no statistically significant interaction between Target and Description \[ F(1.732,145.488)=0.591, p=0.532 \]^a; and no statistically significant 3-way Description by Target by Age interaction \[ F(3.464,145.488)=1.118, p=0.347 \]^b on the quantity of descriptors provided. There was a statistically significant 2-way Age by Target interaction \[ F(2,84)=4.992, p<0.01 \] caused by 6-year-olds providing a larger quantity of descriptors for Target 2 and 8-year-olds providing a larger quantity of descriptors for Target 1. 10-year-olds provided approximately the same quantity of descriptors for both targets.

(2) Effect of Target on the Accuracy of Prompted Descriptors

A 2x2x3 mixed ANOVA design was employed. The between participants factor Target had two levels (Target 1 and Target 2). The within participants factor Prompt had two levels (Visual and Verbal). The between participants factor Age had 3 levels (6-, 8-, and 10 years). The dependent variable was the accuracy of the prompted descriptors.

---

^a Mauchly's test of sphericity was significant \[ W=0.845, df=2, p<0.005 \], so the Greenhouse-Geisser epsilon correction was applied to the degrees of freedom and subsequent p-value

^b \[ W=0.845, df=2, p<0.005 \]
Results showed no statistically significant 2-way interaction between Target and Age \( [F(2,84)=0.944, p=0.957] \); no statistically significant 2-way interaction between Target and Prompt \( [F(1,84)=0.519, p=0.473] \); and no statistically significant 3-way interaction between Prompt, Target and Age \( [F(2,84)=0.096, p=0.909] \); on the accuracy of the prompted descriptions provided. There was a statistically significant main effect of Target \( [F(1,88)=9.900, p<0.005] \), due partly to the higher maximum adult score for Target 1 (due to the fact that Target 1 only included 19, rather than 20, feature elements). Additionally, as Target 1 had only a small amount of obviously very dark hair, selecting the correct exemplar was an easier task than for Target 2, meaning children generally selected the same exemplar as the adults for Hair Type and Colour. Finally, children were poor at selecting the correct Hair Style for Target 2.

(3) Effect of Target on the Inaccuracy of Prompted Descriptors

A 2x2x3 mixed ANOVA design was employed on the same factors specified in (2). The dependent variable was the inaccuracy of the prompted descriptions.

Results showed a statistically non-significant main effect of Target \( [F(1,84)=0.636, p=0.427] \); no statistically significant 2-way interaction between Target and Age \( [F(2,84)=0.374, p=0.689] \); no statistically significant 2-way interaction between Target and Prompt \( [F(1,84)=1.153, p=0.286] \); and no statistically significant 3-way interaction between Prompt, Target and Age \( [F(2,84)=0.488, p=0.616] \); on the inaccuracy of prompted descriptions provided.

(4) Effect of Prompt Order on the Quantity of Descriptors

A 2x3x3 mixed ANOVA design was employed. The between participants Prompt Order had two levels (Verbal-visual and Visual-verbal). The within participants factor
Description, had three levels (Free, Visual and Verbal). The between participants factor Age had 3 levels (6-, 8-, and 10 years). The dependent variable was the quantity of descriptors provided.

Results showed a statistically non-significant main effect of Prompt Order \( F(1,84) = 3.275, p=0.074 \); a statistically non-significant 2-way Age by Prompt Order interaction \( F(2,84) = 0.635, p=0.533 \)  a statistically non-significant interaction between Prompt Order and Description \( F(1,735,145.708) = 0.109, p=0.870 \); and no statistically significant 3-way Description by Prompt Order by Age interaction \( F(3,469,145.708) = 0.939, p=0.434 \) on the quantity of descriptors provided.

(5) Effect of Prompt Order on the Accuracy of Prompted Descriptions

A 2x2x3 mixed ANOVA design was employed. The between participants factor Prompt Order had two levels (Verbal-visual and Visual-verbal). The within participants factor Prompt had two levels (Visual and Verbal). The between participants factor Age had 3 levels (6-, 8-, and 10 years). The dependent variable was the accuracy of the prompted descriptors.

Results showed a statistically non-significant main effect of Prompt Order \( F(1,84) = 3.707, p=0.058 \) ; no statistically significant 2-way interaction between Prompt Order and Age \( F(2,84) = 2.799, p=0.067 \); and no statistically significant 2-way interaction between Prompt Order and Prompt \( F(1,84) = 2.734, p=0.102 \) on the accuracy of the prompted descriptions provided. There was a statistically significant 3-way interaction between Prompt, Prompt Order and Age \( F(2,84) = 3.641, p<0.05 \). This interaction was due to the fact that for prompts presented in the order visual-verbal, children of all ages

\(^1\) \([W=0.847, df=2, p<0.005]\)
\(^2\) \([W=0.847, df=2, p<0.005]\)
performed at similar levels. Whereas, when prompts were presented in the order verbal-visual, 8- and 10-year-olds provided descriptions of a higher accuracy for the visual prompts and 6-year-olds provided descriptions of a higher accuracy for the verbal prompts.

(6) Effect of Prompt Order on the Inaccuracy of Prompted Descriptions

A 2x2x3 mixed ANOVA design was employed on the same factors specified in (5). The dependent variable was the inaccuracy of the prompted descriptions.

Results showed a statistically non-significant main effect of Prompt Order \([F(1,84)=1.824, p=0.180]\); no statistically significant 2-way interaction between Prompt Order and Age \([F(2,84)=0.502, p=0.607]\); and no statistically significant 2-way interaction between Prompt Order and Prompt \([F(1,84)=0.542, p=0.464]\) on the inaccuracy of prompted descriptions provided. There was a statistically significant 3-way interaction between Prompt, Prompt Order and Age \([F(2,84)=3.292, p<0.05]\). This interaction was due to the explanation provided above for the accuracy of descriptions.
### APPENDIX Va: PREVIOUS COMPOSITE RESEARCH WITH CHILDREN

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Participants</th>
<th>Composite System</th>
<th>Stimuli</th>
<th>Delay</th>
<th>Design &amp; Procedure</th>
<th>Evaluation Measure</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flin, Markham &amp; Davies (1989) Exp. 1</td>
<td>48 children 8-9, 11-12 yrs 24 adults (from Christie et al. (1981))</td>
<td>Photo-FIT</td>
<td>Photograph (colour); Adult male; 60sec presentation; 3 pairs of target faces</td>
<td>None</td>
<td>1. Verbal Description free, prompted (with facial features) 2. Composite Construction for 2 photos: 1 target absent; 1 target present. 3. Identification array of 24 faces (6 target faces mixed with 18 new faces) Artistic enhancement added</td>
<td>Sorting task: 20 judges sort composites into 6 piles corresponding to likenesses of 6 target faces awarded score of 1-20 based on n°. of judges who correctly assigned composite to correct face.</td>
<td>Composites Sig. effect of Age: adults sig. more accurate than 11 yrs; difference between 11 yrs. &amp; 8 yrs. approached sig. All scores low Composites correctly sorted: 50% for adults; 40% for 11 yrs; 34% for 8 yrs (chance=17%) No sig. difference between photo absent/present Incorrect sorting Hairstyle is the primary source of confusion</td>
<td>Advantages Adult comparison objective measure of composite utility Disadvantages Not forensically realistic: photographic stimuli; no delay</td>
</tr>
<tr>
<td>Davies, Tarrant &amp; Flin (1989)</td>
<td>128 children 6-7, 10-11 yrs</td>
<td>Photo-FIT</td>
<td>Live interaction; Adult male; 5min presentation (3min30sec close proximity); 2 targets used</td>
<td>1 week</td>
<td>2 groups: Group 1: 1. Verbal Description free, prompted (with facial features) 2. Identification from array of 8 faces. Group 2: 1. Verbal Description (as above) 2. Composite Construction 3. Identification</td>
<td>Likeness Rating 12 judges rate composite likeness on 5-point scale from 'poor' to 'very good'</td>
<td>Composites No sig. effect of Age All likeness ratings low Mean likeness ratings: 1.53 (30.5%) for 6-7 yrs and 1.67 (33.4%) for 10-11 yrs. Identification No effect on identification if Photo-fit made.</td>
<td>Advantages Forensically realistic stimuli (live interaction) Forensically realistic delay (1 week) Disadvantages No objective measure of composite utility No adult comparison</td>
</tr>
<tr>
<td>Researchers</td>
<td>Participants</td>
<td>Composite System</td>
<td>Stimuli</td>
<td>Delay</td>
<td>Design &amp; Procedure</td>
<td>Evaluation Measure</td>
<td>Results</td>
<td>Comments</td>
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</tr>
<tr>
<td>Schwartz-Kenney,</td>
<td>32 children</td>
<td>Identikit</td>
<td>Live</td>
<td>None</td>
<td>1. Prompted</td>
<td>Likeness Rating</td>
<td>Composites</td>
<td>Advantages</td>
</tr>
<tr>
<td>Norton, Chalkey,</td>
<td>5-6, 8-9yrs</td>
<td>interaction;</td>
<td>interaction; Adult</td>
<td>Prompted</td>
<td>Description</td>
<td>74 judges rate composite likeness on 6-point scale from 'very much unlike' to 'very much alike'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jewett, Davis</td>
<td></td>
<td>Adult</td>
<td>female;</td>
<td></td>
<td>Age, height, weight &amp; hair colour.</td>
<td></td>
<td>8-9yrs sig. more accurate than 5-6yrs</td>
<td>Forensically realistic composite utility</td>
</tr>
<tr>
<td>(1996)</td>
<td></td>
<td>15mins</td>
<td>presentation; 1 target</td>
<td></td>
<td>Description</td>
<td></td>
<td>Mean likeness ratings: 2.57 (42%) for 8-9yrs and 2.12 (35%) for 5-6yrs</td>
<td>Not forensically realistic delay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
<td>2. Composite</td>
<td></td>
<td>No objective measure of composite utility</td>
<td>No adult comparison</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction</td>
<td></td>
<td></td>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX Vb: LINE-UPS USED IN EXPERIMENT 5

Target 1

Target 2
Target 3

Target 4
### APPENDIX Ve: RESPONSE SHEET USED IN EXPERIMENT 5

**Opinion of Initial Face**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hair</td>
<td>y/n</td>
<td>y/n</td>
<td>y/n</td>
<td>y/n</td>
<td></td>
</tr>
<tr>
<td>2 Face Shape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Eyebrows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Eyes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Nose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Ears</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Maximum time?**  Yes / No

**Other changes?**

**Identification Task**
## APPENDIX Vd: SUMMARY FORM USED TO INPUT VISUAL PROMPT CHOICES INTO E-FIT IN EXPERIMENT 5.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Visual Choices</th>
<th>Feature</th>
<th>Visual Choices</th>
</tr>
</thead>
</table>
| **1.1 Eyebrow Shape** | 1. Straight  
2. Curved  
3. Arched  
4. Peaked  
5. Not sure? | **5.2 Ear Size** | 1. Small  
2. Average  
3. Large  
4. Not sure? |
| **1.2 Eyebrow Thickness** | 1. Thin  
2. Average  
3. Thick  
2. Average  
3. Promuding  
4. Not sure? |
| **1.3 Eyebrow Colour** | 1. Light  
2. Medium  
3. Dark  
4. Greying  
5. Grey  
6. Not sure? | **6.1 Hair Thickness / Length** | 1. Bald  
2. Almost bald  
3. Receding  
4. Very short  
5. Short  
6. Collar Length  
7. Long  
8. Not sure? |
| **2.1 Eye Shape** | 1. Narrow  
2. Oval  
3. Round  
2. Brushed backwards  
3. Spiky  
4. Parting  
5. Not sure?  
6. Not sure? |
| **2.2 Eye Size** | 1. Small  
2. Average  
3. Large  
4. Not sure? | **6.3 Hair Type** | 1. Straight  
2. Slightly waved  
3. Wavy  
4. Curly  
5. Frizzy  
6. Not sure? |
| **2.3 Eye Colour** | 1. Light  
2. Dark  
3. Not sure? | **6.4 Hair Colour** | 1. Light  
2. Medium  
3. Dark  
4. Greying  
5. Grey  
6. Not sure? |
| **3.1 Nose Length** | 1. Short  
2. Average  
3. Long  
4. Not sure? | **7.1 Face Shape** | 1. Round  
2. Oval  
3. Triangular  
4. Angular  
5. Square  
6. Not sure? |
| **3.2 Nose Breadth** | 1. Narrow  
2. Average  
3. Wide  
2. Average  
3. Apart  
4. Not sure? |
| **3.3 Nose Tip** | 1. Upturned  
2. Straight  
3. Down turned  
2. Average  
3. Apart  
4. Not sure? |
| **4.1 Mouth Lips** | 1. Very thin  
2. Thin  
3. Average  
4. Thick  
5. Very thick  
2. Average  
3. Apart  
4. Not sure? |
| **4.2 Mouth Shape** | 1. Upturned  
2. Straight  
3. Down turned  
4. Lop-sided  
2. Average  
3. Apart  
4. Not sure? |
| **4.3 Mouth Width** | 1. Narrow  
2. Average  
3. Wide  
2. Average  
3. Apart  
4. Not sure? |
| **2.1 Ear Shape** | 1. Rounded  
2. Pointing  
2. Average  
3. Apart  
4. Not sure? |
APPENDIX Vc: COMPOSITE IMAGES CONSTRUCTED IN EXPERIMENT 5

Target 1

6-year-olds

8-year-olds

10-year-olds

Adults
APPENDIX VI: IMAGES OF TARGETS USED IN EXPERIMENT 6\textsuperscript{k}

Target 1

Target 2

Target 3

\textsuperscript{k} Actual size of each image = approximately 6cm by 10cm
Background

When the identity of an offender is unknown in a criminal investigation, witnesses are often asked to produce a composite image with a police officer. E-FIT is a composite software package in use by police forces today. The aim of E-FIT is to produce a suspect likeness. Below is an example of an E-FIT created by a trained police operator which is considered to be a good likeness of the man in the photograph.

<table>
<thead>
<tr>
<th>Photograph</th>
<th>E-FIT image</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Photograph" /></td>
<td><img src="image2.jpg" alt="E-FIT image" /></td>
</tr>
</tbody>
</table>
Instructions

- You are about to see two sets of face images. Each set will consist of one photograph and sixteen E-FIT (facial composite) images that have been made of it, labelled A to P.

- For each set I would like you to give a number of scores. You should record your decisions on the table provided:

1. Complete details of your gender and age
2. Record the number on the photograph you are looking at (shown on the bottom of the page)
3. Rate how distinctive you think the person in the photograph looks from 1 to 10 (where 1 is a "very average-looking person" and 10 is a "very distinctive-looking person").
4. Sort the E-FITs (A to P) equally into 4 ordered groups as follows:

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best</td>
<td>Next Best</td>
<td>Next Worst</td>
<td>Worst</td>
</tr>
<tr>
<td>Group 1</td>
<td>Group 2</td>
<td>Group 3</td>
<td>Group 4</td>
</tr>
<tr>
<td>(4 E-FITs)</td>
<td>(4 E-FITs)</td>
<td>(4 E-FITs)</td>
<td>(4 E-FITs)</td>
</tr>
<tr>
<td>look most like the photo</td>
<td>look least like the photo</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Record the group number for each of the E-FITs in the column marked "Group Number" (i.e. Group 1, Group 2, Group 3 or Group 4).
6. Next, give each E-FIT (A to P) a score from 1 to 10 (where 1 is "nothing like the person" and 10 is "exactly like the person") in the column marked "Rating". You may provide the same rating score for more than one E-FIT.
7. Repeat this procedure for the second photograph.

Remember that there are no right or wrong answers - it is your perception of the images which matters.
APPENDIX Vh: RESPONSE SHEET USED IN EXPERIMENT 6

<table>
<thead>
<tr>
<th>Participant No.</th>
<th>Gender</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Photograph number:**

Distinctiveness of photograph (from 1 to 10):

<table>
<thead>
<tr>
<th>E-FIT</th>
<th>Group Number from 1 (most like photo) to 4 (least like photo)</th>
<th>Rating from 1 (nothing like the person) to 10 (exactly like the person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
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<tr>
<td>C</td>
<td></td>
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<td>D</td>
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<td>E</td>
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<td>O</td>
<td></td>
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<tr>
<td>P</td>
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</tbody>
</table>
APPENDIX VI: TARGET CALCULATIONS FOR EXPERIMENTS 6 AND 7

A 5x4x2 between participants ANOVA design was employed. The factor ‘Target’ had five levels (Targets 1 to 5). The factor ‘Prompt’ had two levels (Visual and Verbal) and the factor ‘Age’ had four levels (6-, 8-, 10-years and Adult). The dependent variables were (1) mean ranking (2) mean rating and (3) number of correct matches as follows:

(1) Mean Ranking
Results showed a non-significant main effect of Target \( [F(4,40)=0.000, p=1.000] \); a non-significant 2-way interaction between Prompt and Target \( [F(4,40)=0.751, p=0.563] \); a non-significant 2-way interaction between Age and Target \( [F(12,40)=1.366, p=0.222] \); and a non-significant 3-way interaction between Age, Prompt and Target \( [F(12,40)=1.625, p=0.123] \) on the ranking of composite images.

(2) Mean Rating
Results showed a non-significant main effect of Target \( [F(4,40)=4.33, p=0.784] \); a non-significant 2-way interaction between Prompt and Target \( [F(4,40)=0.625, p=0.647] \); a non-significant 2-way interaction between Age and Target \( [F(12,40)=1.534, p=0.152] \); and a non-significant 3-way interaction between Age, Prompt and Target \( [F(12,40)=1.591, p=0.134] \) on the rating of composite images.

Therefore, Target will not be considered further in the Ranking and Rating results section.

(3) Matching
Results showed a non-significant main effect of Target \( [F(4,40)=1.377, p=0.259] \); a non-significant 2-way interaction between Age and Target \( [F(12,40)=1.696, p=0.390] \); and a non-significant 3-way interaction between Age, Prompt and Target \( [F(12,40)=0.840, p=0.610] \) on the matching of composite images. There was a statistically significant 2-way interaction between Prompt and Target \( [F(4,40)=3.899, p<0.05] \) which is discussed in Section 8.4.3.
APPENDIX Vj: LINE-UPS USED IN EXPERIMENT 7

Each line-up was printed on an A3 sheet. Approximate size of each image = 7cm by 5.5cm
APPENDIX V_k: INSTRUCTION SHEET USED IN EXPERIMENT 7

Instructions

- You are about to see a number of E-FITs (facial composites) along with a photo array of 10 faces. The photo from which each E-FIT was constructed is always present in the array.

- I would like you to record a number of scores. You should record your decisions on the table provided:

1. Complete details of your gender and age

2. Record the number on the composite you are looking at (shown at the top of the page, this will be a number between 1 and 80) in the column marked "E-FIT"

3. Indicate which photograph (A to J) you think the composite most resembles in the column marked "Photograph"

4. Repeat steps 2 and 3 for all of the composites you have been given

- Please note:
  - The photo from which each composite was constructed is always present in the array.
  - You may choose a photograph as many or as few times as you wish
  - You do not have to choose every photograph
  - The numbers and letters each composite and photograph are labelled with were allocated entirely randomly and give no indication as to the correct response.
  - Each judgement should be independent of any others
  - You may take as long as necessary to make a decision
APPENDIX VI: RESPONSE SHEET USED IN EXPERIMENT 7

<table>
<thead>
<tr>
<th>Participant number:</th>
<th>Gender:</th>
<th>Age:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>E-FIT No. (between 1 and 80)</th>
<th>Photograph (A to J) composite most resembles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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