Universidade de Aveiro Departamento de Educação
Ano 2014

JOHANNE LIA EMONTS CALDEIRA

INFORMAÇÃO ENGANADORA E TESTEMUNHO OCULAR EM CRIANÇAS: EFEITO DO TIPO DE ALINHAMENTO E IDADE EM ENSAIOS DE ALVO AUSENTE

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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Psicologia Forense, realizada sob a orientação científica da Doutora Isabel Maria Barbas dos Santos, Professora Auxiliar do Departamento de Educação da Universidade de Aveiro

o júri

presidente

Prof. Doutora Josefa das Neves Simões Pandeirada
equiparada a investigadora auxiliar do Departamento de Educação da Universidade de Aveiro

Prof. Doutora Maria de Fátima de Jesus Simões
professora associada com agregação do Departamento de Psicologia e Educação da Universidade da Beira Interior

Prof. Doutora Isabel Maria Barbas dos Santos
professora auxiliar do Departamento de Educação da Universidade de Aveiro

agradecimentos

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palavras-chave

Testemunhas oculares, crianças, alinhamentos policiais, alinhamento simultâneo e sequencial, investigação forense, enviesamentos de memória, alvo-ausente.

resumo

A literatura tem vindo a demonstrar que existe uma diversidade de variáveis que interferem com a fiabilidade da identificações por testemunha ocular (e.g., idade da testemunha, se o é alvo ausente ou presente, presença de informação errónea e entidade que a introduz, tipo de alinhamento utilizado). O presente estudo teve como objetivo testar a eficácia do tipo de alinhamento utilizado (simultâneo ou sequencial), face à introdução de um enviesamento de memória, em crianças como testemunhas oculares perante alinhamentos de alvo ausente. Para tal, 55 crianças de faixas etárias diferentes (4-5 anos e 8-10 anos), separadas em dois grupos por tipo de alinhamento, visualizaram quatro vídeos que mimicavam metragens de câmaras de vigilância e retratavam um furto. Após uma breve tarefa de interferência foi pedido que identificassem o suspeito que tinham visto no vídeo, caso achassem que este se encontrava entre os membros do alinhamento. As suas respostas foram registadas de acordo com o sujeito que escolhiam ou não e podiam pertencer a um de quatro tipos: acerto (não escolher ninguém do alinhamento), dummy (escolher o membro com as características erróneas descritas), pseudo-alvo (escolher o membro com maior nível de semelhança ao perpetrador) e outro (escolher qualquer um dos restantes quatro membros do alinhamento). Os resultados demonstraram que as crianças mais novas identificaram um maior número de vezes o “dummy” do que as crianças mais velhas, demonstrando uma maior sugestionabilidade. Verificou-se ainda uma correlação significativa entre o alinhamento sequencial e a probabilidade de escolherem um dos outro quatro membros do alinhamento, possivelmente dado a não poderem utilizar um julgamento relativo como no alinhamento simultâneo de modo a excluir mais facilmente estes membros das suas escolhas. Este estudo tem o potencial de auxiliar investigações criminais relacionadas com testemunhas oculares menores de idade, no sentido de ajudar a compreender os erros e aperfeiçoar as técnicas de procedimento aquando do reconhecimento e identificação de suspeitos em alinhamentos.

keywords

Eyewitness testimony, children, sequencial and simultaneous lineups, forensic investigation, misleading information, target absence.

abstract

Existing literature on eyewitness testimony indicates that there is a wide range of variables which interfere with the reliability of eyewitness identifications (e.g., eyewitness' age, target presence in the lineup, presence of misleading information and the entity that delivers it, lineup type). The present study focused on the efficency of simultaneous versus sequential lineups in children eyewitness testimonies in the case of target absent lineups, with the insertion of misleading information. The effect of children's age was also investigated. Hence, 55 children of two different age groups (4-5 years-old and 8-10 years-old), divided into two lineup type conditions, viewed four videos of fake CCTV footage that depicted minor thefts. After a brief interference task, the children were asked to identify the suspect seen in the video, if they believed that he was amongst lineup members. Answers were registered according to the lineup member chosen, and could be of four different types: correct (no lineup member was chosen), dummy (the filler with the misinformation described features was chosen), pseudo-target (the filler with highest resemblance to the suspect in the video was chosen) and other (any of the other four lineup members was chosen). Results showed that younger children identify more frequently the dummy in the lineups than older children, evidencing a greater suggestibility. Additionally, results showed that participants identified significantly more "other" lineup members in the sequential lineup than in the simultaneous one, possibly because of not being able to exclude these members from their choice as easily as in the simultaneous lineup, which permits a relative judgment. This study has the potential to aid forensic investigations envolving child eyewitnesses, in an effort to understand and improve testimony and lineup methodology.

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Introduction

According to the Portuguese law, if there is a need to proceed to the recognition of a person, it is requested that the witness makes the identification and describes said person with every detail that he/she can recall. The witness is also questioned whether that person has been seen before and if so in which circumstances (art. 147º do Código de Processo Penal). In Portugal, identification by eyewitness testimony may be used as evidence in court. Frequently, this might be the only existing evidence in a trial, whereby it is imperative that the fallibility of eyewitness testimony is taken into account and its limits thoroughly tested. As described by Busey & Loftus (2006), forensic evidence such as eyewitness testimony can be easily corrupted by perceptual, memorial or judgmental noise, which is why this topic poses such a significant field of study amongst psychologists.

According to the literature on this subject, there has been an increase in evidence regarding erroneous eyewitness identification as being the primary cause of conviction of innocent people (Wells, Small, Penrod, Malpass, Fulero & Brimacombe, 1998). Since early on, not only psychologists but also other professionals have become aware of the frequency with which memory errors occur and their possible implications in criminal investigations. This led to an increase in research on the malleability of the human memory. Hence, since the 90s that criminal justice has leaned on psychology to help rectify the methodologies used in eyewitness testimony. Furthermore, courts began accepting expert testimony to help judges and jurors in the understanding of the fallibility of eyewitness identification (Wright & Loftus, 1998). From this multidisciplinary alliance, a series of studies have emerged which aimed to minimize the occurrence of errors and false identifications. These studies assess the weight of several variables in eyewitness identification results (e.g., target presence *versus* target absence, the effects of stress, the abilities of children relative to adults to recall witnessed events, the lineup procedures used). Regarding lineup procedures, these may include both structural (e.g., appearance characteristics of lineup members) and procedural properties (e.g., how the lineups are exhibited to the eyewitness, instructions given to the witness prior to viewing) (Wells et al., 1998).

For instance, studies can manipulate the type of lineup used in eyewitness identification, in order to assess its effectiveness in different circumstances. In real life

situations, the most common method used by police forces is the simultaneous lineup, where all members of the lineup (or photographs) are displayed at the same time. Under these conditions, the eyewitnesses tend to employ a relative judgment, in which they compare lineup members to each other to determine which most closely resembles their memory of the perpetrator (Wells, 1984). However, even if the perpetrator is not part of the lineup, this tendency remains. Thus, the eyewitnesses may merely choose the best match between their memory of the perpetrator and the lineup member, leading to a false positive. In order to mitigate this occurrence, Lindsay and Wells (1985; cit. by Steblay, Dysart, Fulero & Lindsay, 2001) proposed an alternative lineup presentation, the sequential lineup. Here, lineup members are displayed one at a time, sequentially, and, before the eyewitnesses may see the next subject, it is requested that they make a decision: whether the person in front of them is or not the perpetrator. This procedure demands a more absolute judgment and discourages the eyewitness from simply choosing the member which most closely resembles the perpetrator. Studies have shown that the effectiveness of both simultaneous and sequential lineups is almost identical when the perpetrator is amongst lineup members (target present trials). However, when the target is absent, the percentage with which false positives occur is about 43% for simultaneous lineups and only 17% for sequential lineups (Steblay et al., 2001; Lindsay, Pozzulo, Craig, Lee & Corber, 1997). Practically speaking, one could argue that charging or convicting an innocent person (false positive) is a worse identification error than not being able to select the real perpetrator (Chance & Goldstein, 1983; cit. por Parker & Carranza, 1989), which makes sequential lineups a better choice in target absent trials.

In criminal investigations, target absent lineups may occur because the suspect present in the lineup may not be the true perpetrator observed by the witness during the crime. Therefore, it is important to assess how this impacts other variables and the eyewitness' recognition performance (Parker & Carranza, 1989). Several studies have compared the results of eyewitness identification between target present and target absent lineups regarding procedural properties, such as the instructions given to the witness prior to viewing which were mentioned earlier. In a target absent trial, the likelihood of false identifications increases abruptly. This phenomenon is thoroughly described in a study by Malpass and Devine (1981), which demonstrates the clear effect of previously given instructions on how witnesses identify subjects. In their study, participants were divided

into two groups: one group was given biased instructions which implied that the perpetrator was amongst the lineup members and the other was given unbiased instructions by being given a “no choice” option. These authors concluded that the percentage of identification errors in target present lineups was fairly low regardless of which instructions were given. However, in target absent lineups, the number of false positives was extremely high in the presence of biased instructions. Because subjects were led to believe the perpetrator was in the lineup, they selected a filler (a non-suspect included in a lineup) regardless of whether he resembled or not their memory of the target. Lindsay et al. (1997) studied this effect amongst adults and children of various ages and found that children were much more likely to commit false positives than adults in target absent lineups.

As a child’s age progresses, a variety of cognitive functions develop as well, which affect the acquisition and storage of information in the memory system. Although some studies show that even very young children (up to the age of two) already possess some ability to recall and mimic sequences, older children have shown to be able to retain more information than younger ones (Bauer, Hertsgaard & Dow, 1994; cit. por Gordon, Baker-Ward & Ornstein, 2001). The same applies to the strength with which that information persists in memory, which means that older children retain more vivid memories (Howe & O’Sullivan, 1997). With this in mind, there is another variable that has the power to bias eyewitness identification results, especially when the eyewitness is of early age. In a real life situation, it is often difficult to control which information the eyewitness has access to between the moment he/she witnesses the crime and the moment in which he/she testifies. Regarding memory storage in children, Gordon et al. (2001) state that stored information may be updated or modified and memory strength may increase or decrease if exposed to a variety of experiences between encoding and recall. Likewise, when we are confronted with information that contradicts our own experience between these two phases, our performance reporting that experience worsens (Loftus & Palmer, 1974). This means that misleading information about the target in an eyewitness identification trial has the potential to compromise the correct identification of the suspect because it may alter the memory the eyewitness has of the initial stimuli. Although everyone is suggestible up to a certain degree, researchers report that preschoolers’ performance suffers more than that of older children or adults when presented misleading information (Ceci & Bruck, 1995; cit.

por Gordon et al., 2001). Other authors list several other factors that may increase a child's suggestibility, such as: misleading information being presented by an adult instead of another child, or the adult is perceived as more rather than less credible, knowledgeable or authoritative (Ceci, Ross & Toglia, 1987; Simpson & Guttentag, 1996; cit. por Gordon et al., 2001). However, a study by Jackson & Crockenberg (1998) shows that 4-year-old girls are more suggestible when the adult is a stranger, as opposed to a familiar and trusted person.

Ultimately, it is important that the scientific community tries to circumvent these obstacles and ascertain which eyewitness identification methodologies are most resistant to any form of biases. Only so may researchers begin to diminish potentially negative repercussions that some procedures may have in real life criminal investigations. Hence, the present study assesses lineup procedures and aims to examine a series of different variables that influence their outcome and how they interact with each other. Specifically, our goal is to assess which type of lineup (simultaneous or sequential) is most resistant in view of child eyewitness testimony, not only in a full target absent experiment, but also in the presence of misleading information. Furthermore, since children find themselves in a very different developmental stage than an adult, it matters to examine closely their performance differences, such as potential obstacles when working with a younger sample (e.g., capability to understand and follow instructions correctly, trust and cooperate with a stranger). This study focuses on child eyewitness' cognitive skills, in particular on visual memory. Given that the literature states a disparity in performance amongst children of different ages, children of two different age groups were assessed. The younger age group included preschoolers between the ages of 4 and 5 and the older age group included children between the ages of 8 and 10. We considered that it was important to analyze these two age groups because studies indicate a significant difference between schooled and preschooled children when it comes to eyewitness identification, the most evident threshold being at the age of 6 years old (Gordon et al., 2001).

As for the results of this study and according to the literature mentioned earlier, we expected to find a higher susceptibility to misleading information amongst the younger age group, which would translate into a higher occurrence of dummy answers. Additionally, we estimated more correct rejections amongst participants that viewed the sequential

lineups, as opposed to the simultaneous ones. As far as we are aware, this is the first study to intersect all the variables described, allowing a better understanding of the interplay between various factors that can influence children's eyewitness accuracy.

Methods

Participants

A total of 59 children from different schools, kindergartens and leisure centers from the city of Aveiro were chosen to take part in this study. However, four participants had to be excluded: one child was foreign and did not speak the language, and might therefore not have understood the instructions correctly; another showed severe signs of attention deficit hyperactivity disorder (although so far undiagnosed), which precluded the normal progression of the experiment; the third was excluded for having given up in the middle of the experiment; and the last was 6 years old and initially included in the younger age group, but later excluded from the study to maintain the homogeneity of the sample. Thus, the final sample consisted of a total of 55 children.

Seeing that the aim was to assess two different age groups, 31 children between the ages of 4 and 5 (M = 4,55; SD = 0,51) were selected (12 male and 19 female), as were 24 children between the ages of 8 and 10 (M = 8,79; SD = 0,72) (7 male and 17 female). The children between the ages of 4 and 5 were all preschoolers, while the older children's education ranged from 2nd to 4th grade. All participants were tested individually, in a quiet room, to avoid distractions and data biases. Since the participants were all minors, an authorization request was signed by the legal guardian of each child before the experiment took place, which explained in detail all the procedures it involved.

Design

The following study was conceived as a 2x2 experimental design, the factors being lineup type (simultaneous or sequential) and age group (4-5 years old or 8-10 years old). Both are between-subject variables, which means each child only watched one type of lineup throughout the entire experiment. The children for each lineup condition were selected randomly, being assigned alternately to the simultaneous or sequential group as they were called to take part in the experiment. From the 31 children in the younger age

group, 16 children viewed only simultaneous lineups and 15 viewed only sequential lineups. From the 24 children in the older age group, 12 children viewed only simultaneous lineups, while 12 viewed only sequential lineups. Each child was presented four different videos in a random order, each followed by their respective lineups, whose lineup members were also arranged randomly in each trial.

Although it would have been preferable to manipulate the lineup type as a within-subjects variable (where each child would view both simultaneous and sequential lineups), this was considered unsustainable. Being young children, they would probably lack enough motivation and concentration skills to undergo an 8 video long experiment, which could potentially bias our data.

Since one of the goals of the study was to achieve a certain degree of memory bias in the participants through the presentation of misleading information right before the viewing of the lineups, this study was a single-blind study. The researcher was in full knowledge that all lineups were target absent and purposely described the physical characteristics of certain fillers (the dummies) as being the perpetrator.

Materials

The stimuli were displayed on a Toshiba Satellite L650-11E laptop with a 15,6 ” screen using VLC Player for the viewing of the videos and E-Prime for presenting the stimuli in the lineups. The four videos and lineups used in this study were selected from the database of the Experimental and Applied Psychology Laboratory (PsyLab) at the Department of Education, University of Aveiro. All videos are 15 seconds long and depict a simple theft. All videos are black and white and shot as to seem like real CCTV surveillance footage. In all the footage the exposure time of the criminal’s face to the camera is four seconds, and, five seconds into each video, the camera zooms in slightly so that the face is more visible. Although the children are told that they are seeing real footage taken by security cameras, actors were paid to feign the thefts. In each video, the pretended felon steals a handbag or purse from a distracted victim, without their knowing. None of the footage is violent in nature, hence no viewer discretion was needed. Given that all lineups were target absent, six fillers were chosen for every video, based on their resemblance (medium or high) to the perpetrator depicted in the video. Fillers were also

taken from the database of the PsyLab, and stimuli had previously been assessed for their resemblance with each of the perpetrators in the theft videos. For each of the four lineups we selected a “pseudo-target” (filler with high resemblance to the subject in the video), a “dummy” (filler with medium resemblance to the subject in the video, but with the most distinctive features – e.g., distinct hair, moles, etc. – which were used in the comments of the experimenter as misleading information) and four other members with a medium resemblance to the perpetrator, rendering 24 portraits in total.

For the interference task, a children’s memory game was used. For the younger age group, we selected 10 matching card pairs, distributed in a 4x5 card board and for the older age group a 6x6 board was put together, with 18 matching card pairs.

Procedure

In order to engage the children’s full attention and to enhance the authenticity of the collected data, they were told that they were taking part in a real criminal investigation. They were also told their help would be a valuable asset to help find the perpetrators if they agreed to participate. Participants were informed of all stages of the experiment before they started. All children underwent each of the following stages four times (once for each video):

1) Firstly, each child viewed one of the four 15 second video portraying a minor theft. The child was told to pay close attention to the face of the felon in the footage in order to remember his features clearly. Each video was shown only once, even if the child said they did not get a good look or asked to see it again.

2) Secondly, the child did a 3 minute long interference task. This task consisted of a memory game, where the child tries to find the matching pairs of cards. Since different children had very different performances (or even knew different rules for the game), this task was slightly adapted for some of the participants in order to control the duration of the task. For instance, for children who took longer to find all matching cards and complete the game, the game was interrupted when the timer reached 3 minutes and continued in the next interference task. If a child matched all cards before the time was over, the remaining time was spent counting the matched pairs or shuffling and displaying the cards on the table for the next game. At the end of every 3 minute interference task, the misleading

information was presented. The child was asked if he/she remembered the perpetrator's face and was reminded of certain features. The features described to each child as belonging to the real perpetrator were features only the dummy possessed. The child was also informed that the perpetrator might not be amongst lineup members, hence giving them a "no choice" option and reducing the likelihood of them feeling obligated to choose a lineup member even if they did not really think that he was the perpetrator.

3) Ultimately, the child viewed the corresponding lineup to each video. Each lineup consisted of 6 mug shot like portraits, varying between each other only in the manner of display between conditions (simultaneous or sequential). Children in the simultaneous lineup condition had the portraits shown simultaneously, one next to the other, as seen in Figure 1, and were asked whether the perpetrator was amongst lineup members and if so, which one he was.

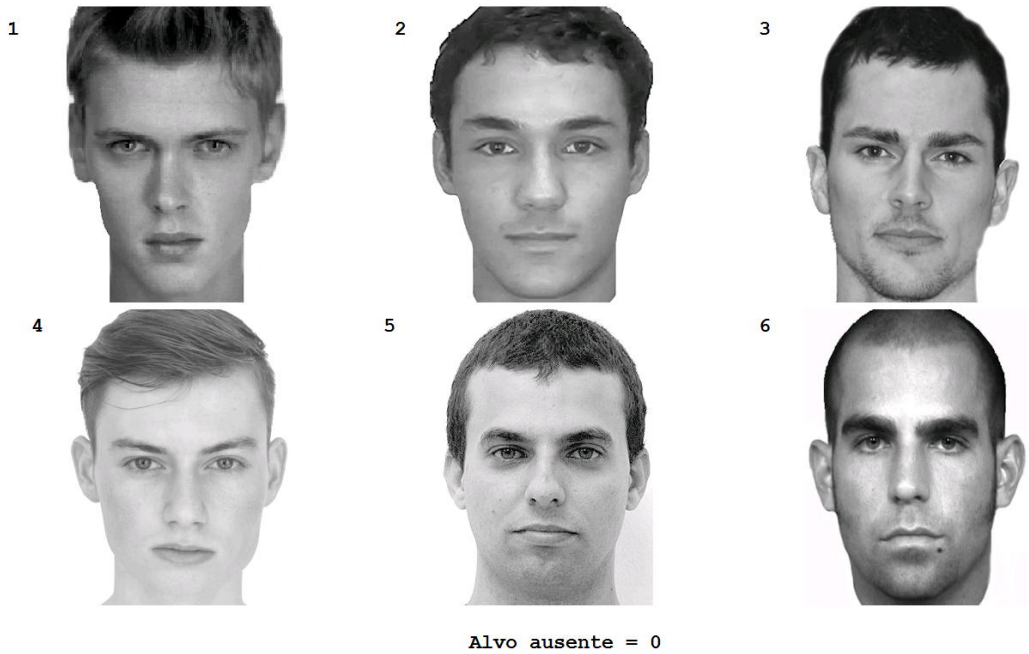

Figure 1. Example of a simultaneous lineup.

In the sequential lineup, portraits were shown one after the other, and participants were asked to make a decision on every portrait: whether the person in the photograph was or was not the perpetrator. Even if they answered affirmatively, they were still shown the rest of the portraits, giving them the opportunity to change their minds. However, they

were only permitted to see each portrait once.

The questions were asked and answered verbally and registered by the researcher on the keyboard. Once the three stages were completed four times (once for every video), each child was asked to keep the experiment a secret and not tell their classmates what they had done in order not to compromise the investigation. They were also told it was a double-blind procedure, feigning that the researcher did not know who the perpetrator was either (or in this case that he was not part of the lineup), since it was currently still under investigation.

Results

For the purpose of statistical analysis, we considered the absolute frequencies of the correct and incorrect answers given for each video, thus considering the various videos as our cases (55 participants x 4 videos = 220 cases), rather than considering the data for each individual participant. For each individual video, participants could give one of four types of answer ("*correct*": saying that the suspect was not present; "*pseudo-target*": identifying the filler with the highest resemblance to the suspect; "*dummy*": identifying the filler for which misleading information had been provided by the experimenter; or "*other*": identifying any of the other four fillers). In order to analyze the data, we considered these four types of response as different dependent variables, and examined whether our independent variables (age group and lineup type) had an effect on the responses given in each particular category of response. In this way, our dependent variables were dichotomous (yes or no for each response type; for example, for that particular video the participant chose the dummy or not). Because we needed to assess the relationship between our independent variables (age group x lineup type) and their effect on our dependent variables (answer type), we chose to start by performing three-way loglinear analyses (two independent variables plus one dependent variable), followed by qui-square tests. For sake of clarity, we have organized the results according to each dependent variable, as follows.

Correct

Table 1

Percentage of correct answers for each age group and lineup type.

		Sequential	Simultaneous	Grand Total
Correct	Older	37,50	37,50	37,50
	Younger	26,67	34,38	30,65
	Grand Total	31,48	35,71	33,64

As can be seen in Table 1, there was a higher number of correct answers in the older age group (37,5%) than in the younger age group (30,65%). Also, while the percentage of correct answers in the older age group did not vary between lineup conditions, there was a higher percentage of correct answers in the simultaneous lineup (34,38%) than in the sequential lineup (26,67%) for the younger age group.

The three-way loglinear analysis for the "correct" dependent variable produced a final model that retained all effects. The likelihood ratio of this model was $\chi^2(0) = 0$, $p = 1$. This indicated that the highest-order interaction (age group x lineup type x correct answer) was indeed not significant, $\chi^2(1) = .673$, $p = .382$. Subsequently, we performed separate chi-square tests for each one of the independent variables (lineup type and age group) and the correct answers. However, the chi-square test regarding the relationship between age group and "correct" answers also showed no significant association between these two variables, $\chi^2(1) = .658$, $p = .417$. The same effect was confirmed regarding the relationship between lineup type and correct answers, with $\chi^2(1) = .881$, $p = .348$.

Dummy

Table 2

Percentage of dummy answers for each age group and lineup type.

		Sequential	Simultaneous	Grand Total
Dummy	Older	22,92	27,08	25,00
	Younger	41,67	40,63	41,13
	Grand Total	33,33	34,82	34,09

As can be observed in Table 2, there was a higher percentage of dummy answers in the younger age group (41,13%) than in the older age group (25%). This effect remains across both lineup types. However, within the older age group, there was a higher percentage of dummy answers in the simultaneous lineups (27,08%) than in the sequential ones (22,92%), while there was almost no difference between lineups in the younger age group (40,63% for simultaneous and 41,67% for sequential lineups).

The three-way loglinear analysis for the "dummy" dependent variable produced a final model that retained all effects. The likelihood ratio of this model was $\chi^2(0) = 0$, $p = 1$. This indicated that the highest-order interaction (age group x lineup type x dummy answer) was indeed not significant, $\chi^2(1) = .440$, $p = .507$. Afterwards, we performed separate chi-square tests for each one of the independent variables (lineup type and age group) and the dummy answers. The chi-square test regarding the relationship between lineup type and dummy answers also showed no significant association between these two variables, $\chi^2(1) = .002$, $p = .963$. However, the chi-square test for age group showed a significant association between the age of the child and the likelihood of choosing the dummy of the lineup, $\chi^2(1) = 5.143$, $p = .023$. As seen in Figure 2, the younger age group displayed a significantly higher rate of dummy answers than the older age group for both sequential and simultaneous lineups.

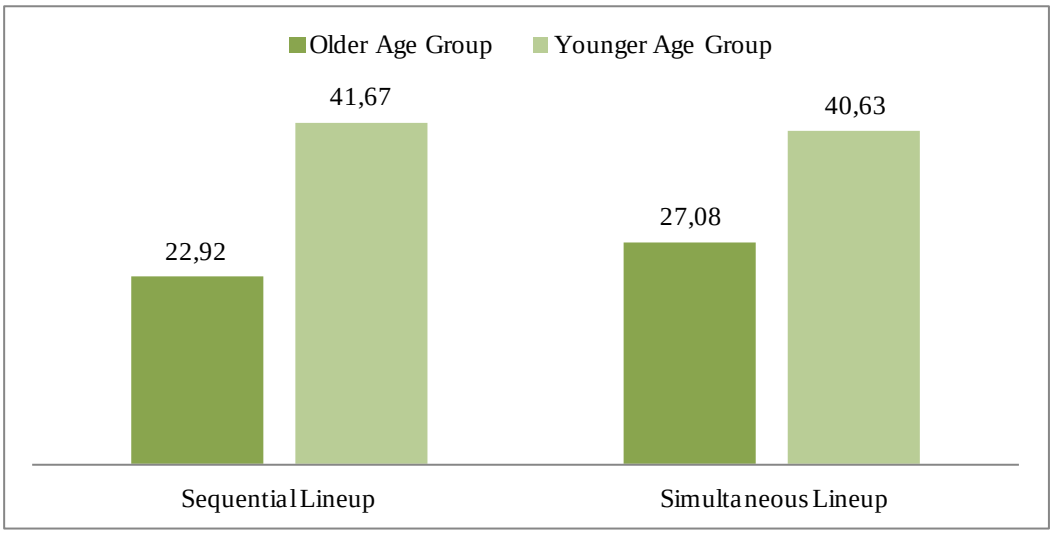

Figure 2. Percentage of dummy answers across age and lineup type.

Pseudo-target

Table 3

Percentage of pseudo-target answers for each age group and lineup type.

		Sequential	Simultaneous	Grand Total
Pseudo-target	Older	14,58	18,75	16,67
	Younger	6,67	12,50	9,68
	Grand Total	10,19	15,18	12,73

As shown in Table 3, there was a higher percentage of pseudo-target answers in the older age group (16,67%) than in the younger age group (9,68%). Furthermore, there was a larger number of pseudo-target answers in the simultaneous lineups (15,18%) than in the sequential lineups (10,19%). This effect was maintained across age groups.

The three-way loglinear analysis for the "pseudo-target" dependent variable produced a final model that retained all effects. The likelihood ratio of this model was $\chi^2(0) = 0$, $p = 1$. This indicated that the highest-order interaction (age group x lineup type x correct answer) was indeed not significant, $\chi^2(1) = .217$, $p = .642$. We then performed separate chi-square tests for each one of the independent variables (lineup type and age group) and the pseudo-target answers. However, the chi-square test regarding the relationship between age group and "pseudo-target" answers also showed no significant association between these two variables, $\chi^2(1) = 2.380$, $p = .123$. The same effect was confirmed regarding the relationship between lineup type and pseudo-target answers, with $\chi^2(1) = .1.234$, $p = .267$.

Other

Table 4

Percentage for other answers for each age group and lineup type.

		Sequential	Simultaneous	Grand Total
Other	Older	25,00	16,67	20,83
	Younger	25,00	12,50	18,55
	Grand Total	25,00	14,29	19,55

As shown in Table 4, while the number of "other" answers does not vary between age groups in the sequential lineups (both at 25%), it does in the simultaneous lineups, with 16,67% in the older age group and 12,5% in the younger age group.

The three-way loglinear analysis for the "other" dependent variable produced a final model that retained all effects. The likelihood ratio of this model was $\chi^2(0) = 0$, $p = 1$. This indicated that the highest-order interaction (age group x lineup type x dummy answer) was indeed not significant, $\chi^2(1) = .230$, $p = .632$. Subsequently, we performed separate chi-square tests for each one of the independent variables (lineup type and age group) and the "other" answers. The chi-square test regarding the relationship between age group and "other" answers also showed no significant association between these two variables, $\chi^2(1) = .180$, $p = .672$. However, the chi-square test for lineup type showed a significant association between the lineup used and the likelihood of choosing one of the "other" members of the lineup, $\chi^2(1) = 4.014$, $p = .045$. As shown in Figure 3, the sequential lineups originated significantly more "other" answers than the simultaneous lineups for both age groups.

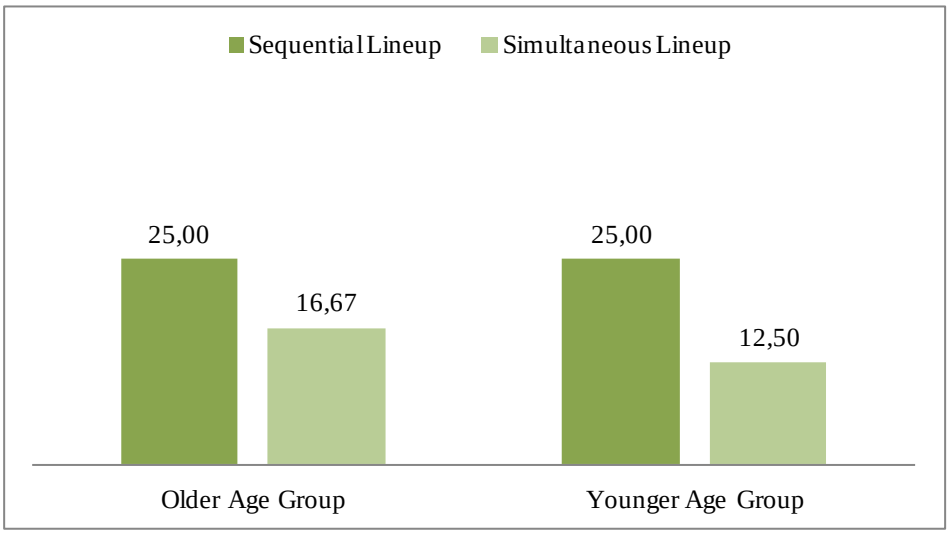

Figure 3. Percentage of "other" answers across lineup type and age.

Non-parametric Correlations

For the correlation analyses, we transformed the database in order to look at the collected data regarding each individual participant, to assess the strength and direction of

the association between the age of the participant and the studied variables. For these analyses, we thus considered how many answers of each type each participant had given in the total of four videos that each one saw. Also, in this case, we considered age as a continuous variable, instead of coding it into the two age groups (younger and older) as we did earlier. Spearman correlations were performed in order to determine the association between variables, which can be examined in Table 5. However, only one correlation was significant: a negative correlation between age and choosing the "dummy" answer (r_s = -.287, p = .034), such that the older the participant was, the less likely he/she was to identify the dummy as the suspect.

Table 5

Correlation coefficients between age and the different answer types.

Spearman's rho

		correct_all	dummy_all	target_all	other_all
age	Correlation Coefficient	,151	-,287	,224	,135
	Sig. (2-tailed)	,271	,034	,100	,327

Discussion

Results showed that a child's age is associated with the likelihood of identifying the dummy in a lineup as the subject seen in the video. We found that a preschooler is much more likely to identify the dummy than an older child, indicating a higher suggestibility to misleading information, as seen in previous studies (Gordon et al., 2001; Goodman, Bottoms, Schwartz-Kenney & Rudy, 1991; Goodman & Reed, 1986). Younger children, even if getting the answer wrong by making a positive identification (since all trials were target absent), chose more often the fillers described by the experimenter, even though they were not the fillers who most closely resembled the perpetrators in the videos. Since younger children's visual memory is not as developed as that of an older one (Gordon et al., 2001; Howe & O'Sullivan, 1997), preschoolers may have had too much doubt to make a decision on their own and hence relied on the clues the experimenter provided them with. This potential explanation is strengthened by the fact that, not only are young children very suggestible (Goodman & Reed, 1986), but even more so if the misleading information is provided by a stranger, as was the case in this study. Literature on this subject shows that

the daily conversational give-and-take between children and their parents makes it more likely for them to contradict or correct parent's suggestions rather than a stranger's (Jackson & Crockenberg, 1998).

Also, we verified that younger children identify the dummy more often than older ones independently of the lineup type. Consequently, we pondered if the presence of misleading information may be a stronger conditioner of eyewitnesses' responses than lineup type. In one of the few studies that crossed variables such as misinformation and lineup type, by Searcy, Bartlett & Memon (2000), results showed that false identifications were less frequent without misleading information in sequential lineups. This means that, in our study, we would expect a higher rate of dummy answers in the simultaneous lineups, although our results showed hardly any difference between the two conditions. Given that misinformation might weaken an eyewitness' performance up to 30% or 40%, that young children are especially susceptible to this kind of manipulation (Loftus, 1992) and that even a slight difference in wording can bias eyewitness response (Loftus & Palmer, 1974), we may argue that the misleading information might have diminished the visible difference between lineup type conditions.

However, results showed that there was a statistically significant association between the lineup type and the likelihood of identifying one of the other lineup members besides the dummy and pseudo-target. We found a significantly higher percentage of "other" identifications in the sequential lineups than in the simultaneous ones. Simultaneous lineups rely on a relative judgment, where eyewitnesses compare lineup members to each other and ultimately choose the one who most closely resembles the person in their memory, if any (Wells, 1984). Given that this was not possible in the sequential lineups (because all lineup members appeared by themselves), our participants may have not been able to exclude the "other" fillers from their choice as easily.

The effects described above were the only ones to reach statistical significance. However, we must keep in mind that the statistical power in this study was fairly low: with 55 children split into four groups (sequential lineup x younger age group; sequential lineup x older age group; simultaneous lineup x younger age group; simultaneous lineup x older age group), we ended up with 15 or less participants per condition. Hence, the lack of statistically significant effects may be relatively less important than the finding that our

results showed a pattern that is in accordance with those found in the literature. Furthermore, some of the interesting tendencies that were observed could prove to be significant if studied with a larger sample. For instance, we found that the older children were more prone to identifying pseudo-targets than the preschoolers. Since studies show that we are more likely to make false positives in target absent lineups (Busey & Loftus, 2006) and even more so for children (Parker & Carranza, 1989), by identifying the filler with the highest resemblance to the target and resisting misleading information provided by the experimenter, we could argue that older children have not only better performance but also a higher confidence level in their identifications. Regarding lineup type, we found a larger number of pseudo-target answers in the simultaneous lineups than in the sequential lineups, independently of the participant's age. Considering that we make more relative judgments in simultaneous lineups, we hereby choose the filler who most closely resembles our memory (Wells, 1984) – which in this case would be the pseudo-target. Since there were, in fact, more pseudo-target answers amongst the simultaneous lineups, this result corroborates the literature that tells us that there is a larger occurrence of false positives in simultaneous than in sequential lineups, when the target is absent (Steblay et al., 2001; Lindsay et al., 1997).

When working with such a young sample, one runs into some difficulties, such as being able to arrange a large enough sample. Since they are underage, the permission for their participation in the study must be granted by a third party, namely their legal guardians. Additionally, being an investigation in the field of forensic psychology, parents are not always comfortable allowing their children to participate in an experiment conducted by strangers. Children also lack the concentration skills of teenagers and adults, which may hinder the normal course of the experiment and result in data biases. In this particular study, we required a distraction-free environment, which was not always easy to find, and which prevented some children from taking part in the study.

During the course of this experiment, several ideas arose for future studies with a similar basis as the present one. For example, the memory game used as the interference task gave us different cues about a child's short-term memory performance. It could prove to be interesting to assess if their performance in one task was in any way correlated with their performance in the other. Furthermore, we chose to let the children always win at the

memory game, for the sake of reducing their frustration and boredom. However, this could also have been an interesting variable to assess, in order to understand if their success in the game influenced their concentration or self-confidence and consequently played a role in their performance and success in the identification task.

The present study aimed to provide a new perspective on child eyewitness testimony by studying several different variables simultaneously, and the dynamics between them. It also aimed to give further clues as to whether child eyewitness testimony is a reliable means of evidence in real life investigations. Overall, the children did not fare very well in the identification task, given that all trials were target absent and only 33,64% of the answers given were correct rejections. However, differences between conditions showed differences in performance and these must be noted. Previous studies tell us that a sequential lineup, due to the absolute nature of the judgment used in identification, provides more conservative results, which are translated by a lower rate of false positives (Malpass & Devine, 1981). However, our study shows that more “dummy” and “other” identifications were made in the sequential lineup, which may contradict the possibility of being a better choice in criminal investigations, at least when the eyewitness is a child. The discrepancy in data collected so far may point toward a lack of clear scientific evidence on the subject and should either promote further studies on the subject or raise awareness towards the reliability of child eyewitnesses.

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Appendices

PEDIDO DE AUTORIZAÇÃO AOS ENCARREGADOS DE EDUCAÇÃO

Para participação no estudo
"Enviesamentos de memória no testemunho ocular em crianças"

Lia Caldeira

Eu, Lia Caldeira, sou aluna do último ano do Mestrado em Psicologia Forense da Universidade de Aveiro e, no âmbito da minha dissertação, pretendo realizar uma investigação sob o tema "Enviesamentos de memória no testemunho ocular em crianças", sob orientação da Doutora Isabel Santos, Professora Auxiliar da Universidade de Aveiro.

Objetivo do Estudo:

Esta investigação pretende estudar a eficácia de diferentes tipos de alinhamento (apresentação dos indivíduos a identificar em simultâneo ou de forma sequencial) perante crianças como testemunhas oculares, numa situação em que se introduzem pistas favoráveis à criação de enviesamentos de memória. Esta investigação pretende aprofundar algumas questões já documentadas na literatura, de forma a consolidar o conhecimento acerca de como minimizar os erros existentes nestes processos, potencialmente auxiliando a investigação criminal.

Procedimento específico:

Será pedido à sua criança que participe numa tarefa de três etapas:

1) Na primeira visualizará um vídeo simples de 15 segundos que retrata um furto. Cada vídeo consistirá numa cena em que um indivíduo irá tirar a carteira ou mala de uma pessoa que se encontra distraída, sem que esta se aperceba do sucedido. Os furtos retratados nos vídeos são encenados e não são de natureza violenta, pelo que não tem qualquer conteúdo suscetível de ferir sensibilidades;
2) Na segunda etapa a criança realizará uma tarefa de interferência que consiste num breve jogo de memória e, em seguida, será explicada a tarefa de reconhecimento a realizar na próxima etapa;
3) Na terceira e última etapa a criança observará um alinhamento de seis fotografias (simultâneo ou sequencial) e terá que indicar se o indivíduo que viu no vídeo se encontra entre os membros do alinhamento e, se sim, qual deles é.

A criança repetirá esta sequência de tarefas quatro vezes, uma para cada um dos quatro vídeos que visualizará. A duração total da experiência será de aproximadamente 20 minutos.

Riscos e benefícios para a criança:

Não há quaisquer riscos acrescidos pela participação da criança nesta experiência. Como referido anteriormente, os vídeos não têm qualquer conteúdo violento. Qualquer que seja a decisão que tome, o(a) seu(sua) educando(a) não será prejudicado, nem por participar, nem por recusar participar neste estudo. A criança também não receberá quaisquer regalias ou compensação por colaborar nesta investigação. O único benefício

que poderá ter com este estudo é a oportunidade de passar por uma experiência diferente e poder contribuir para a investigação científica.

Mesmo que autorize a participação do(a) seu(sua) educando(a) nesta investigação, serão explicadas as tarefas e perguntado à criança no momento da experiência se esta aceita participar ou não. Caso esta recuse, não participará na experiência e não sofrerá quaisquer repercussões por isso.

Confidencialidade:

Todos os dados recolhidos ao longo do estudo, através dos procedimentos que lhe foram explicados, serão confidenciais e para uso exclusivamente em investigação científica, nunca sendo comprometida a identidade da criança. Isto quer dizer que os dados serão tratados e analisados estatisticamente, e divulgados de modo anónimo e apenas em grupo, nunca individualmente. Para este estudo não interessa estudar só uma criança, mas sim um grupo de crianças.

Os resultados e conclusões da investigação serão usados para a redação de uma tese de mestrado ou outros trabalhos académicos, obedecendo ao objetivo da investigação científica.

Caso autorize a participação do(a) seu(sua) educando(a), peço que não lhe conte que irá participar neste estudo de modo a não comprometer os resultados no mesmo. É importante que toda a informação que a criança receba acerca da experiência seja transmitida de forma uniforme e controlada pela investigadora de forma a não enviesar o desempenho da criança aquando da realização das tarefas.

Contacto:

Caso deseje obter informações adicionais ou se tiver quaisquer dúvidas ou questões relacionadas com esta investigação, não hesite em contactar-me, pois terei todo o gosto em responder-lhe: lia.caldeira@ua.pt

Afirmação do consentimento informado:

Tomei conhecimento do objetivo do estudo e compreendi todos os seus procedimentos. Fui informado(a) que tenho o direito de recusar a participação do(a) meu/minha educando(a) e que essa recusa ou desistência não terão consequências para mim nem para o/a meu/minha educando(a). Foi-me garantida a confidencialidade de toda a informação recolhida sobre o/a meu/minha educando(a) durante este estudo. Assim declaro que aceito que o/a meu/minha educando(a) _____ _____ participe nesta investigação.

_____
Encarregado de Educação

_____
Data

Lia Caldeira (lia.caldeira@ua.pt)
Investigadora

Isabel Santos (isabel.santos@ua.pt)
Orientadora da Dissertação

Obs. final: rubricar cada uma das restantes páginas deste documento.