
COGNITION IN ACTION

COGNITION IN FORENSIC SETTINGS II

Dr Kate Williams

PROVIDING FACE DESCRIPTIONS

- EWs describe what they witnessed.
 - Including description of suspects face
 - Sounds easy, but actually very difficult
- Serves important function of:
 - Allowing law enforcement to search for suspect
 - Give public idea of who to look out for
 - Basis to select foils in line-up
- Needs to be as accurate as possible!

DESCRIBING FACES

- How can we put visual image into words?
- Dual-code theory:
 - Suggests this type of information is stored separately
 - Visual code: global information
 - How face fits together (not just component parts).
 - Verbal code: specific information containing verbal labels
 - Independent and additive – e.g., “They had a big round nose”
- Advantage = If they cannot remember one type, hopefully they have other as a back-up.

DESCRIBING FACES

- Consequences of verbal processing:
 - Positive:
 - Elaboration – meaningful labels associated with new stimuli.
 - Repetition – rehearsal helps memory of visual info
 - Negative:
 - Discriminating targets from distractors is difficult if they are similar
- When people in line-up look similar, verbal labels not useful
- Verbal labels only helpful if only one person in line-up looks like verbal label

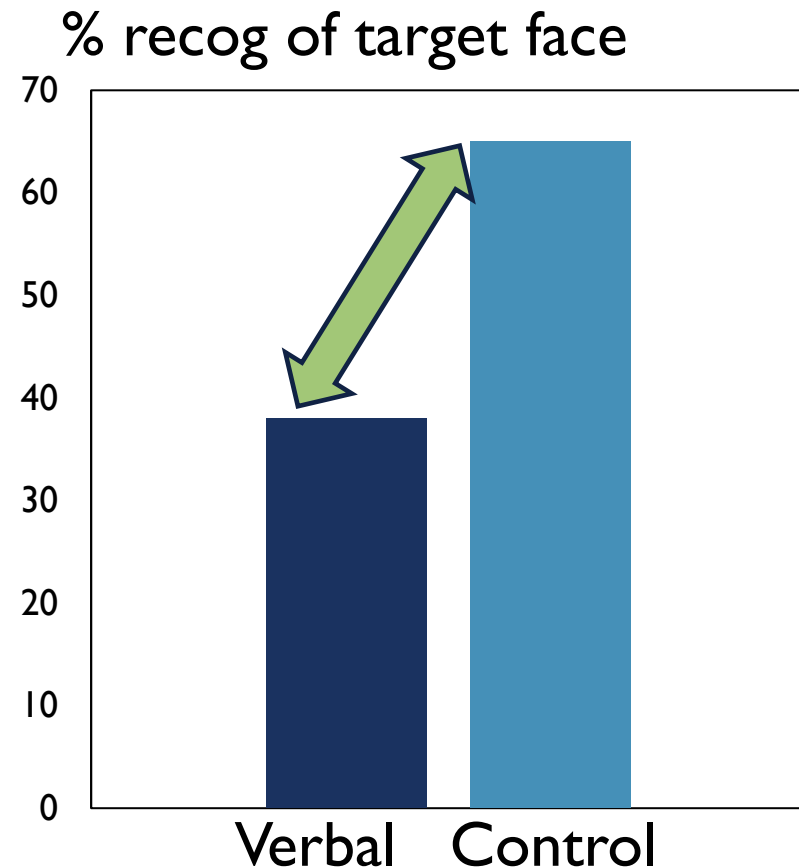
DESCRIBING FACES – VERBAL OVERSHADOWING (VO) EFFECT

Ps watch video of bank robbery

**Describe culprits
face for 5 mins**

**Shown slides of 8
verbally similar faces**

Schooler & Engstler-Schooler (1990)



VO: RETREIVAL ACCOUNT

- Recoding Interference: verbal memory accessed but loss of retrieval availability to visual memory (blocking effect)
- Global vs Local processing: Macrae & Lewis (2002)
 - Letter ID task with 100 mismatching letters
 1. Global processing condition
 2. Local processing condition
 - Face recognition test

VO: RETREIVAL ACCOUNT

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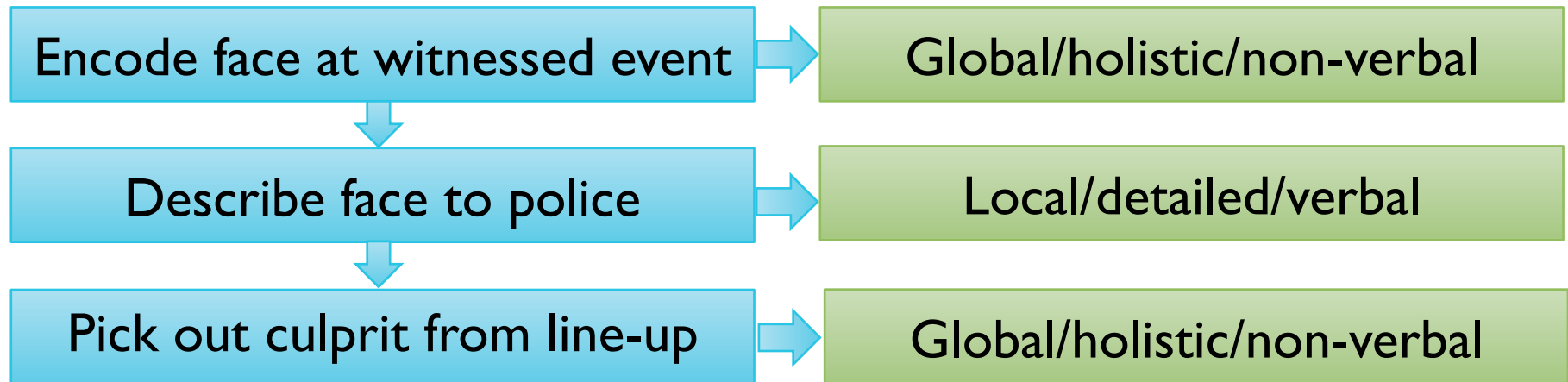
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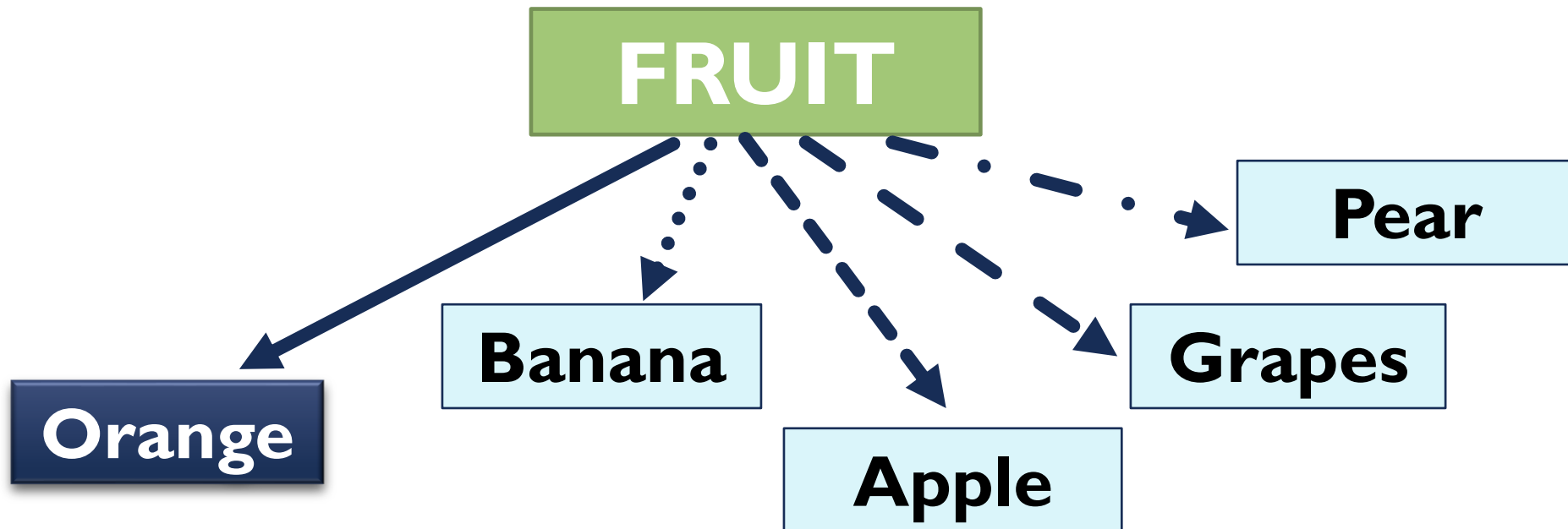
MODALITY MISMATCH



- Mismatch between global processing at line-up with local processing during verbalisation
- Difficult to get EW out of local, detailed, verbal description stage when at line-up
- However, some people may be expert in certain sensory domain

INVESTIGATING MEMORY

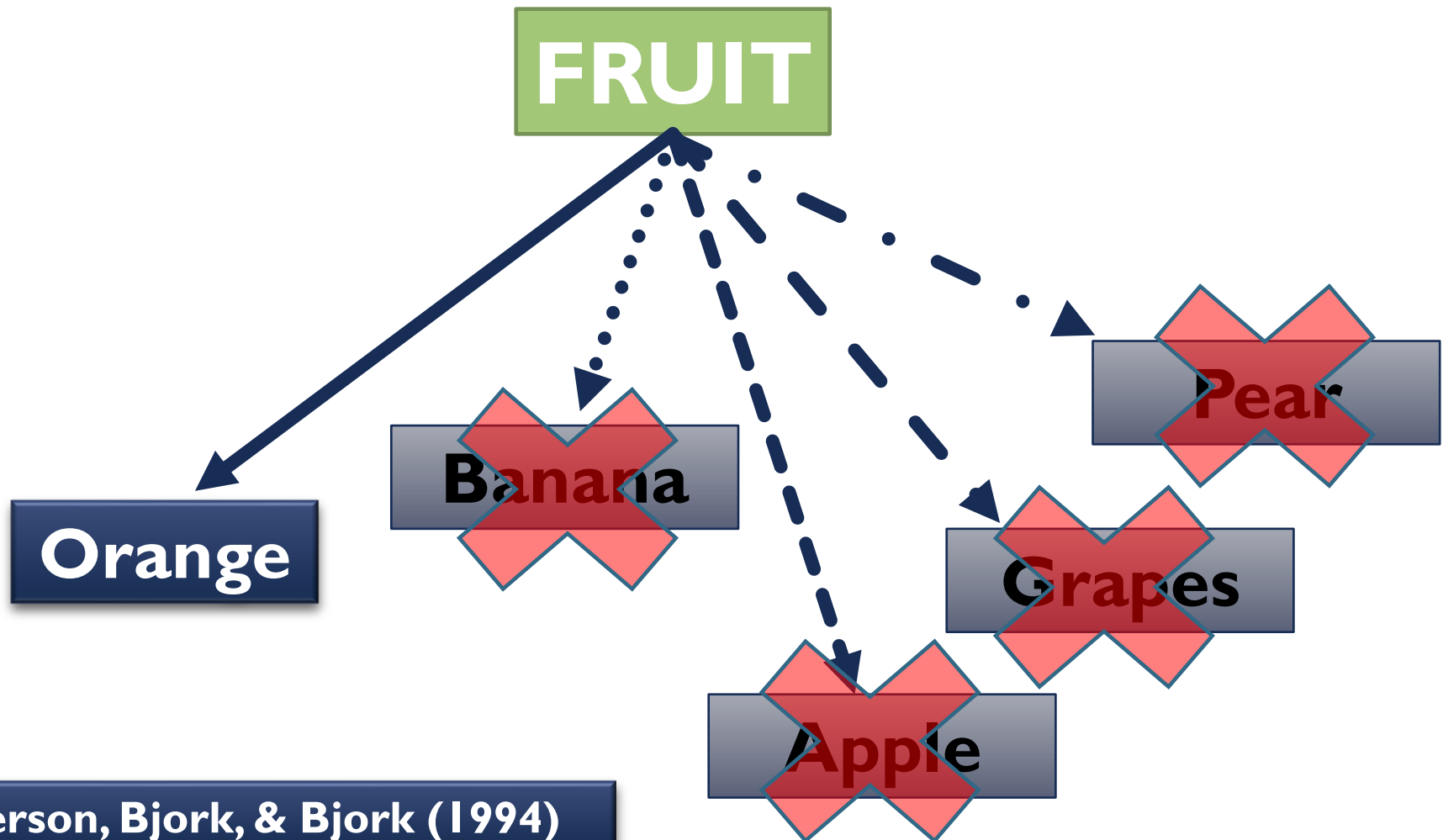
- Can be difficult to retrieve specific memory due to retrieval being dependent on **cues** that facilitate access to the correct item.
- Spreading activation model: activation of cue spreads to the representation of the memory the person is trying to retrieve.



UNCONSCIOUS FORGETTING

- **Retrieval-induced Forgetting (RIF):**
 - Retrieving an item from memory (e.g., Orange) from a specific category cue (e.g., *Fruit*), can later impair retrieval of another item sharing the same category (e.g., Pear), but not the retrieval of an item from an unrelated category (e.g., *Vehicle-Car*).
 - Happens due to cues for recall being insufficiently specified – general cues activate the target memory (R_p^+) in addition to all other memories related to that cue (R_p^-).
 - Unwanted information competes for retrieval with the target item.
 - These are then forgotten so that the target item can be retrieved.

COMPETITION FOR RETRIEVAL



Anderson, Bjork, & Bjork (1994)

Typical Retrieval-practice paradigm

Study

Fruit_ orange

Fruit_ banana

Fruit_ pear

Fruit_ apple

Vehicle_ car

Vehicle_ train

Vehicle_ bicycle

Vehicle_ airplane

Retrieval
practice

Fruit_ or _____

Fruit_ ba _____

Test

Rp+

Fruit_ or _____

Fruit_ ba _____

Rp-

Fruit_ pe _____

Fruit_ ap _____

Vehicle_ ca _____

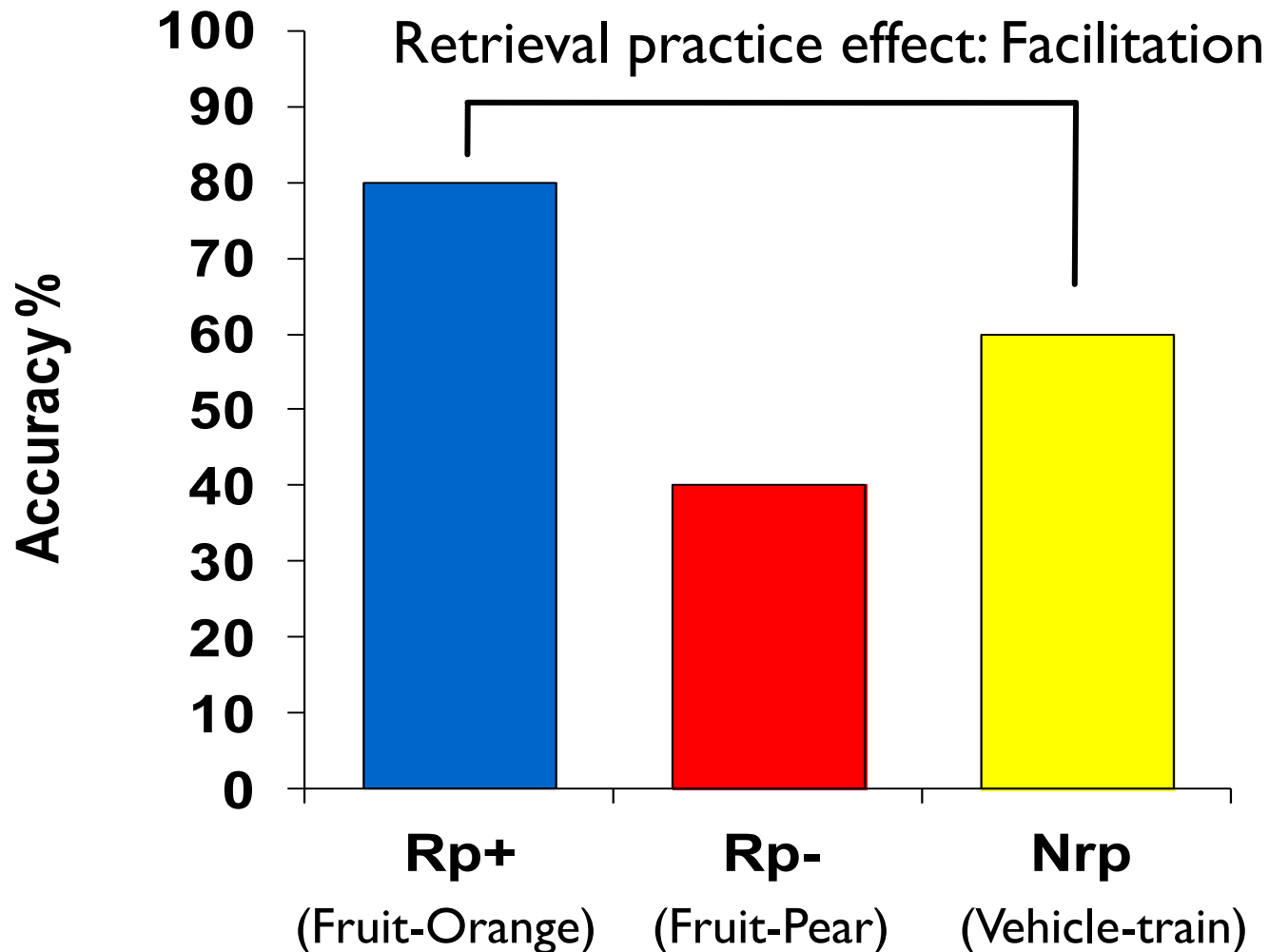
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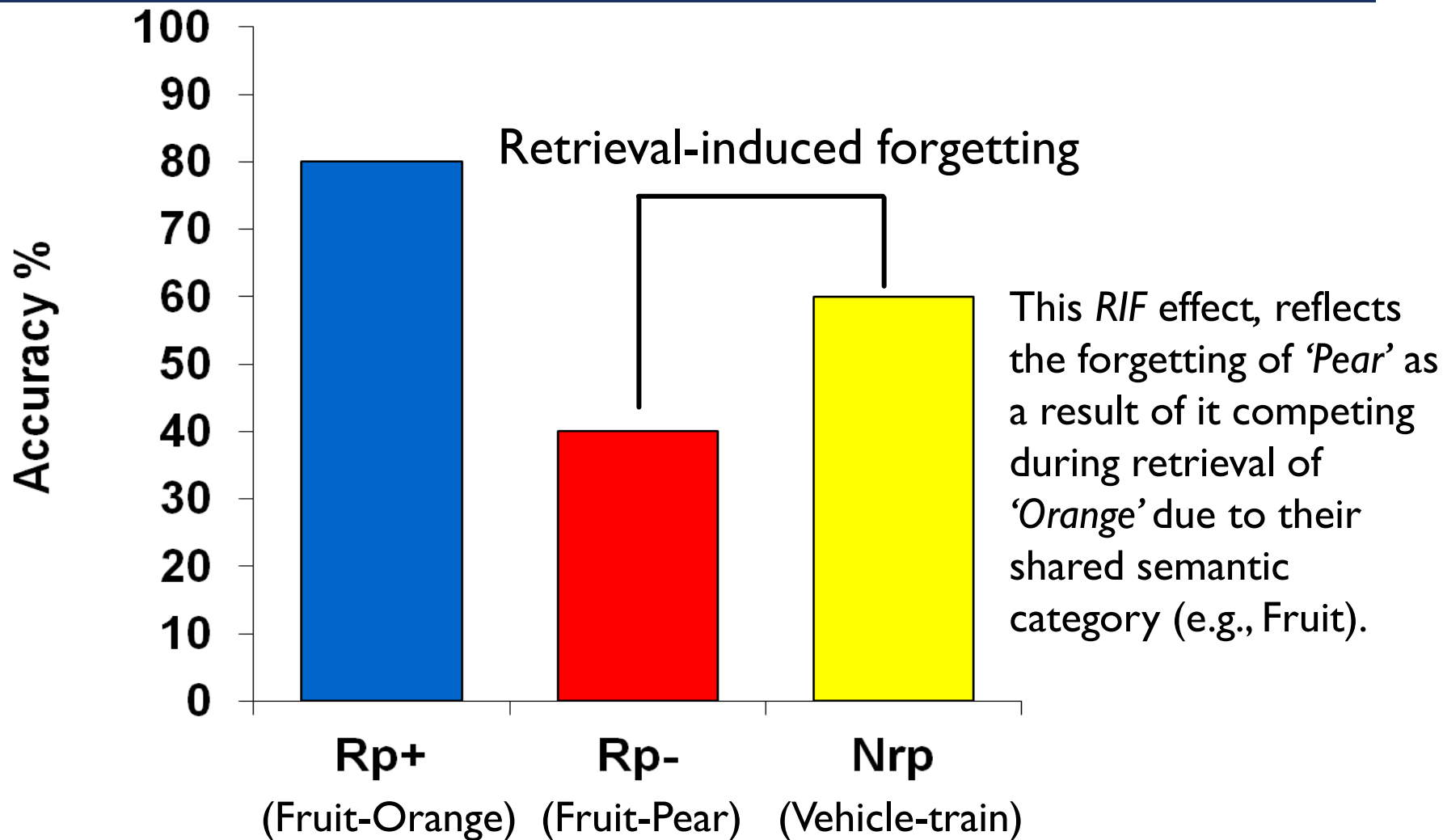
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Nrp

RIF: TYPICAL RESULTS



RIF: TYPICAL RESULTS



THEORETICAL ACCOUNTS OF RIF

Inhibitory Theory:

- Retrieval practice leads to reduced activation of Rp- items.
- During retrieval practice, Rp- items compete with Rp+ items, and to allow efficient retrieval practice of target Rp+ items the memory representation of the Rp- items is actively inhibited or suppressed (e.g., Anderson et al., 1994; Anderson & Spellman, 1995).
- This inhibition of Rp- items is expressed in their lower accuracy in the later test phase, compared with items whose category was never practiced (Nrp items).

THEORETICAL ACCOUNTS OF RIF

■ Non-inhibitory Theories:

■ Do not support idea RIF emerges from inhibition of competing items during practice.

■ Instead, propose other mechanisms:

- Associative blocking (Butler, et al., 2001; MacLeod, et al., 2003)
- Encoding specificity (Perfect, et al., 2004).

■ Suggest RIF occurs because memory of practiced items is strengthened by retrieval practice and blocks retrieval of weaker non-practiced memories.

■ Context-based account (e.g., Jonker, Seli, & MacLeod, 2013)

- RIF is entirely contextual effect.
- Occurs when context between study and practice changes, and context of practice phase is activated during the test phase.

THE RIF EFFECT

- Let's conduct a basic RIF study
 - Read through the list of category word pairs twice
 - Complete the retrieval practice phase
 - List as many words as you can remember

RESEARCHING RIF

- Stimuli used in most RIF studies involve words.
- But what about pictures and objects?
 - This is what we look at for a considerable amount of time in our lives.
- Difficult to examine with recall experiments.
 - Why?

RESEARCHING RIF

- Instead, use recognition paradigms.
- As study materials, pictures offer possibility to examine different types of strength effects in memory.
- They also take account of episodic memory, not just semantic memory.

RIF IN REAL-WORLD

- Why do these differences matter?
 - i.e., Why might this matter in a real-world setting?
- What about effect of distractors in recognition tasks?
 - I.e., Performance based on signal detection theory.....



INTERVIEWING WITNESSES

BRIEF BACKGROUND

■ 1970s:

- Police spent most shift time talking to public, but few had formal training.
- Rand corporation (1975): aspects that solved a case were completeness and accuracy of EW report
 - Whatever police could get from EW



MID 1980: 'STANDARD POLICE INTERVIEW'



- Interviewer driven
- Question-answer format
- Lots of interruptions
- Shift to narrative from EW
 - Specific Qs asked to clarify points/expand
 - Repeated questioning to test consistency
- Gives impression of standardisation but is not.
 - Based on experience of interviewer /common sense
 - Learnt as they went along/knowledge passed down

INTERVIEWING WITNESSES



- Hillgard and Loftus (1979) – order of questioning is key:
 - EW should report incident in own words first
 - Reduces leading Qs or post-event info interference.
- But free recall may miss details police want to know.
 - Ask specific questions after.
- Suitability of repeated questioning is contentious
 - Tests consistency and strengthens memory (useful if long time between event and court case)
- However, cannot go over everything consistently
 - Items not being questioned are forgotten – sometimes more so than if no questioning conducted at all (RIF effect).

INTERVIEWING TECHNIQUES – REPEATED QUESTIONING

Shaw, Bjork, and Handel (1995)

Wallet stolen from student halls:
Police called and Ps view slides:
8 sweatshirts / 8 textbooks



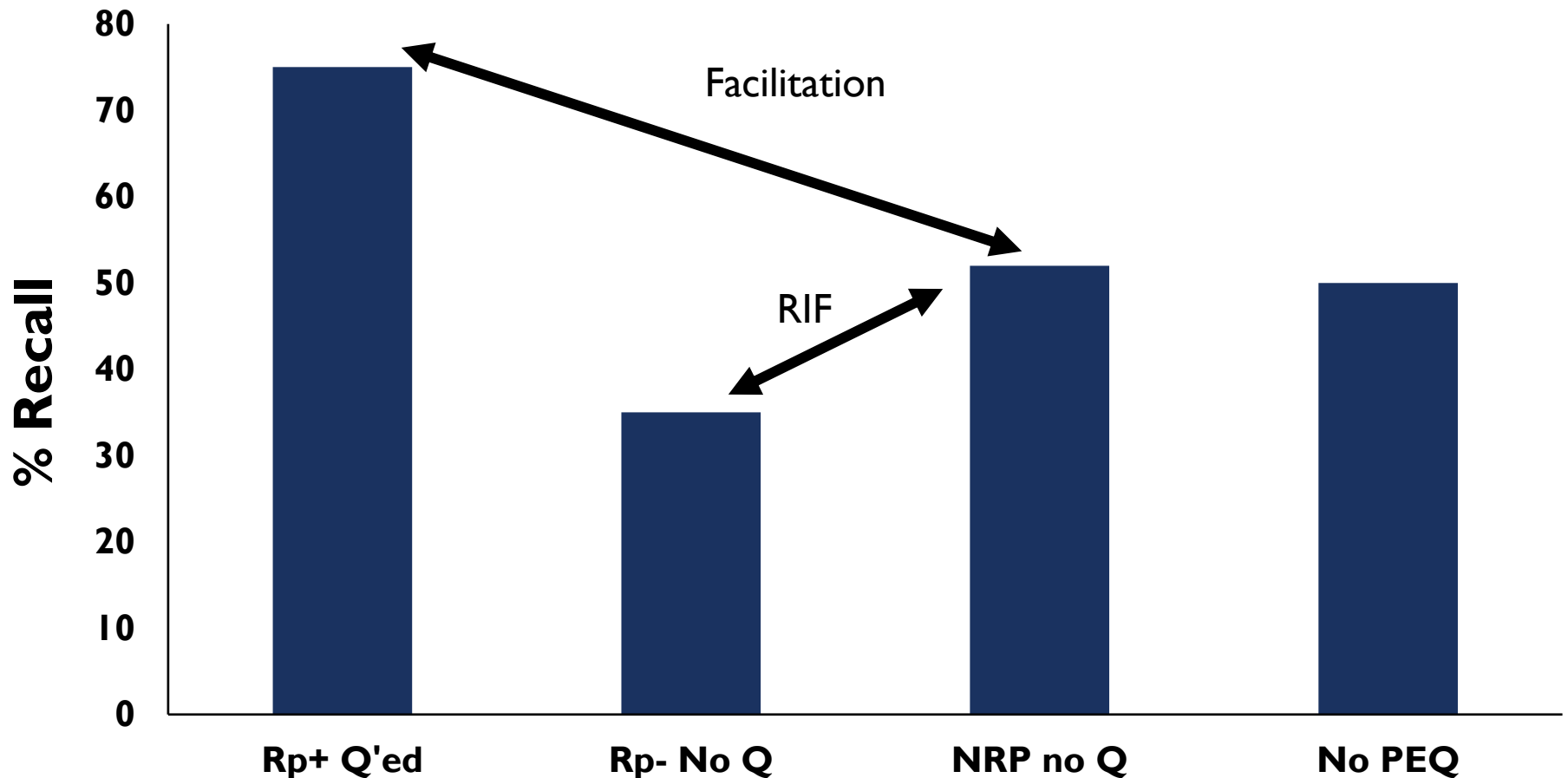
Incomplete PEQ for ½ items from one category.
No items from another category questioned



Free Recall

INTERVIEWING TECHNIQUES – REPEATED QUESTIONING

Shaw, Bjork, and Handel (1995)



INTERVIEWING TECHNIQUES – REPEATED QUESTIONING

MacLeod (2002)

Ps presented with slides: Blond/Brunette woman

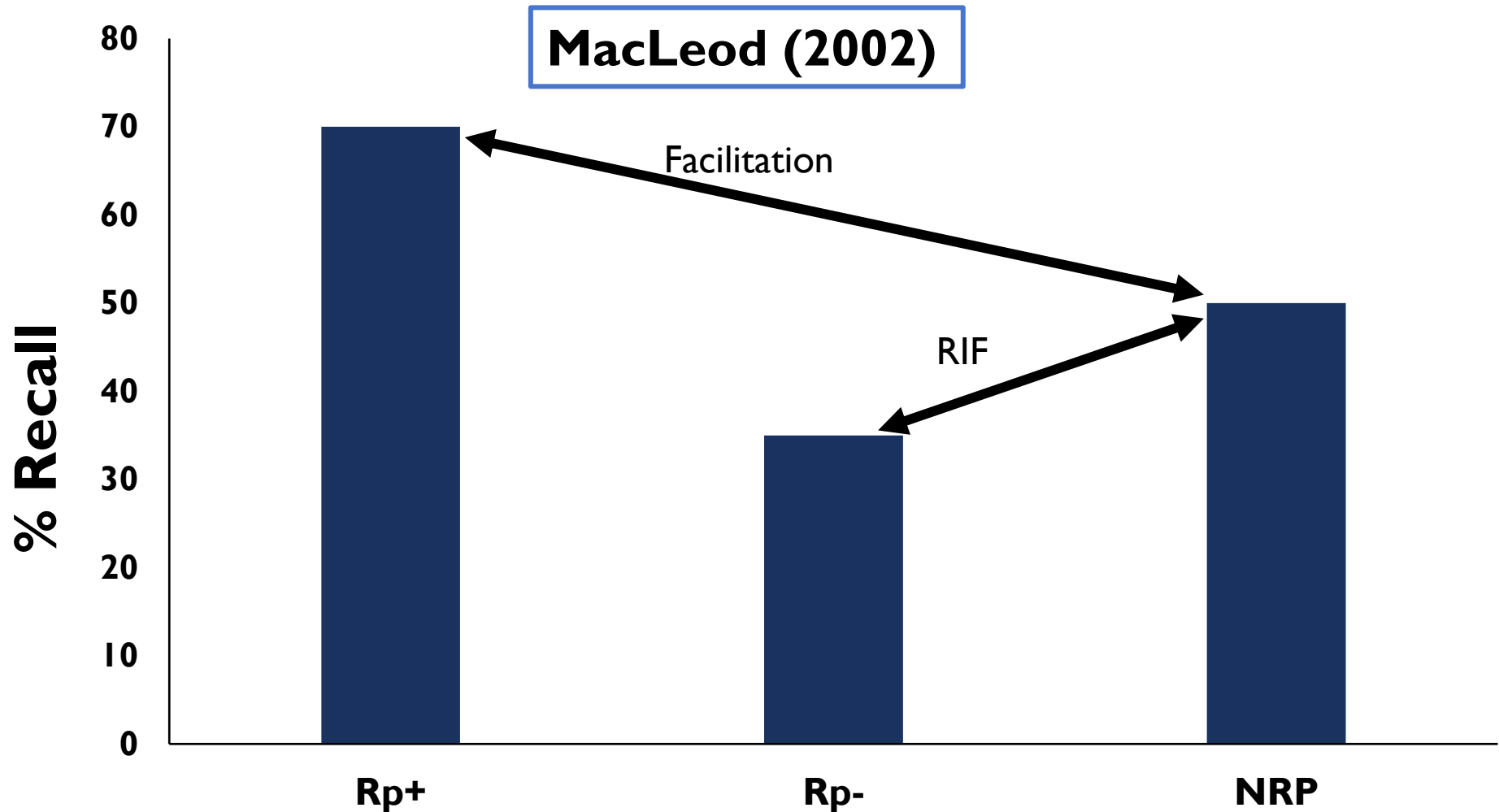


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Free Recall

INTERVIEWING TECHNIQUES – REPEATED QUESTIONING



STANDARD COGNITIVE INTERVIEW



- Based on understanding of LTM
 - Find ways of asking questions that essentially become retrieval cues
- Tulving's Encoding Specificity Principle:
 - Overlap between trace and cue
 - Many retrieval routes to memory trace
 - Appropriate cue(s) successfully retrieve target trace.

STANDARD COGNITIVE INTERVIEW

- **Geiselman et al. (1985)**
- **Fisher and Geiselman (1992)**
- **Four General Components:**
 1. Mental reinstatement of context of event (use all 5 senses)
 2. Report every detail (no matter how trivial)
 3. Recall event from different temporal orders
 4. Recall event from different viewpoints/perspectives

STANDARD COGNITIVE INTERVIEW



- Geiselman et al. (1985)
 - Ps viewed film of violent crime
 - Interviewed 48hrs later using one of three methods:
 - Standard Cognitive interview;
 - Standard interview used by Los Angeles Police;
 - Interview using hypnosis.
 - No. of facts accurately recalled, and no. of errors recorded.

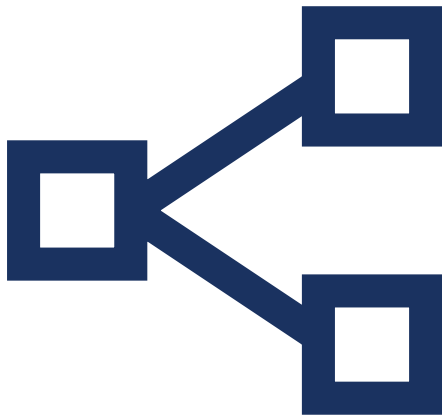
STANDARD COGNITIVE INTERVIEW

- Geiselman et al. (1985)

Interview Type	Average No. of correctly recalled facts
Standard Cognitive Interview	41.2
Standard Interview	29.4
Hypnosis	38.0

- No sig difference in no. of errors.
- Cognitive interview leads to better memory for events, with witnesses able to recall more relevant information.

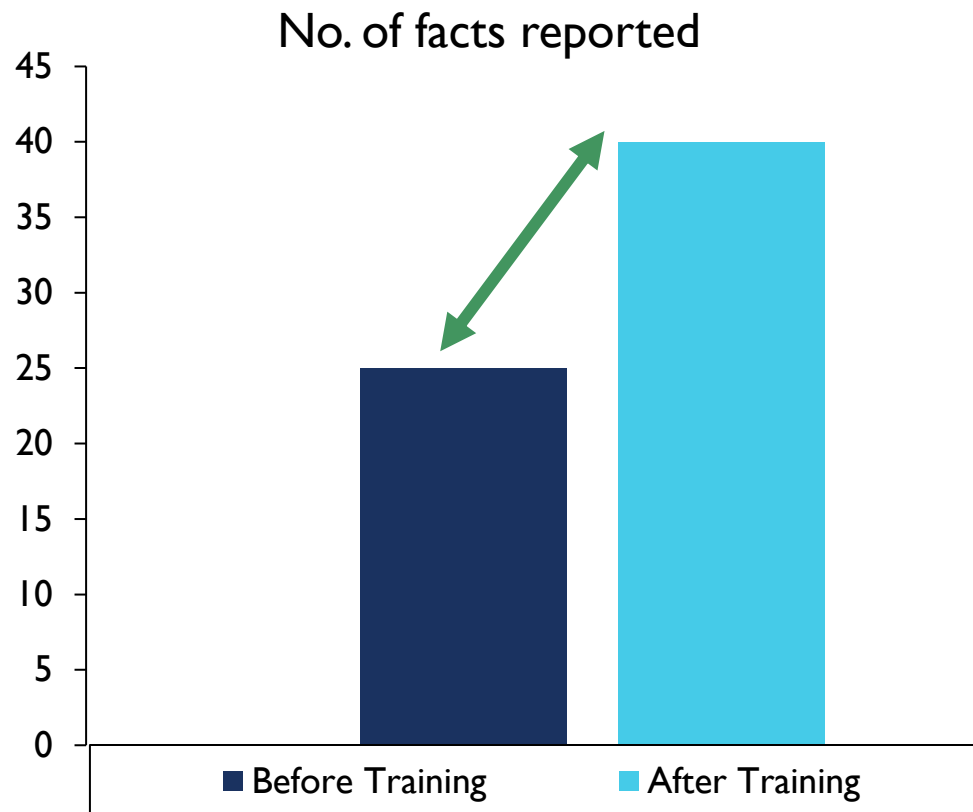
STANDARD COGNITIVE INTERVIEW



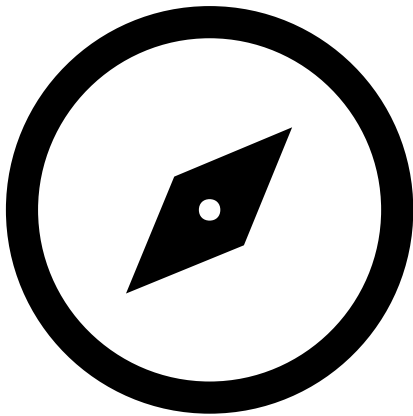
- Increases % of info recalled to between 10-98%.
- Variance between studies based on several factors:
 - Cooperation between interviewer & EW
 - High = sig increase in success of CI
 - Level of emotional arousal of EW
 - High = sig decrease in success of CI
- Suggests social component involved

ENHANCED COGNITIVE INTERVIEW

- Enhanced CI in the Field: Fisher et al. (1989)



THE GUIDED MEMORY INTERVIEW (GMI)



- Based on principles of context reinstatement
- Encourages environmental & emotional context
- Malpass & Devine (1981):
 - Ps witness act of vandalism
 - View photo line-up 5 months later
 - Guided through GMI for each step of incident
 - Asked to visualise sequence of events
 - Form image of suspect, describe appearance
- Recognition of suspects better than controls

STRUCTURED INTERVIEW

- Koehnken et al. (1994)
 - Build rapport
 - Witness allowed to give narrative description
 - Ample time given for witness to respond
 - Good with vulnerable witnesses (children or traumatised EVWs)
 - Simple, unlikely to cause confusion
 - Non-interruptive
 - Builds witness confidence
 - Uses active listening and open-ended questions

CAN EW MEMORY BE IMPROVED THROUGH INTERVIEWING?

- Techniques based on Cognitive principles have some success
 - Better than no technique – but experience helps.
 - Social factors sometimes underestimated
 - Vulnerable EW may not respond well.
 - Questioning can improve memory but underestimates negative consequence of incomplete repeated questioning (RIF).

