Pozzulo et al. (line-ups)

> Pozzulo, J. D., Dempsey, J., Bruer, K., & Sheahan, C. (2012). The culprit in target-absent lineups: Understanding young children's false positive responding. *Journal of Police and Criminal Psychology*, *27*(1), 55-62.

Psychology Being Investigated

Eyewitness Testimony

Eyewitness testimony is evidence given by a person who has witnessed a crime.

For example, a witness might be asked to identify a suspect from a lineup or to describe what they saw during a crime.

This evidence is used by police to catch the perpetrator of the crime.

The accuracy of eyewitness testimony is therefore extremely important, as it can have a significant impact on whether a person is convicted or acquitted.

False Positive Responses

Pozzulo et al. focused on a specific aspect of eyewitness testimony called false positive responses.

A false positive response occurs when an eyewitness incorrectly identifies a person as the perpetrator of a crime, even though the actual perpetrator is not present in the lineup.

Research has shown that children are more susceptible to making false positive identifications than adults.

Social and Cognitive Factors

The researchers wanted to see how social pressures versus a child's cognitive ability affect their likelihood of giving a false positive.

- **Social Factors:** Children may feel pressure from authority figures, such as police officers, to choose someone from a lineup, even if they are unsure. They may also be more likely to comply with authority figures and fear getting into trouble if they don't provide an answer.
    Subtle cues from interviewers, such as their clothing or the way they phrase questions, can influence children's responses.
- **Cognitive Factors:** Children's cognitive abilities (e.g.memory) are still developing, which may make them more susceptible to suggestion and less able to accurately recall and recognize faces.

Background

Pozzulo's study investigates how children's developing memory and cognitive abilities, in comparison to those of adults, affect their accuracy in eyewitness identification tasks, particularly in legal contexts.

The study explores age-related differences in memory accuracy and susceptibility to suggestion, crucial aspects of eyewitness testimony.

It examines children's responses in both target-present and target-absent lineups, considering the impact of social cues and authority expectations.

By comparing children to adults, the study aims to determine when children's eyewitness abilities become similar to those of adults and identify factors that might influence these abilities.

Aims

- To investigate the role of social and cognitive factors in children's identification accuracy in lineups.
- To assess whether children are less accurate and more prone to false positives than adults.

Method

Sample

- **Children:** A total of 59 children between the ages of 4 and 7 years old (with an average age of 4.98 years) participated in the study. This group included 21 females and 38 males. The children were recruited from pre-kindergarten and kindergarten classes in three private schools located in Eastern Ontario, Canada.
- **Adults:** The adult participant group consisted of 53 individuals between the ages of 17 and 30 (with an average age of 20.5 years). This group included 36 females and 17 males. All adult participants were recruited from an introductory psychology participant pool at a university in Eastern Ontario, Canada.

Design

Pozzulo et al. conducted a well-controlled laboratory experiment to investigate children's eyewitness identification abilities.

The study employed a mixed factorial design, incorporating multiple independent variables:

Independent variables

- **Age Group:** This naturally occurring independent variable divided participants into two groups: young children (aged 4 to 7) and adults (aged 17 to 30). This variable employed an independent measures design as participants could only belong to one age group.
- **Target Type:** This variable was manipulated by presenting participants with either cartoon characters or human faces. The use of both familiar (Dora the Explorer and Go Diego Go) and unfamiliar targets (two Caucasian university students) allowed the researchers to examine the influence of familiarity on identification accuracy.

- **Lineup Type:** Participants were shown either target-present lineups (where the target was included in the lineup photos) or target-absent lineups (where the target was replaced with a similar-looking individual). This manipulation enabled the researchers to assess both correct identifications and correct rejections.

Dependent variables

The study's primary dependent variable was the participants' accuracy in identifying or rejecting the target, measured as the mean number of correct identifications in target-present lineups and the number of correct rejections in target-absent lineups.

- **Correct Identifications:** This measure was used in target-present lineups, where the actual target from the video clip was included among the lineup photos. A correct identification occurred when the participant accurately selected the target from the lineup.
    The researchers calculated **mean correct identification rates** to account for potential variations in difficulty across different target faces.
- **Correct Rejections:** This measure was used in target-absent lineups, where the actual target was not present, and a similar-looking foil replaced them. A correct rejection occurred when the participant accurately indicated that the target they had seen in the video was not present in the lineup.
    The researchers calculated **mean correct rejection rates** for each target type (human and cartoon) across both age groups.

Procedure

1. **Lineup Instructions:** Before each lineup, participants were informed that the person or cartoon from the video might not be present. Children were instructed to point to the photo if they saw the person/cartoon from the video, and to point to a designated box (containing a silhouette) if they did not see the target. Adults indicated their choice by marking a matching sheet instead of pointing.
2. **Watching Video Clips:** Both age groups were shown a series of four six-second video clips. Two of the video clips featured Caucasian university students (one male and one female) completing everyday tasks, such as brushing hair or putting on a coat. The other two clips featured the cartoon characters Dora the Explorer and Go Diego Go engaged in similar mundane activities.
    Close-up Shots: Each video clip included a two- to three-second close-up shot of the target's face, ensuring that participants had a clear view of the individual's facial features.

3. **Filler Task:** After each video, participants were asked to recall details about the character they had just seen, such as “What did the cartoon character/person look like?”
    - This recall task served as a filler to allow some time to pass between the video exposure and the lineup presentation, reducing the possibility of immediate recall influencing their choices.
    - Chilren answered this recall task verbally and adults completed in writing.
4. **Lineup Presentation:** Following the filler recall task, participants were shown a lineup of six photos on a laptop screen. They were then asked to identify the character they had seen in the video clip, if present, or to indicate if the target was absent.
    - Each target (human or cartoon) was presented in a lineup using a simultaneous procedure, where all six individuals are presented at the same time.
    - The lineups themselves consisted of six photos displayed on a laptop screen. In target-present lineups, one photo showed the actual target while five showed carefully selected foils. Target-absent lineups contained six foils.
    - The selection of foils followed rigorous criteria: they needed to match the target’s general facial structure, hair length, and color. To eliminate potentially confounding factors, all photos were cropped to show only the face, neck, and upper shoulders.
    - For cartoon lineups, foils were specifically chosen to focus on facial features while minimizing the influence of clothing or background details.
    - Adults indicated their choice by marking a matching sheet and children by pointing at the laptop screen.

Results

Quantitative Findings

- **Correct Identification Rates for Human Faces:** Children had an average correct identification rate of 0.23 for human faces, while adults had a significantly higher rate of 0.66. This difference was statistically significant.
- **Correct Identification Rates for Cartoon Faces:** Both children and adults demonstrated high accuracy in identifying cartoon faces. Children achieved an average correct identification rate of 0.99, and adults had a rate of 0.95. This difference was not statistically significant.

- **Comparison Between Human and Cartoon Faces**: The study found that both children and adults were significantly more accurate at identifying cartoon faces compared to human faces.
- **Correct Rejection Rates Human Faces:** Children's correct rejection rate for human faces was 0.45, while adults had a higher rate of 0.70. This difference was statistically significant.
- **Correct Rejection Rates Cartoon Faces:** Children's correct rejection rate for cartoon faces was 0.74, compared to adults' higher rate of 0.94. This difference was statistically significant.

Qualitative Findings

In addition to the quantitative results, the study also collected qualitative data through filler task descriptions.

Participants were asked to describe everything they could remember about each video clip.

The primary open-ended question was, "What did the cartoon character/person look like?" followed by a probing question, "Do you remember anything else?"

Children who did not respond to the first probing question were asked a second, slightly modified version: "Do you remember anything from the video?"

Conclusion

- **Cognitive Factors:** Both children and adults were significantly more accurate at identifying cartoon faces compared to unfamiliar human faces. This finding indicates that familiarity with a target enhances recognition and recall, impacting identification accuracy. Children's near-perfect identification of popular cartoon characters like Dora the Explorer and Diego underscores the robustness of their memory for familiar stimuli.
- **Social Factors:** Despite their strong memory for familiar characters, children exhibited considerably lower correct rejection rates compared to adults, even for cartoon faces. This suggests that their higher false-positive rates in target-absent scenarios might stem from social pressures rather than cognitive limitations. Children may feel compelled to select a face from a lineup, even when uncertain, due to perceived expectations from authority figures or a desire to please, increasing the likelihood of inaccurate identification.

- **Developmental Differences:** The study reveals key developmental differences between children and adults in eyewitness identification accuracy. Children consistently demonstrated lower correct rejection rates for both human and cartoon faces compared to adults, indicating a greater susceptibility to making identification errors in target-absent lineups.
- **Implications for Legal Practices:** The study advocates for a cautious approach to children's testimony, especially in target-absent lineups, and emphasizes the importance of implementing procedures that minimize social pressure and promote reliable identification.

    Law enforcement agencies and legal practitioners should be trained to recognize the specific challenges associated with child witnesses and implement appropriate protocols to ensure the reliability of their testimony.

Strengths

1. Strong Control of Variables

- **Standardized Procedures:** The study implemented rigorous controls to ensure procedural standardization and minimize extraneous variables. Key aspects of the procedure, including video clip duration (6 seconds with a 2-3 second close-up of the target's face), photo array presentation, and instructions, were kept consistent for all participants. This standardization enhanced the reliability of the study by minimizing the influence of procedural inconsistencies on the results.
- **Carefully Selected Foils:** The researchers meticulously selected foils (incorrect lineup options) based on their similarity in appearance to the targets, using three independent raters to ensure consistency. The foils were carefully chosen to resemble the target in terms of general facial structure, hair length, and color to make the identification task more challenging and minimize the chances of random guessing.
- **Control for Target-Specific Peculiarities:** The researchers calculated mean correct identification rates for each target separately, controlling for any unique characteristics of individual targets that might have influenced identification. This approach strengthened the internal validity of the study by ensuring that the findings reflected general patterns of identification accuracy rather than being skewed by specific features of certain targets.

2. Counterbalancing and Randomization

- **Randomized Target Positioning:** The position of the target (or its replacement in target-absent lineups) within the photo array was randomized for each participant. This randomization minimized the potential for order effects, where participants might be more likely to select options presented in specific positions.
- **Varied Presentation Order:** The order in which video clips and photo arrays were presented was also varied among participants. This counterbalancing reduced the potential for any specific sequence of stimuli to influence responses, further strengthening the internal validity of the study.

3. Consideration of Participants' Comfort and Well-being

- **Child-Friendly Environment:** The researchers took steps to create a comfortable and non-threatening environment for child participants. They introduced themselves as a group from the university working on a project about TV shows and computer games, engaged children in crafts before the task, and monitored them for signs of fatigue, anxiety, and stress. These efforts were crucial for reducing potential stress and anxiety, which could have negatively impacted children's performance and compromised the ethical integrity of the study.
- **Right to Withdraw:** During the introduction, the researchers explicitly informed the children that they could withdraw from the study at any time without facing any negative consequences. This clear communication of their right to withdraw ensured that children felt empowered to participate voluntarily and without coercion, safeguarding their ethical rights.

4. Mixed-Methods Approach

- **Quantitative and Qualitative Data:** The study incorporated both quantitative (identification/rejection rates) and qualitative data (free recall descriptions). This mixed-methods approach provided a more comprehensive understanding of the factors influencing eyewitness identification.
- While the quantitative data allowed for statistical comparisons and objective assessments of accuracy, the qualitative data offered insights into participants' thought processes and attentional focus during the task.

5. Addressing the Social Demands of Lineups

Explicit Instructions Regarding Rejection: The study explicitly informed children that the target might not be present in the lineup, and they were given the option of selecting a silhouette to indicate rejection. This clear instruction aimed to reduce the potential pressure children might feel to select a face even when unsure, addressing the social demands inherent in lineup tasks.

Weaknesses

1. Limited Age Range and Generalizability

- **Restricted Age Group:** The study focused exclusively on children aged 4 to 7 years old. This narrow age range restricts the generalizability of the findings to other age groups, as developmental differences in memory, suggestibility, and social compliance can vary significantly across childhood and adolescence. The study's conclusions might not be applicable to younger children who might be even more susceptible to social pressures or older children and adolescents whose cognitive abilities and social awareness are more developed.
- **Homogeneous Sample:** The child participants were recruited from three private schools in Eastern Ontario, Canada. This sampling method introduces potential biases, as children attending private schools may differ from the broader population in terms of socioeconomic background, educational experiences, and cultural influences. These factors could affect their cognitive abilities, social compliance, and exposure to media, potentially influencing their performance on the identification task. The limited diversity of the sample restricts the generalizability of the findings to other populations, such as children from different socioeconomic backgrounds, cultural groups, or educational settings.

2. Artificiality of the Experimental Setting and Ecological Validity

- **Laboratory Setting:** The study was conducted in a controlled laboratory environment, which may not accurately reflect the complexities and stressors of real-world eyewitness situations. The artificiality of the setting could have influenced participants' responses, as the controlled environment might not evoke the same emotional responses, attentional focus, and memory encoding processes that occur during actual criminal events.

- **Simplified Stimuli:** The study utilized video clips and photo arrays to present targets and foils. This simplified approach might not adequately capture the dynamic and multifaceted nature of real-world eyewitness encounters, where factors such as lighting, distance, movement, and distractions can significantly impact perception and memory. The use of still images might have oversimplified the identification task and limited the ecological validity of the findings.
- **Unrealistic Nature of Targets:** The study compared familiar cartoon characters (Dora the Explorer and Diego) with unfamiliar human faces. While this design allowed for examining the influence of familiarity, it introduced a potential bias. Children are generally more engaged with and better at recognizing familiar cartoon characters, which could have led to an overestimation of their overall identification abilities. In real-world scenarios, eyewitness targets are typically unfamiliar individuals, and children's identification performance might be lower in such circumstances. The use of cartoon characters, although aimed at creating a low cognitive demand task, might have limited the ecological validity of the findings, as it does not reflect the typical challenges of identifying unfamiliar faces in real-world settings.

3. Potential for Demand Characteristics

- **Influence of Authority Figures:** Despite efforts to create a child-friendly atmosphere, the presence of adult researchers as authority figures could have inadvertently influenced children's responses. Children are generally sensitive to adult expectations and might have felt pressure to provide answers that they perceived as desired by the researchers, even if unsure. This potential for demand characteristics could have contributed to their higher false-positive rates, especially in target-absent lineups.
- **Repeated Measures Design:** The study employed a repeated measures design where participants completed identification tasks for both cartoon and human targets, as well as target-present and target-absent lineups. This design, while controlling for individual differences, could have introduced fatigue effects, potentially impacting participants' attention and performance, especially for children who might have shorter attention spans. Fatigue could have led to less careful scrutiny of the lineups and increased reliance on guessing, influencing the accuracy of their responses.

4. Limitations in Measuring Social Factors

Indirect Assessment of Social Pressure: The study primarily inferred the influence of social factors based on the pattern of children's errors, particularly their higher false-positive rates in target-absent lineups. While this inference is plausible, the study did not directly measure or manipulate social pressure, limiting the ability to conclusively establish its role in children's identification performance. Future research could incorporate direct measures of social pressure, such as observing children's behavior during the task or asking them about their perceived expectations and motivations, to provide more concrete evidence of its impact.

Ethics

> The researchers took careful steps to make the experience comfortable and engaging for the young children:

1. **Parental Consent and Information Gathering:** Before the experiment, parents or guardians provided informed consent and filled out a demographic and cartoon-watching form.
    - This form gathered information about the child's age, gender, ethnicity, cartoon-watching habits, and familiarity with the specific cartoon characters used in the study (Dora the Explorer and Go Diego Go).
    - This ensured that children were familiar with the cartoon targets, minimizing the cognitive demands of the identification task and allowing for a clearer assessment of social influences on their responses.
2. **Right to Withdraw:** During the introduction, the researchers explicitly informed the children that they could withdraw from the study at any time without facing any negative consequences. This clear communication of their right to withdraw ensured that children felt empowered to participate voluntarily and without coercion, safeguarding their ethical rights.
3. **Child-Friendly Introduction and Testing Environment:** Female researchers introduced themselves as a group from a university working on a project about TV shows and computer games to avoid any anxiety or intimidation associated with a formal research study or legal context.
    - Three female experimenters and one female facilitator arrived at each private school, inviting only the children whose parents or guardians had given consent to participate.
    - Experimenters tested children individually, monitoring them for fatigue, anxiety, and stress.

4. **Token of Appreciation:** At the end of the study, children were given crayons and a coloring book for their participation.

The procedure for adults was similar but adapted for their age and cognitive abilities:

- **Informed Consent and Introduction:** Adults received a consent form at the beginning of the study, implying they were informed about the study's nature and their rights as participants, including the right to withdraw.
    Unlike the children, they were not told the specific focus on eyewitness identification to avoid demand characteristics that could bias their responses.
- **Demographic Information:** After completing the lineups, adults filled out a demographic questionnaire that included questions about their familiarity with the cartoon characters used in the study.

Issues and Debates

Application to everyday life: Consideration of Lineup Procedures

Traditional lineup procedures might be less reliable when involving children, as they might be more likely to make false identifications, particularly in target-absent lineups.

Law enforcement agencies should consider implementing alternative lineup procedures,

Sequential lineups present individuals one at a time rather than simultaneously, to reduce the pressure children might feel to select someone even when unsure.

The elimination lineup asks children to make two judgments: first, to select the person most similar to the target and second, to decide if this most similar person is actually the target.

Application to everyday life: Specialized Interviewing Techniques:

The study's findings have implications for improving eyewitness interviewing techniques, particularly when involving children.

Law enforcement and legal professionals should be trained to use age-appropriate questioning methods, avoid suggestive language, and create a supportive and non-intimidating environment to minimize the potential for social pressure and maximize the accuracy of children's recollections.

Using techniques like cognitive interviewing, which encourages witnesses to recreate the context of the event, can improve recall accuracy.

Nature versus nurture

Certain cognitive processes involved in memory and perception, crucial for accurate eyewitness testimony, have biological foundations (**nature**).

These processes, such as attention, memory capacity, and cognitive control, are likely influenced by genetic factors and develop along predetermined trajectories.

Children's cognitive abilities (e.g.memory) are still developing, which may make them more susceptible to suggestion and less able to accurately recall and recognize faces.

The study emphasizes that environmental factors, particularly social influences, play a significant role in shaping children's identification abilities (**nurture**).

Children's experiences, interactions with others, and exposure to various stimuli contribute to their understanding of social cues, expectations, and appropriate behavior in different contexts.

This socialization process can influence how children respond to authority figures, interpret instructions, and perceive social pressure in situations like lineup identifications.

For example, societies that emphasize obedience to authority might foster a greater tendency for children to comply with perceived expectations, potentially leading to higher false positive responses in lineup tasks.

Similarly, cultural variations in facial recognition, influenced by exposure to diverse or homogeneous populations, could impact the accuracy of identifications.

Individual and situational explanations

Individual differences

Individual variations in memory capacity and processing speed can impact eyewitness identification. Some individuals might have a greater capacity for encoding and retaining visual information, leading to more detailed and accurate memories of faces.

The study's comparison of children and adults reveals that age plays a crucial role in eyewitness identification accuracy.

For example, younger children might have difficulty focusing on the critical details of a face, leading to less reliable memory encoding.

Situational explanations

The study's use of simultaneous lineup procedures, where all individuals are presented at the same time, could contribute to children's higher false positive rates.

Simultaneous lineups might increase the pressure on children to choose someone, as they are presented with multiple options and might feel compelled to select one, even when uncertain.

Reductionism versus holism

Reductionist elements: The study exemplifies a reductionist approach by isolating specific variables to investigate their influence on eyewitness identification accuracy.

Pozzulo et al. carefully manipulate factors like age group (children versus adults), target type (cartoon versus human), and lineup type (target-present versus target-absent) while controlling for extraneous variables.

Holistic elements: This recognition of the interplay between individual and situational factors reflects a more holistic understanding of eyewitness testimony, moving beyond the isolation of single variables.

The analyses of individual and situational explanations emphasize that individual characteristics, such as cognitive abilities and susceptibility to social pressure, interact with situational factors, such as authority figures' presence and lineup procedures, to influence identification performance.

Keep Learning

To help reinforce your understanding and prepare for potential exam questions, here are some practice questions related to this study and the A-level psychology syllabus:

1. The study by Pozzulo et al. is listed as a core study in the *cognitive* approach1. **Identify** one other core study from the cognitive approach. [1]
2. **State** the topic investigated by Pozzulo et al. [1]
3. **Suggest** one question about Pozzulo et al. that could be answered using qualitative data. [1]