



eCOMMONS

Loyola University Chicago
Loyola eCommons

Master's Theses

Theses and Dissertations

1978

Children as Eyewitnesses

Barbara VanOss Marin
Loyola University Chicago

Follow this and additional works at: https://ecommons.luc.edu/luc_theses

 Part of the [Psychology Commons](#)

Recommended Citation

Marin, Barbara VanOss, "Children as Eyewitnesses" (1978). *Master's Theses*. 2988.
https://ecommons.luc.edu/luc_theses/2988

This Thesis is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Master's Theses by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License](#).
Copyright © 1978 Barbara VanOss Marin

112

CHILDREN AS EYEWITNESSES

by

Barbara VanOss Marin

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

December

1978

ACKNOWLEDGMENTS

The author would like to gratefully acknowledge the encouragement and support of her thesis advisors, Dr. Deborah Lott Holmes and Dr. Jeanne M. Foley, in the preparation, execution and write-up of this thesis. The author is also grateful to Mark Guth, Paul Kovak and Linda Lawler for their invaluable help in data collection. Finally, the author would like to acknowledge the constant loving support of her husband, Gary.

VITA

The author, Barbara VanOss Marin, is the daughter of Arnold G. VanOss and Jean (Michels) VanOss. She was born on October 14, 1949, in Green Bay, Wisconsin.

She attended St. Philip's Grade School and St. Joseph Academy in Green Bay, graduating from high school in June, 1968. Her undergraduate education was at Loyola University of Chicago where she was a National Merit Scholar. She received the Bachelor of Arts degree in June, 1972.

The author spent the subsequent four years in Colombia, South America teaching English and then Psychology.

In 1976, she was admitted to the graduate program in Applied Social Psychology at Loyola University of Chicago and was granted an assistantship.

The list of her publications includes:

Desarrollo de los estereotipos sexuales y raciales (development of racial and sexual stereotypes). Revista Interamericana de Psicología, 1974, 8, 301-308.

El proceso psicoterapeutico como aplicacion de los principios del aprendizaje (the therapeutic process as an application of learning principles). Revista Latinoamericana de Psicología, 1974, 6, 59-64.

Grupos (groups). Chapter in G. Marin, Manual de investigacion en psicología social. Mexico: Trillas, 1975.

Estereotipos em relacao a papeis sexuais na Colombia (sex role
stereotypes in Colombia). Cadernos de Pesquisa, No. 15,
December, 1975.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	ii
VITA.....	iii
LIST OF TABLES.....	vii
CONTENTS OF APPENDICES.....	viii
 Chapter	
I. INTRODUCTION.....	1
II. REVIEW OF THE LITERATURE, DESIGN AND HYPOTHESES.....	3
Review of the Literature.....	3
Memory Capabilities of Children.....	3
Eyewitness Simulation Studies.....	7
The Influence of Leading Questions on Ability to Report.....	8
Time Delay before Interrogation.....	9
Individual Differences in Eyewitness Ability.....	10
Design and Hypotheses.....	12
III. METHOD.....	15
Subjects.....	15
Measures.....	15
Free recall.....	16
Objective questions.....	16
Leading question.....	18
Photo identification.....	18
Embedded Figures Test.....	19
Procedure.....	20
IV. RESULTS.....	22
Free recall.....	22
Objective questions.....	27
Photo Identification Data.....	30
Leading questions.....	33
Summary of Results.....	34

TABLE OF CONTENTS

	Page
V. DISCUSSION.....	36
SUMMARY.....	42
REFERENCES.....	44
APPENDIX A.....	49

LIST OF TABLES

Table	Page
1. Mean Number of Items Correctly Recalled and Incorrectly Mentioned by Each Age Group.....	24
2. Analysis of Variance on Correctly Recalled Items.....	25
3. Analysis of Variance on Incorrectly Mentioned Items.....	26
4. Percentage of Correct Answers on Objective Test for Each Age and Sex Group.....	28
5. Analysis of Variance on Percent Correct on Objective Test.....	29
6. Percent of Subjects in Each Age and Sex Group who Correctly Identified Target.....	31
7. Analysis of Variance on Identification of Target from Photos.....	32

CONTENTS OF APPENDIX

Page

APPENDIX A Objective, Nonleading and Leading Questions.....	49
-------------------------------------------------------------	----

CHAPTER I

INTRODUCTION

An eyewitness is a person who observes an event and is later called upon to recall that event. This recall may occur in any of a variety of settings. Among other things, the eyewitness may be asked to identify a suspect from a lineup or a group of photographs, to answer specific questions about the crime and the criminal or to identify the accused and describe the crime at the time of trial. This study focuses upon a particular type of eyewitness: the child.

Children have traditionally been suspect as eyewitnesses. At least one legal expert indicated that he felt "mental immaturity" should be equated with "mental derangement" (Wigmore, 1940). Stafford (1962), in a comprehensive review of the legal status of children as witnesses, indicated that the judicial system as a whole has demonstrated skepticism about children as witnesses. He indicated that a few state courts are so impressed with the unreliability of the young witness that they insist that special instructions be given to the jury to view this testimony with extreme care. Courts assume that the intelligence of children under 10 is suspect in three areas: their mental capacity to observe and register the event when it occurs, their capability for retaining the event in memory over a period of time, and their capacity to relate that event at the time of trial. There has also been an implicit assumption on the part of legal experts that children would be more easily led into false testimony by leading

questions than adults.

This attitude of the court regarding the use of children as eyewitnesses can easily be seen in its decisions: in no case up to 1962 had a child under the age of four been allowed to testify (see Stafford, 1962); and there are many cases in which children between the ages of 4 and 9 have not been allowed to testify, or in which the judge determined that the child was not competent to testify on the basis of examination or testimony (*Getty v. Hutton*, 1920; *Hollaris v. Jankowski*, 1942; *Macale v. Lynch*, 1920; *State v. Smith*, 1940). In addition, many potential young witnesses never reach the courtroom because of reticence on the part of lawyers to risk the objections of their opponents and a defeatist attitude about using children as witnesses (Stafford, 1962).

In fact, such a skeptical attitude may be unwarranted. The present study of the child's capacity to observe, retain and relate an event was undertaken to clarify this issue. The study was designed to measure three areas of a person's capacity to observe, retain and relate an event, specifically, ability to narrate an account of what had been seen, ability to correctly answer straightforward questions about the event seen, and ability to identify the person just seen from among various photographs of similar-looking people. The study also measured susceptibility to leading questions. Subjects ranging in age from 5 to 21 years were tested for their eyewitness ability on these measures.

CHAPTER II

REVIEW OF THE LITERATURE, DESIGN AND HYPOTHESES

Review of the Literature

Memory Capabilities of Children

Psychologists have long been interested in the memory capabilities of children as well as in memory differences between children and adults. This interest is reflected in the numerous studies of the development of memory that have been published in recent years. Most of these studies have examined three specific forms of memory: recognition, free recall, and cued recall. In recognition tasks, the subject is asked to identify a stimulus as either the same or different from other stimuli seen previously. This is quite different from free recall tasks in which the subject is asked to actively retrieve information from memory with no or few prompts. Cued recall tasks comprise a sort of middle ground on this continuum, since here the subject is given part of the answer and asked to provide the rest. For example, the subject may be asked simple, direct questions about what happened, and the question itself serves as a cue in retrieving the memory.

Interestingly, these three different memory tasks have been found to differ in the degree to which they show developmental trends; that is, in the extent that performance differs as a function of age. Thus, it is generally accepted that children perform as well as adults on recognition memory tasks. A number of studies have revealed that

3- and 5-year olds can recognize repeated pictures with over 90% accuracy, which is similar to adult performance on such tasks (Brown & Campione, 1972; Brown & Scott, 1971; Corsini, Jacobus, & Leonard, 1969). For example, Nelson (1971) found equivalent retention in picture recognition across the age range of 7-13 years. Another series of studies (Brown, 1973a, 1973b; Brown, Campione, & Gilliard, 1974) also found no developmental effects even though recency judgments for isolated items were tested (a task that is less susceptible to the ceiling effects that are frequently obtained in recognition studies). This evidence is tangential, but suggests that developmental trends are absent on recognition tasks.

The same is not true of free recall tasks. For example, Paris and Upton (1974) used a delayed free recall task to measure children's memory for a story. In this study the kindergarten children recalled 1.9 ideas per story compared to 4.4 and 9.3 for second and fourth graders respectively. Based on studies such as that described above, as well as others (Kobasigawa, 1974; Ritter, Kaprove, Fitch, & Flavell, 1974), Brown (1975) postulated that the more a specific task demands active retrieval strategies, the more there will be developmental differences in performance. Thus, experiments employing recognition tasks show little developmental change since they require little use of active retrieval strategies, whereas experiments employing free recall tasks show major developmental differences since they rely very heavily on the use of active retrieval strategies.

Cued recall, not surprisingly, appears to occupy a middle ground between free recall and recognition in the extent to which it

evokes developmental differences. Since cued recall provides the subject with part of the memory, it should be almost as effective in aiding retrieval as the information available in recognition tasks, and far more effective than free recall tasks (Brown, 1975). Therefore, cued recall tasks might be expected to show few, if any, developmental trends.

The reason why the distinction between these three types of memory tasks is so important, is that different eyewitness tasks show some correspondence to these three different types of memory tasks. A police interrogation or courtroom appearance in which witnesses are asked to freely narrate what they saw resembles a free recall task, and therefore would be expected to be quite difficult for young children. Children might, however, be able to provide more information during interrogation if it were handled by the use of simple direct questions and resembled a cued recall task or a recognition task. Based on this line of argument, a photo identification or lineup task, where recognition memory is involved, should show equally good performance for children or adults, since no special strategies or verbal abilities are needed.

Interestingly, an eyewitness simulation study using only adults has shown that there are differences between recognition and recall memory which are consistent with this argument. After viewing a 2 1/2 minute film depicting a supermarket accident, subject narrated what they had seen, and then were asked open-ended, multiple-choice or leading questions (Marshall, Marquis, & Oskamp, 1971). In examining the performance of 151 subjects ranging in age from 21 to 64 years, it

was found that free reports were far less complete than responses to more structured forms of interrogation. Those subjects given multiple-choice questions (recognition memory) produced more complete testimony than those given open-ended questions (free recall memory). Recognition memory tasks thus appear to be easier and to produce better testimony than free recall tasks even in adult subjects.

Whether this phenomenon is also true for children and will thus make them comparable to adults at least on recognition tasks, is the question this study was designed to answer. There is at least one piece of evidence regarding this question. In the only published study using children, McGeoch (1928) staged an event in a classroom and then asked 580 children aged 9-14 years to describe in writing what had happened and to answer specific questions. He found that the richness of the narrative based on what the children had seen increased with age, with the 9-year olds reporting about 18 correct items, while the 14-year olds reported almost 28 correct items on the average. Number of correct answers to specific questions also increased somewhat from over 18 to almost 24 correct answers between the ages of 9 and 14, while wrong answers decreased from 18 to 15 for the same ages. McGeoch concluded that there was a definite but slow increase in the ability to report related to increasing age. It should be noted that the differences between 9- and 14-year olds in the McGeoch (1928) study were larger using the narrative than the interrogatory formats.

The present study was designed to test the memory capabilities of subjects of a wider age range on various types of eyewitness-like

tasks. Although recall memory performance was expected to increase significantly with age, recognition memory and cued recall tasks were expected to yield better and approximately equivalent performance for children and adults.

Eyewitness Simulation Studies

Before embarking on a fuller discussion of the study to be presented here, however, some mention must be made of what is currently known about eyewitness testimony in general. A number of researchers have investigated the capabilities of "witnesses" for remembering what they have seen in contrived "real-life" situations. Buckhout (1974) reported a study in which a staged assault on a college campus yielded 141 "eyewitnesses." Six weeks after the incident, 126 of these witnesses were asked to identify the man who had perpetrated the assault from six photos. Only 40% correctly identified the "guilty" party and fully 25% identified an innocent bystander as the culprit.

In another simulated study, 102 police trainees, 167 law students, and 22 settlement house residents were shown a film and asked to recall what they had seen (Marshall, 1966). Subjects were able to correctly recall an average of only one fact about the persons in the film, although they did recall an average of almost six action items. When asked, over 20% of the subjects reported that they heard the woman say something she did not say. Almost half of the subjects were unable to correctly answer a direct question about whether the suspect was wearing a light jacket, a dark jacket or no jacket at all. Only about two-thirds of the subjects correctly

answered direct questions about sideburns, a mustache, or hair style. In general, the accuracy of these subjects was disappointing.

A study of eyewitness capabilities in photo identification or live "show-up" recognition (Egan, Pittner, & Goldstein, 1977) again indicated that witnesses are frequently inaccurate. A total of 86 subjects viewed two confederate "criminals" briefly through a one-way mirror and were asked either 2, 21, or 56 days later to identify them from two lineups. Only 28% of the subjects made no errors in identification.

In summary, past eyewitness simulations have shown that adult subjects tend to be highly inaccurate in their performance on eyewitness tasks. Based on this research, it is expected that performance of subjects of all ages in the present study would be relatively poor.

The Influence of Leading Questions on Ability to Report

Another aspect of eyewitness performance that has been a subject for research is the effect of leading questions. Although studies on the effect of leading questions on children have not been reported to date, it has been shown repeatedly that the wording of questions that witnesses are asked can strongly influence their subsequent memory for the event. A leading question is one that asks about something that did not take place, about an object that was not present, or which implies a state of affairs that did not exist. Its effect is to introduce new information into the subject's memory of the event, thus causing reconstruction or alteration of the event based on the new information. At a later time, when this memory is tapped, fictitious

events or objects, based on the false information, will be retrieved from memory. The extent to which leading questions may influence eyewitness performance is apparent in a study by Loftus and Palmer (1974). Leading questions were found to alter subjects' judgments about the speed of vehicles and the severity of an accident and caused many subjects to report seeing broken glass at the scene of the accident when in fact there was none. In a further study, Loftus, Altman, and Geballe (1975) found that the descriptions of events by eyewitnesses were altered in systematic ways depending on the wording of the questions asked. For example, if a question was worded aggressively, the situation was described by witnesses as being more violent. Although several authors have shown that false identifications are made with surprisingly high frequency, Miller and Loftus (1976) found that false identifications were significantly increased by leading questions.

The present study investigated susceptibility to leading questions as a function of age. Although the courts have assumed that young children are more susceptible to the influence of leading questions, it appears that no relevant research exists in this area, which is one of concern to persons interested in the child as eyewitness.

Time Delay before Interrogation

Common sense and research on learning both suggest that the longer the delay between the time of an event and the time that event is to be recalled, the poorer the memory for that event. In eyewitness situations, such as an accident or a robbery, initial

interrogation of witnesses usually takes place within an hour of the event. Nickerson (1968) in a study of recognition memory, found that length of study-test interval affects accuracy of performance. However, other studies have not confirmed this relation (Clark, 1965; Goldstein & Chance, 1970). In order to measure the possible impact of the time delays on memory in an eyewitness task, two time delays (10 and 30 minutes after the event) were used in this study.

Individual Differences in Eyewitness Ability

While age and its relation to eyewitness ability is of major interest in this study, there are a number of other individual differences which may be related to eyewitness ability. From past research it seems that females may be better than males on eyewitness tasks. Thus, in his early study of eyewitness ability, McGeoch (1928) reported sex differences with female subjects having more correct items than male subjects. In this study, there was also a tendency for females to report fewer wrong items after seeing a staged incident. Interestingly, these sex differences did not appear in tasks involving memory for object cards and pictures. Similarly, Exline (1963) reported consistent findings indicating that there are sex differences in person perception. She found that females tended to focus more specifically on the person with whom they were interacting and relied on visual cues more than males. However, Egan, Pittner, and Goldstein (1977) reported no sex differences between adults on an eyewitness identification task, and the relation of sex of subject to eyewitness ability remains unclear.

Other research indicates that intelligence may be related to

some extent with eyewitness accuracy. McGeoch (1925) in a study of subjects ranging from low to average intelligence, found a positive correlation between IQ and report accuracy for subjects in the below average range. However, within the normal range of intelligence there was no relationship between intelligence and report accuracy. Shrauger and Altrocchi (1964) and Marshall (1966) reported that intelligence, recognition ability, and accurate reporting correlate.

Another individual difference that may have an influence on eyewitness accuracy is field dependence. Field dependence-independence refers to a person's ability to focus on individual aspects of the environment while remaining uninfluenced by other aspects of the environment. Thus, field dependence-independence is an aspect of an individual's cognitive style and can be measured in a variety of ways. For example, field dependent people have difficulty overcoming the influence of a tilted frame on the perceived orientation of a room. Field dependence can also be measured by the Embedded Figures Test (EFT), which measures one's ability to perceive elements as discrete from their background. Performance on the EFT has been found to be related to enhanced ability to remember social situations, social cues, details of social interactions and faces. Fitzgibbons, Goldberger, and Eagle (1965) found that those subjects who were field dependent showed superior incidental learning of social visual learning material as compared to neutral visual material. Apparently field dependent people do not have better memories in general (Adcock & Webberly, 1971; Eagle, Goldberger, & Breitman, 1969), but they do have better memory for social objects and events. Field dependent people remember

faces better (Cohen, 1969; Crutchfield, Woodworth & Albrecht, 1958; Messnick & Damarin, 1964) and they look more at other people's faces (Konstadt & Forman, 1965) than field independent people. Thus, one would expect that this ability or cognitive style should be positively related to eyewitness accuracy.

Another factor that may influence memory is the race of the subject and of the person to be remembered. Malpass and Kravitz (1969) indicated that subjects have greater acuity for faces of their own race. Tajfel (1969) pointed out that prejudiced white subjects are poorer than unprejudiced ones in memory for black persons.

For purposes of the present study, the factors of age and sex were manipulated so that their effects could be measured. The other individual differences were controlled, i.e., all subjects were of at least normal intelligence, and only white subjects and experimenters were used. The level of field dependence was measured so that its effect on eyewitness accuracy could be determined.

Design and Hypotheses

The present study involved a 4 X 2 X 2 (age X sex X time delay) complete factorial design. The four levels of age were (a) kindergarten and first graders, (b) third and fourth graders, (c) seventh and eighth graders, and (d) college students. The two levels of sex were male and female. The two levels of time delay were delays of either 10 or 30 minutes from the time of the simulated eyewitness event to the time of testing. There were also four dependent measures in this study. Free recall performance was measured as the number of facts which the subjects verbally recalled about the simulated eyewitness

situation. Recognition was measured by presenting the subject with six photos of men and asking the subject to pick out the one seen in the simulated eyewitness event. Cued recall was measured by asking the subject to answer 20 yes-no questions pertaining to the simulated eyewitness situation. The effect of leading questions was measured by presenting subjects first with a leading question, and two weeks later with the same question in nonleading form. Answers of subjects receiving the leading question were compared to a control group who received the same question in nonleading form at both testings.

On the basis of the review of the literature, a number of predictions were made. They were:

1. Recall performance increases linearly as a function of age, because of the greater ability of older persons to express themselves verbally and because recall demands active retrieval strategies which only develop with age.
2. Recognition performance is equal across ages, because it does not demand active retrieval strategies or verbal ability.
3. Cued recall performance is equal across ages, or improves only slightly, because the cue should aid younger subjects in retrieving the memory and less verbal ability was called for than in a free recall situation.
4. Leading questions produce more errors in recall than control questions, because leading questions interfere with the subject's memory for the event and cause new information to be retrieved from memory at a later time.
5. Field dependence, as measured by the Embedded Figures Test,

is positively associated with high performance on eyewitness tasks, especially photo identification, because field dependent people have been found to have somewhat better memory for social material than field independent people.

6. Overall, performance on the eyewitness tasks is relatively poor, since eyewitness tasks are difficult and performance on them is usually poor.

In addition, several variables were investigated although no clear predictions could be made. Due to the contradictory findings in the area, no clear prediction regarding sex differences in eyewitness ability and the effect of time delay on eyewitness ability could be made. The effect of age and sex on susceptibility to leading questions had not previously been investigated so no predictions were made.

CHAPTER III

METHOD

Subjects

Ninety-six subjects participated in this study: 24 subjects each from (a) kindergarten and first grade, (b) third and fourth grades, (c) seventh and eighth grades, and (d) college students. Males and females were equally represented in each age group. College-aged subjects were obtained from an undergraduate subject pool at a private denominational school; younger subjects were obtained from a nearby parochial school. College subjects volunteered, younger subjects received their parent's permission to participate in a psychology study. All subjects were white, of at least normal intelligence as judged by their teachers, and had normal or corrected normal vision.

Two of the potential subjects from the youngest age group could not be tested due to their initial fear of the experimenter and the strange testing room. One of the potential subjects in the oldest age group also was not tested because he had seen the confederate before the experiment began. These subjects were replaced by other subjects of the appropriate age and sex.

Measures

Data were collected on four dependent variables: free recall, objective questions, photo identification, and impact of leading questions on later recall of the event.

Free recall. As soon as the testing began, it was explained to the subject that the incident had been staged and that the experimenter was interested in finding out what the subject could remember about what had happened. Subjects were then asked to relate to the experimenter as much information as they could recall. When subjects paused in their narrative, they were encouraged to continue by statements from the experimenter like "Tell me more." Each subject's narration was tape-recorded.

The tapes containing the subject's free recall narratives of the event they had seen, were rated by two independent raters. A total of 20 possible descriptive statements or ideas, those which would be most likely to have been mentioned by subjects, were developed by the raters. Then, the raters listened to each subject's narrative as often as necessary and checked off those ideas that the subject had mentioned. Incorrect items mentioned were scored as such by the raters. A few subjects made statements which had not been developed but were correct, and these were added to their score. A subject's final scores were the number of correct statements which both raters agreed had been made regarding the event seen, and the number of incorrect statements which both raters agreed the subject had made. The number of times the raters agreed was calculated, using the McGrew (1972) formula for interrater reliability. Reliability between the raters was .914.

Objectives questions. When subjects had completed their narrative, they were asked 20 yes-no objective questions about the physical and behavioral aspects of the incident and the target. The

questions were devised specifically for this study. Great care was taken to make the questions appropriate for use with children through the use of simple vocabulary and sentence structure (see Appendix A for list of questions used). Wherever possible, questions were phrased as comparisons rather than absolute judgments. For example, one question asked whether the confederate was taller than the experimenter, instead of asking whether the confederate was tall (a difficult judgment for children who see all adults as tall). Questions were also worded so that half were correctly answered "yes" and half were correctly answered "no."

A point-biserial correlation was done on the 20 objective test items. Subjects' scores were randomly divided into two groups while maintaining equal numbers of subjects from each age, sex, and delay condition. Correlations for each item for each half of the subjects revealed that items 1, 6, and 7 were unreliable, that is, did not differentiate those who did well on the test from those who did poorly, (failed to attain correlations of .20). These particular items asked if the man was wearing brown pants, if he had blonde hair, and if he wore glasses. The item concerning blonde hair was a poor discriminator because of a ceiling effect, that is, most subjects got it right. The other two items were only answered correctly at chance levels, indicating that they were very difficult. Several other items were also quite difficult, i.e., were responded to correctly only as often as would be expected by chance. These were "Was his shirt out of his pants?", "Was his shirt green?", "Were his sleeves rolled up?", and "Was his hair curly?"

Leading question. After the 20 objective questions had been answered, an additional "leading question" was asked (subjects were not aware that this question was any different than the others). Two leading questions were used, with half of the subjects in each age X sex X delay group receiving one of them in leading form and the other in nonleading form. For the other half of the subjects, the leading-nonleading forms of the questions were reversed. The impact of the leading questions was assessed at the second testing session two weeks later, when all questions were presented in nonleading form (questions 20A and 20B, and 21A and 21B of Appendix A are the non-leading and leading questions that were used).

Photo identification. At the close of the first testing session, subjects were also asked to identify the target in an array of six photographs. The six photographs used were selected from an initial set of 12 photographs of men with beards, glasses, and medium length brown hair. All of the photographs were taken with the men wearing the same shirt and with the same lighting and background conditions. Initially, these 12 photographs were shown to 40 adults, each of whom was asked to eliminate the two or three that they felt were most different from the others. In this way, an array of six men who looked most like each other (and the target) was chosen. This array of six photographs was then presented to 21 second graders who were asked to imagine themselves in a situation similar to that depicted in the experiment and to guess which of the men would be the confederate. These responses were analyzed using a chi square ($\chi^2(20) = 6.14, p > .20$). Since this test revealed no significant differences among the

different photographs, it was fair to assume that any differences that might be obtained in photo identification in the experiment would not be due to response bias.

Three different arrays of the six photographs were used in the experiment to eliminate any biases in response as a function of position in the array. In these three arrays, the confederate's photograph occurred in the first, third and last positions. One-third of the subjects in each age X sex X delay group received each of the different orders.

Before debriefing, all subjects were asked if they had seen any of the men in the photographs before the experiment, and all responded that they had not.

Embedded Figures Test. The Embedded Figures Test was included as a potential covariate. Either the adult or children's form was administered to all subjects: the adult form (EFT) was used with the two older age groups; the children's form (CEFT) was used with the two younger groups. Both of these tests consist of complex figures in which a simple form is embedded. The subject's task is to find the simple embedded form.

The adult form is scored on the basis of the number of seconds it takes the subject to find the embedded figures. The children's form is scored by counting the number of embedded figure tasks which the child is able to successfully solve. Therefore, on the EFT, the higher the score, the more field dependent the person is, whereas on the CEFT, the lower the score, the more field dependent the person is. Scores on these tests were standardized using the age and sex norms

for each group and the sign was reversed on the resulting z scores for the EFT, so that all scores were comparable.

Procedure

Subjects were tested individually. Upon arrival at the testing room for the study, each was greeted and took a seat. The "study" was, however, briefly interrupted by the event described below which involved three participants: (a) the experimenter--a male who initially greeted the subject, (b) the assistant--a female who assisted the experimenter, and (c) the target--another male who interrupted the testing. The eyewitness event consisted of the following: a few minutes after the subject entered the room and sat down, a male (the target) entered. This target looked upset and said to the male experimenter: "Why are you using this room? I told you that I asked for it three weeks ago, and I need it right away." The male experimenter began to apologize, but was interrupted by the target, who said, "I'm going to see that someone hears about this right now," and left the room. This entire interaction lasted about 15 seconds. The target and the male experimenter stood about 7 feet from the subject and about 2 feet apart.

After the target had departed, the male experimenter explained to the subject that he had to leave briefly to straighten out this matter, and that the female assistant would have him/her begin work on the test materials in his absence. The female assistant then administered the Embedded Figures Test.

After a brief interval (10 or 30 minutes, depending upon the delay condition), the male experimenter returned and the subject's memory for the eyewitness event was assessed using free recall,

objective questions (including one leading question), and photo identification. Two weeks later, subjects were asked to return and the entire assessment was repeated, this time with the leading question in nonleading form.

CHAPTER IV

RESULTS

The basic design for this study was a 4 X 2 X 2 analysis composed of four levels of age (kindergarten and first graders, third and fourth graders, seventh and eighth graders, and university-aged students), two levels of sex (males and females), two levels of time delay (10 or 30 minutes) complete factorial. The dependent measures, each of which will be discussed separately, were free recall, 20 yes-no questions, susceptibility to leading question and photo identification.

The Embedded Figures Test, used to measure field-dependence-independence, was analyzed first, in order to assess its relationship to the dependent measures. If a strong relationship existed, a subject's standardized score on the EFT would be used as a covariate with the dependent measures. A multiple regression analysis of field dependence regressed on the percent correct score and photo identification data indicated that the subjects' score on field dependence was not related to either photo identification accuracy or accuracy on the yes-no test items (multivariate $r = .23$, accounting for less than 5% of the variance). Field dependence appeared to have little relationship to either of these dependent variables (r for EFT and photo identification = $-.17$; r for EFT and percent correct = $.12$), so EFT was not used as a covariate in later analysis.

Free Recall

Performance by subjects on the free recall task was poor, since

the highest score for items correctly recalled was 13, with many subjects (especially the younger ones) not volunteering any information. The mean number of correct statements across ages and sexes was 4.53. The number of statements which subjects could have made about what happened was actually much greater than 20.

The number of items recalled and the number of wrong items mentioned were analyzed using two separate 4 X 2 X 2 (age X sex X time delay) analyses of variance. The means can be seen in Table 1, and results of analysis in Tables 2 and 3. The effect of age was significant for both types of items ($F(3, 80) = 35.78$, for correct items, $p < .001$; $F(3, 80) = 5.52$ for wrong items, $p < .005$). As predicted, the number of items mentioned increased linearly with age. As can be seen in Table 1, the youngest age group recalled only about one correct item per subject whereas the oldest group recalled over seven items per subject. However, Table 1 also indicates that the number of incorrect items mentioned increased linearly with age as well, with a mean number of incorrect items mentioned approaching one per subject for the oldest group. The analysis of correct items also revealed a significant effect of delay. Surprisingly, the longer delay produced a greater number of items correctly recalled ($F(1, 80) = 9.41$, $p < .005$). Subjects recalled over 25% more items after 30 minutes than were recalled after 10 minutes. However, number of incorrect items mentioned showed no effect of delay ($F(1, 80) < 1.00$).

In summary, the analysis of the free recall data indicated that recall of both correct and incorrect items increased linearly with age, that the longer time delay was associated with an increased number of

Table 1

Mean Number of Items Correctly Recalled and Incorrectly Mentioned by
Each Age Group

Items	Grade			
	K,1	3,4	7,8	University
Correctly recalled	1.38	3.29	6.00	7.46
Incorrectly mentioned	.04	.46	.50	.79

Table 2

Analysis of Variance on Correctly Recalled Items

Source of Variance	<u>df</u>	<u>MS</u>	<u>F</u>
Age	3	177.79	35.78 ^{**}
Sex	1	0.26	<1.0
Delay	1	46.76	9.41 [*]
Age X sex	3	5.68	1.14
Age X delay	3	9.46	1.90
Sex X delay	1	1.76	<1.0
Age X sex X delay	3	6.29	1.27
Error	80	4.97	

* $p < .005$.

** $p < .001$.

Table 3

Analysis of Variance on Incorrectly Mentioned Items

Source of Variance	<u>df</u>	<u>MS</u>	<u>F</u>
Age	3	2.07	5.52**
Sex	1	1.04	7.82*
Delay	1	0.04	<1.0
Age X sex	3	0.40	1.07
Age X delay	3	0.24	<1.0
Sex X delay	1	0.04	<1.0
Age X sex X delay	3	0.13	<1.0
Error	80	0.38	

*
p<.10

**
p<.005

items correctly recalled, and that sex had no influence on the number of items recalled.

Objective Questions

A score based on the percent correct of the 20 items (Table 4) was calculated for each subject. All subjects had answered all items. As was the case with free recall, performance on these items was poor. On the average, subjects correctly answered 74% of the 20 items, and by chance alone they would be expected to answer 50% correctly.

These scores were analyzed using a 4 X 2 X 2 (age X sex X time delay) analysis of variance. As predicted, the results of the analysis (Table 5) indicated no age differences between the groups on the percent correct on this test ($F(3, 80) = 1.54, p > .20$). The analysis also revealed a significant sex difference ($F(1, 80) = 8.78, p < .005$), with females being more accurate on this test than males. On the average males correctly answered 71% of the 20 questions, whereas females correctly answered 77% of them. No time delay differences were revealed ($F(1, 80) < 1.00, p > .20$).

In order to determine whether subjects showed a differential response bias depending on their age or sex, the number of subjects showing a positive or negative bias was determined. Response bias was defined as a situation where the subjects chose a particular response 60% of the time or more. Overall, subjects were more likely to show a negative rather than a positive response bias. In all, 41% of the subjects showed a negative response bias whereas only 11% showed a positive bias. Analyzing by age and sex groups, younger males were somewhat less likely to show a negative response bias than older

Table 4
Percentage of Correct Answers on Objective Test for
Each Age and Sex Group

Group	Grade			
	K,1	3,4	7,8	University
Males	67	70	75	73
Females	76	77	80	76

Table 5
Analysis of Variance on Percent Correct
on Objective Test

Source of Variance	<u>df</u>	<u>MS</u>	<u>F</u>
Age	3	0.02	1.54
Sex	1	0.09	8.77*
Delay	1	0.01	<1.0
Age X sex	3	0.00	<1.0
Age X delay	3	0.01	<1.0
Sex X delay	1	0.01	<1.0
Age X sex X delay	3	0.00	<1.0
Error	80	0.01	

*
p < .005

males, but this difference was not statistically significant, ($\chi^2 (3) = 5.90, p > .10$). Other groups also showed no difference in response bias.

This analysis was done to determine whether a signal detection analysis of the data on objective questions was necessary. If a differential response bias had been present, a signal detection analysis would have been helpful (Buckhout, 1974; Swets, 1964), but since differential bias was not present, no such analysis was reported.

Photo Identification Data

The photo identification which the subject made was scored as either a correct or an incorrect identification of the target. The percent correct for each group is reported in Table 6. All subjects made an identification. Overall performance again was rather poor, with only 57% of the subjects being able to correctly identify the photo of the target (17% should be expected to respond correctly by chance). The position of the photograph in the array; (first, third or last) had no effect on the subjects' choice ($\chi^2 (2) = 1.36, p > .20$).

Since the binomial distribution approaches the normal distribution rather quickly, correct or incorrect identification scores were analyzed using a 4 X 2 X 2 (age X sex X time delay) analysis of variance. This analysis (Table 7) revealed no age, sex, or time delay differences between groups ($F (3, 80) = 1.45, p > .20$ for age; $F (1, 80) = 1.99, p > .15$ for sex; and $F (1, 80) < 1$ for time delay). This analysis confirmed the prediction that there would be no age differences in recognition of the target.

Although this analysis revealed no significant differences, inspection of Table 6 would suggest that some rather large differences

Table 6
Percent of Subjects in Each Age and Sex
Group who Correctly Identified Target

Group	Grade			
	K,1	3,4	7,8	University
Males	41	41	67	50
Females	67	50	83	58

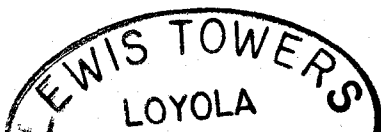
Table 7
Analysis of Variance on Identification of
Target from Photos

Source of Variance	<u>df</u>	<u>MS</u>	<u>F</u>
Age	3	0.37	1.45
Sex	1	0.51	1.99
Delay	1	0.09	<1.0
Age X sex	3	0.04	<1.0
Age X delay	3	0.29	1.13
Sex X delay	1	0.01	<1.0
Age X sex X delay	3	0.09	<1.0
Error	80	0.26	

existed between some of the age and sex groups. For example, 83% of the females in the seventh and eighth grades were correct in their identification of the confederate from photographs, whereas only 41% of the males in the two youngest age groups were correct. A post hoc trend analysis of this data barely missed significance, suggesting a cubic trend for age ($F(1,80) = 3.58, p < .06$). However, this analysis indicated that even if age differences do exist in subject ability for photo identification, such differences probably would not be linear. Rather, these data suggest the possibility that adolescents may be somewhat better on this task than both older and younger groups.

Leading questions

A chi-square analysis of the data on leading questions revealed that the introduction of a leading question at Time 1 (time of the first test) caused a significant increase in the number of false positive responses to the corresponding nonleading question at Time 2 (2 weeks after the first testing) as compared to the control, i.e., those subjects who received the nonleading form of the leading question both times they were tested. Subjects gave over twice as many false positive responses to the nonleading question at Time 2 if they had had a leading question at Time 1. Whereas about 25% of the control subjects responded "yes" when the answer was "no," about 50% of those who had previously received the leading question responded "yes." The two types of leading questions were both effective in producing this increase in false positive responses. Analysis of one leading question ("Was the package the man carried small?"---"Was the man carrying a package?") resulted in a corrected chi-square 4.94 ($p < .05$). The



impact of the other leading question ("Did the man slam the door as he closed it?"; "Did the man close the door as he left?") was also significant ($\chi^2(1) = 6.33, p < .01$). However, further analysis revealed no age, sex or time delay differences in susceptibility to leading questions. Combining both forms of leading questions for these analyses, chi-squares for age, sex and delay were all less than one (all $p > .20$).

Summary of Results Section

The basic results of this study can be summarized as follows:

- 1) As predicted, performance on eyewitness tasks was poor.

Subjects recalled less than one-fifth of the items that they could have recalled, they answered incorrectly over 25% of the time when asked yes-no questions about what happened, almost 50% of them could not recognize the man they had just seen from six photos, and a significant number of them were misled by leading questions.

- 2) As predicted, although older subjects were able to recall more when asked "What happened?" than younger subjects, younger subjects did not differ from adults on answering the yes-no questions, identifying the photo of the intruder and being misled by the leading question.

- 3) Females in general performed comparably to males on these tasks, except in answering the yes-no questions, on which they were significantly better.

- 4) Contrary to predictions, time delay generally had no effect on the performance of subjects on these tasks, except for the free recall tasks in which those subjects with a 30-minute delay did significantly better than those with a 10-minute delay.

5) Contrary to predictions, field dependence was unrelated to either photo identification accuracy or percent correct scores on the 20 yes-no items.

CHAPTER V

DISCUSSION

The major finding of this study was that children, following a simulated eyewitness incident, were as capable as adults in answering direct questions about the incident and identifying the person they had seen from photos. The children were not, however, as capable as adults in narrating what they had seen. Both in their answers to 20 objective questions and in their identification of the person seen from six photos, children from kindergarten, first, third, fourth, seventh and eighth grades performed as well as college students. However, when asked to narrate what they had seen, with encouragement but no prompts, the age of the respondent was clearly related to the amount of information given, with the younger witnesses giving far fewer descriptive statements than the adults.

These results confirm the theory of one developmental psychologist (Brown, 1975) concerning the memory capabilities of children. Brown has suggested that children have very adequate memory capacity, but that it is not always possible for them to retrieve the memories due to their inferior retrieval strategies and verbal abilities. For this reason, objective questions and photo identification which give the witness cues for retrieval showed equally good performance for children and adults. However, narrative descriptions, which require verbal abilities, were longer for older than younger subjects.

Confirmation of Brown's theory in this study means that the attitude of skepticism toward children's testimony which has been so prevalent in U.S. courts should be re-examined. Although special care should still be taken in terms of the way children's testimony is obtained, it should generally be treated with the same respect given that of an adult. In fact, in the present study, children were significantly less likely to give false information in their narrative descriptions of what they had seen than adults were.

One other area of concern for the courts, the effect of leading questions on children, was also resolved in the child's favor in this study. Although the leading questions used in this study did produce significant increases in the number of wrong answers given, children were no more likely to be misled than adults were.

The results of this study also confirmed the observations of other researchers who have indicated that the testimony of all eye-witnesses should be viewed with a healthy skepticism by the jury. Subjects in this study were able to correctly identify the man they had seen less than 60% of the time, and got an average of only 75% of the objective questions correct. Even characteristics of the intruder that one would assume to be particularly salient, such as the color of his clothes and the fact that he was wearing glasses, were not recalled at better than chance levels. A characteristic as obvious as his beard was missed by almost 20% of the subjects. Other studies (Buckhout, 1974; Egan et al., 1977; Marshall, 1966; McGeoch, 1928) have also found poor performance on the part of eyewitnesses on similar tasks.

Besides suggesting the need for a healthy concern about the

accuracy of eyewitnesses of all ages, this study can offer a number of suggestions for improving eyewitness accuracy. In order for children to give the best possible testimony, it is important for them to be familiar with the place where they will testify and to be accompanied by someone they trust. In the study reported here, two of the kindergarten-aged children could not be tested because they were so frightened of the testing room (which they had never seen before) that they began to cry. A young witness should be taken to the courtroom before the trial and allowed to sit in the witness stand. Very young children may feel more comfortable during the trial if their mother is standing next to the witness stand while they testify. A lawyer who is examining a child should start off with a number of simple questions about the child, his family, school, and other topics which will make the child feel more comfortable (Stafford, 1962).

Another piece of evidence regarding the need for reducing a witness's anxiety in order to obtain more accurate testimony comes from the results of the time delay manipulation. Although time delay was not related to eyewitness accuracy on two of the dependent measures used in this study (photo identification and objective questions), it was related in a way opposite to what might intuitively have been expected on recall performance. On that measure, the longer delay was associated with better performance. This may have been due to subject's need to adapt to the test situation. Many of the younger subjects became visibly more relaxed in the test situation the longer they were in it, so that they may have performed better at the longer delay because they felt less anxiety. Subjects of all ages in the 30-minute

delay frequently completed the Embedded Figures Test before the entire delay was over. These subjects chatted with the assistant, read, or played games until the experimenter returned. It is quite possible that such anxiety-reducing activities helped to improve those subjects' subsequent performance. This again confirms the previous discussion regarding the importance of reducing the natural anxiety of a witness in order to improve their performance on the witness stand.

The way a question is asked will have an important influence on the answer, and this is true for witnesses of all ages. Instead of asking for absolute judgments like "Was the man tall?", the lawyer or investigator should use comparisons like "Was the man taller than I am?" (Bower, 1978). This manner of questioning is especially important for children who do not share an adult's perspective on many things. Vocabulary should be kept as simple as possible, since some words will be unfamiliar to young children. In conducting the interrogation, lawyers and police investigators should avoid as much as possible simply asking the child to tell what happened, but should try to ask simple yes-no or multiple-choice questions, asking them in more than one way if possible. In the present study, as in others (Marshall et al., 1971), free recall performance was much poorer than recognition performance and direct question tasks. These results suggest that open-ended questions may be an inappropriate means of obtaining information from eyewitnesses of any age, not just children.

The conclusion regarding sex differences in eyewitness ability which can be drawn from this study must necessarily be quite tentative. Although females were significantly better at answering the 20 objective

questions than males, they were not significantly better on either photo identification or free recall. They also did not differ from males on their susceptibility to leading questions. The sex difference which was found in performance on the objective questions does confirm McGeoch (1928) who found similar differences for children aged 9-14 on a simulated eyewitness task. The problem in both of these instances is that the confederate was male, and it is quite possible that females pay greater attention to males and vice versa. A further study is needed to rule out this alternative explanation.

One clearly negative finding was the lack of relationship between field dependence and eyewitness accuracy. Field dependence was completely unrelated to either accuracy on the objective questions or photo identification. Its relationship to free recall could be expected to be quite negative, since field dependence decreases with age while recall increases. But in terms of predicting eyewitness accuracy on non-age-related measures, field dependence was a failure. There is no obvious explanation for this lack of relationship, but it may be that the relationship between memory for faces and field dependence found by some researchers only exists with subjects who achieve extreme scores on field dependence.

There are a number of limitations to the generalizability of this study, including the age range of the sample, the level of stress of the situation, the sex of the confederate, the intelligence of the subjects, and their race. It would be important to know if, at the lower age ranges, there are detectable differences in performance. How much do 3-year olds differ from 5-year olds in their abilities on eye-

witness tasks? How do older adults differ from the sample of college-aged students studied here? Also, would a more stressful event change the results? It is entirely possible that subjects would become so upset by a stressful event that they would be unable to perform later. It is also likely that if these subjects had viewed a confederate who was black or Oriental, they would have performed much more poorly. Another limitation of this study is that questions asked were kept strictly factual. Often witnesses may be called upon to make inferences and it is not clear how children would perform relative to adults on such a task. It is also unclear how a longer time delay might affect performance. Finally, the possibility that adolescents perform better than older and younger groups on photo identification should be explored further. A number of issues need to be explored to learn more about eyewitnesses in general, and children as eyewitnesses in particular.

Using children as witnesses may be difficult at times, and will often be greeted with skepticism on the part of lawyers, judges, and jury, but based on this study, there is no reason to doubt their capabilities more than those of an adult. Although some special questioning procedures may be helpful, the validity of the testimony given by a child should be as great as that given by an adult.

SUMMARY

This research was designed to answer questions regarding children's capabilities as eyewitnesses. The legal system generally regards the testimony of a child with skepticism. However, other research in the psychology of memory indicated that although children should have difficulty with interrogations, they should be as accurate as adults in their memory for an event, if that memory is tapped in an appropriate way. Therefore, the study examined the capabilities of children and adults through narrations of what they had seen, answers to specific questions, identification of the target person from a group of photos, and answers to leading questions.

The study utilized a 4 X 2 X 2 (age X sex X time delay) design. The four levels of age were kindergarten and first graders, third and fourth graders, seventh and eighth graders, and university students. The time delays used were either 10 or 30 minutes from the time of the incident to the time of testing.

Results indicated that children were unable to narrate what they had seen as thoroughly as adults. However, they were as accurate as adults when answering objective questions about what they had seen and when identifying the target from among six photos. They were also no more susceptible to leading questions than adults. Overall, all subjects showed poor performance on these eyewitness tasks, with many incorrect responses and incorrect identifications being given. Subjects were also frequently misled by leading questions.

The results were discussed emphasizing the recommendations that lawyers and judges ask questions in a structured way of their witnesses, no matter what their age. The discussion also proposed that children should be taken more seriously by the legal profession as potential witnesses.

References

- Adcock, C.J. & Webberley, M. Primary mental abilities, Journal of General Psychology, 1971, 84, 229-243.
- Bower, G.H. Improving memory. Human Nature, 1978, 1, 65-72.
- Brown, A.L. Judgments of recency for long sequences of pictures: The absence of a developmental trend. Journal of Experimental Child Psychology, 1973, 15, 473-481(a).
- Brown, A.L. Mnemonic elaboration and recency judgment in children. Cognitive Psychology, 1973, 5, 233-248(b).
- Brown, A.L. The development of memory: Knowing, knowing about knowing, and knowing how to know. In H. W. Reese (Ed.), Advances in child development and behavior (Vol. 10). New York: Academic Press, 1975. Pp. 103-152.
- Brown, A.L. & Campione, J.C. Recognition memory for perceptually similar pictures in preschool children. Journal of Experimental Psychology, 1972, 95, 55-62.
- Brown, A.L., Campione, J.C., & Gilliard, D.M. Recency judgments in children: A production deficiency in the use of redundant background cues. Developmental Psychology, 1974, 10, 303.
- Brown, A.L. & Scott, M.S. Recognition memory for pictures in preschool children. Journal of Experimental Child Psychology, 1971, 11, 401-402.
- Buckhout, R. Eyewitness testimony. Scientific American, 1974, 231, 23-31.

- Clark, H. Recognition memory for random shapes as a function of complexity, association value, and delay. Journal of Experimental Psychology, 1965, 69, 590-595.
- Cohen, R.A. Conceptual styles, culture conflict and nonverbal tests of intelligence. American Anthropologist, 1969, 71, 828-856.
- Corsini, D.A., Jacobus, K.A., & Leonard, D.S. Recognition memory of preschool children for pictures and words. Psychonomic Science, 1969, 16, 192-193.
- Crutchfield, R.S., Woodworth, D.G., & Albrecht, R.E. Perceptual performance and the effective person (WADC-TN-58-60). Lockland Air Force Base, Texas: Personnel Laboratory, Wright Air Development Center Air Research and Development Command, April, 1958.
- Eagle, M., Goldberger, L., Breitman, M. Field dependence and memory for social versus neutral and relevant versus irrelevant incidental stimuli. Perceptual and Motor Skills, 1969, 29, 903-910.
- Egan, D., Pittner, M., & Goldstein, A.G. Eyewitness identification: Photographs vs. live models. Law and Human Behavior, 1977, 1, 199-205.
- Exline, R.V. Exploration in the process of person perception: Visual interaction in relation to competition, sex and need for affiliation. Journal of Personality, 1963, 31, 1-20.
- Fitzgibbons, D., Goldberger, L., & Eagle, M. Field dependence and memory for incidental material. Perceptual and Motor Skills, 1965, 21, 743-749.

- Getty v. Hutton, 110 Wash. 124, 188 Pac. 10 (1920).
- Goldstein, A.G. & Chance, J. Visual recognition memory for complex configuration. Perception and Psychophysics, 1970, 9, 237-249.
- Hollaris v. Jankowski, Appellate Court of Illinois, 315 Ill. App. 154, 42 N.E. 2d 859 (1942).
- Kobasigawa, A. Utilization of retrieval cues by children in recall. Child Development, 1974, 45, 127-134.
- Konstadt, N. & Forman, E. Field dependence and external directedness. Journal of Personality and Social Psychology, 1965, 1, 490-493.
- Loftus, E.F., Altman, D., & Geballe, R. Effects of questioning upon a witness' later recollections. Journal of Police Science and Administration, 1975, 3, 162-165.
- Loftus, E., & Palmer, J.C. Reconstruction of automobile destruction: An example of the interaction between language and memory. Journal of Verbal Learning and Verbal Behavior, 1974, 11, 585-589.
- Macale v. Lynch, 110 Wash. 444, 118 p. 517 (1920).
- Malpass, R.S. & Kravitz, J. Recognition for faces of own and other race. Journal of Personality and Social Psychology, 1969, 13, 330-334.
- Marshall, J. Law and Psychology in Conflict. New York: Bobbs-Merrill, 1966.
- Marshall, J., Marquis, K., & Oskamp, S. Effects of kind of question and atmosphere of interrogation on accuracy and completeness of testimony. Harvard Law Review, 1971, 84, 1620-1643.

- McGeoch, J.A. The fidelity of report of normal and subnormal children.
American Journal of Psychology, 1925, 36, 434-445.
- McGeoch, J.A. The influence of sex and age upon ability to report.
American Journal of Psychology, 1928, 40, 458-466.
- McGrew, W.C. An ethological study of children's behavior. New York:
Academic Press, 1972.
- Messnick, S. & Damarin, F. Cognitive styles and memory for faces.
Journal of Abnormal and Social Psychology, 1964, 60, 313-318.
- Miller, D.G. & Loftus, E.F. Influencing memory for people and their
actions. Bulletin of the Psychonomic Society, 1976, 7, 9-11.
- Nelson, K.E. Memory development in children: Evidence from nonverbal
tasks. Psychonomic Science, 1971, 25, 346-348.
- Nickerson, R. A note on long-term recognition memory for pictorial
material. Psychonomic Science, 1968, 11, 58.
- Paris, S.G. & Upton, L.R. The construction and retention of linguistic
inferences in children. Paper presented at the Western
Psychological Association, San Francisco, April, 1974.
- Ritter, K., Kaprove, B.H., Fitch, J.P., & Flavell, J. The development
of retrieval strategies in young children. Cognitive Psychology,
1973, 5, 310-321.
- Shrauger, S. & Altrocchi, J. The personality of the perceiver as a
factor in person perception. Psychological Bulletin, 1964, 62,
289-308.
- Stafford. The child as a witness, 37 Wash. L. Rev. 303 (1962).
- State v. Smith, 3 Wn. 2d 543, 101 P. 2d 298 (1940).

Swets, J.A. (Ed.). Signal detection and recognition by human observers.

New York: John Wiley & Sons, 1964.

Tajfel, H. Social and cultural factors in perception. In 3 The handbook of social psychology, G. Lindzey & E. Aronson, (eds).

New York: Addison-Wesley, 1969. Pp. 315-394.

Wigmore. Evidence, § 505 (3d ed. 1940).

APPENDIX A

APPENDIX A

Objective, Nonleading and Leading Questions

Objective

1. Was the man wearing brown pants?
2. Was the man carrying a book?
3. Was the man fatter than I am?
4. Was the man taller than I am?
5. Was the man's shirt out of his pants?
6. Did the man have blonde hair?
7. Did the man wear glasses?
8. Did the man have a beard?
9. Was the man's shirt green?
10. Was the man wearing a tie?
11. Did the man have a moustache?
12. Did the man say he needed the room right away?
13. Was the man's hair longer than mine?
14. Were the man's sleeves rolled up?
15. Did the man knock before he came in?
16. Did the man touch me?
17. Was the man's name Paul?
18. Was the man wearing a sweater?
19. Was the man's hair curly?

Nonleading

- 20A. Did the man close the door as he left?
- 20B. Was the man carrying a package?

Leading

- 21A. Did the man slam the door as he closed it?
- 21B. Was the package the man carried small?

APPROVAL SHEET

The thesis submitted by Barbara VanOss Marin has been read and approved by the following committee:

Dr. Deborah L. Holmes
Assistant Professor, Psychology, Loyola

Dr. Jeanne M. Foley
Professor, Psychology, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Dec 14, 1978
Date

Deborah L. Holmes
Director's Signature