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FIELD DEPENDENCE AS A FACTOR IN EYEWITNESS ACCOUNTS

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The purpose of this study was to investigate the relationship between field dependency and performance on an eyewitness task. Sixty four college students participated in the experiment. Subjects were divided into two groups, field dependent and field independent, based on their scores on the Group Embedded Figures Test (Witkin et al., 1971). All the subjects viewed a series of slides depicting a wallet snatching incident and, after completing a short filler activity, filled out a thirty item questionnaire on the slides. After a two day interval, the subjects read a summary paragraph of the wallet snatching incident. This paragraph contained four pieces of erroneous information about four items in the slides. After completing another filler activity, the paragraphs were collected and a second, twenty item questionnaire on the slides was passed out and completed by the subjects. Among the twenty items on the second questionnaire were the correct and incorrect answers to the four false pieces of information presented in the summary paragraph. It was hypothesized that the field independent subjects would have fewer errors and would be more accurate on both questionnaires about the wallet snatching incident than the field dependent subjects. It was also hypothesized that the field dependent subjects would be more open to post event suggestion from a significant social figure than field independent subjects and would therefore incorporate more of the false information into their recall of the wallet snatching incident. Results indicate that both groups, field
dependent and field independent, performed better on questionnaire one than on questionnaire two given two days later. However, there were no differences between the two groups on their accuracy scores on the two questionnaires or on their scores on the four critical items. It was concluded that performance on an eyewitness task is not related to field dependency.
When a person witnesses some event such as a crime or a traffic accident, that person is often called upon to remember that event in a courtroom situation. Often the smallest detail becomes important: what was the thief wearing, what was the victim holding, did the car have a turn signal on, how fast was the car traveling. To further complicate matters, two witnesses to the same event will frequently give different accounts of the event. Loftus (1979b) indicates that this disparity is due to the fact that every person varies in their ability to perceive information accurately and to recall complex events. People also vary in suggestibility or the extent to which people come to accept post event information and incorporate it as their own recollections.

When we witness an important event, we do not simply record that event as a videorecorder. According to Loftus (1979b) theoretical analyses of the process divides the situation into three stages. The first stage is the acquisition stage, or the perception stage, in which information is encoded in the memory. The second stage is the retention stage or that segment of time that passes between the original event and the recollection of the entire event or pieces of information from that event. The third stage is the retrieval stage or the stage where stored information is actively recalled. This three stage analysis is now so central to the concept of information processing and human memory that it is uni-
versally accepted among psychologists.

This study is concerned with failures at the acquisition and retention stages which in turn affect the retrieval stage. Before an event can be stored in memory, it must be accurately perceived. Therefore, it must be bright enough and close enough to be seen, loud enough to be heard, and attended to by the observer. Even when all these conditions have been met, we still find discrepancies in an observer's recollection of the event. According to Loftus (1979b), there are two groups of variables that affect an observer's ability to accurately perceive an event: event factors and witness factors. Event factors such as exposure time to the event, number of opportunities to see the event, and detail salience are not considered in this study. Witness factors can be divided into two distinct categories: (a) factors inherent in any event that affect a person's ability to perceive an event such as stress, expectations, prejudices, and temporary biases and, (b) factors inherent in the witnesses themselves such as sex, age, and intelligence. This second group of witness factors are those that differentiate people or the characteristics that people possess long before an incident occurs. Research has been conducted on some of these characteristics with the idea of determining which, if any, can be used to predict who will be a good eyewitness and who will not.

Earlier research has investigated the relationship between subject characteristics such as anxiety, neuroticism, sex differences, age, intelligence, and previous training and performance on eyewitness tasks. Sarason, Johnson, & Siegel (1978) found that the accumulation of unde-
sirable life changes or life stressors are associated with depression and anxiety. Siegel & Loftus (1978) further studied the relationship between life stressors with resulting anxiety and performance on a test of eyewitness ability. Subjects completed a test of life stress using the Life Experiences Survey, a test of anxiety using the Multiple Affect Adjective Checklist, a self preoccupation scale developed by Sarason & Stoops (1978), and an eyewitness testimony task. Simple tests of correlation confirmed that performance on the test of eyewitness ability was negatively correlated with the two preoccupation scales and anxiety. Therefore, Seigel & Loftus concluded that persons who are preoccupied and highly anxious tend to do worse on eyewitness tasks.

Mueller, Bailis, & Goldstein (as cited in Loftus, 1979b) also found that anxiety affects facial recognition. Subjects took a test that was designed to measure anxiety and then participated in a facial recognition task. Each subject viewed a set of fifty black and white slides of female and male faces. The slides were then randomly mixed in with fifty new slides which were presented to the subjects one at a time. The subjects were to indicate whether they had seen the slide before. Results confirmed that the high anxiety subjects did worse on this facial recognition task than low anxiety subjects.

Zanni & Offermann (1978) investigated the relationship between the personality trait neuroticism and eyewitness ability. The researchers suspected a relationship between neuroticism and eyewitness ability be-
cause neuroticism is usually conceptualized in terms of arousal. People scoring high on a neuroticism scale function at higher levels of arousal than people scoring low on the scale. Also, highly neurotic people usually perform more poorly on a complex cognitive task than low neurotic people. This led Zanni & Offermann to hypothesize that high neurotic subjects would make more errors when questioned about some witness event than low neurotic subjects since witness events can be complex tasks. Subjects were measured for neuroticism by the Eysenck Personality Inventory and were asked to look at a film showing a man taking a journey. The subjects answered forty written questions on the film, five of which did not pertain to items present in the film. The researchers' hypothesis was confirmed when they discovered that high neurotic subjects made significantly more errors on the five critical questions than the low neurotic subjects. A second experiment conducted by Zanni & Offermann produced a positive correlation of .41 between neuroticism scores and error rates.

The effects of sex differences on eyewitness ability has produced varying results. Some studies on sex differences have indicated that females perform better on eyewitness tasks than males (Lipton, 1977; Witryol & Kaess, 1957) while other studies have shown that males outperform females on eyewitness tasks (Clifford & Scott, 1978). Other studies indicate no differences in accuracy of males and females (McKelvie, 1976). Powers, Andriks, & Loftus (1979) found that there were no significant differences between males and females on accuracy scores on questionnaires.
about a wallet snatching incident depicted on a series of color slides. However, a significant difference was found when certain questions were examined. Females were more accurate on questions dealing with women's clothing or actions, and they were more likely to incorporate false or misleading information into their recollections of the scene. Males were more accurate on questions dealing with the thief's appearance and the surroundings, and they were not as suggestible as females. Powers et al. (1979) confirmed these systematic sex differences in suggestibility and accuracy in a subsequent study. The results clearly indicate that males and females tend to be more accurate on different types of items.

Powers et al. (1979) also looked at the relationship between intelligence and eyewitness performance. As a measure of mental ability, the researchers used performance on the Washington Pre-College Test, an aptitude test similar to the Scholastic Aptitude Test. This test is routinely given to all college bound juniors in high school in the state of Washington. Previous research had shown a substantial relationship between W.P.C. scores and performance on other cognitive tasks. The researchers hypothesized that subjects with higher cognitive abilities had also developed higher abilities to process, store, and retrieve information. Thus they would probably have better memory strategies and should be better eyewitnesses. Results indicated that there was no relationship between accuracy scores on an eyewitness task and W.P.C. scores.

Age as a factor in eyewitness ability has also been studied. Several
cross sectional studies have examined the eyewitness ability of children of varying ages. Ellis, Shepherd, & Bruce (1973) selected males and females, half of whom were seventeen and half of whom were twelve, and had them view twenty color slides of undergraduate students. The twenty slides were then randomly mixed with forty other slides and were shown to the subjects four hours later. The subjects were to indicate whether or not they had viewed the slide earlier. Results indicated that seventeen year olds recalled more faces than the twelve year olds. Goldstein & Chance (1964) found that twelve to fourteen year olds outperformed six to nine year olds. Kagan, Klein, Haith, & Morrison (1973) found that eleven year olds outperformed eight year olds who in turn outperformed five year olds.

At the upper end of the age continuum, the situation is not the same. Smith & Winograd (as cited in Loftus, 1979b) demonstrated that people over the age of sixty perform less accurately than people under the age of sixty. Schaie & Gribbin (1975) have demonstrated a decrease in performance between the ages of forty and sixty. However, Baltes & Schaie (1976) have shown that there are great differences among people and while one person may show decline with increased age, another person may show no such decline. Loftus (1979b) cautions that it is safe only to conclude that while performance may decline with age on some tasks, performance on complex inference tasks and memory for logical relationships do not necessarily decline with age.

Another witness factor that has been studied is previous training.
Specifically the question asked has been whether trained observers such as police officers make better eyewitnesses than untrained observers. Tickner & Poulton (1975) investigated this issue. Twenty four police officers and 156 untrained observers viewed a street scene filmed from a first floor window. The film depicted the usual movement of people and traffic but a number of additional actions and people were deliberately inserted in the film. The subjects had previously seen photographs of the people in the film. Some of the subjects were instructed to watch for certain people in the film, other subjects were asked to watch for instances of certain actions such as a theft, and still others were asked to watch for more than one person. When the performances of the police officers and the untrained observers were compared, the researchers found that the police officers reported more alleged thefts than the untrained observers. However, there was no significant difference between the police officers and the untrained observers on the number of true detections of thefts and people.

Loftus (1979b) believes that current training procedures developed to recognize facial features may have some explanatory value for these findings. Many training programs today are based on the recommendations of Penry (1971). Penry believes that the best way to remember faces is to treat the face as a collection of features. He argues that breaking the face down into component parts allows for better discrimination and remembrance of faces. Loftus cites some current research being conducted by Woodhead, Beddeley, & Simmons (as cited in Loftus, 1979b) that
is attempting to evaluate Penry's feature approach for recognizing faces. In their first experiment, the subjects were divided into two groups: (a) trainees in Penry's method, and (b) controls who had no previous training. All subjects viewed twenty photographs of the faces of white males in different poses, with different expressions, and with disguises such as mustaches, beards, and glasses. Then these twenty faces were incorporated into a larger set of seventy-two faces and all the faces were then shown to all the subjects. Results indicated no significant differences between the trainee group and the control group in their ability to identify a face they had previously seen in the first set of photographs.

During the second phase of the experiment, the trainees attended a course designed to improve recognition skills. For three days the trainees heard lectures, participated in discussions, performed field exercises, saw slides and film demonstrations, and handled case histories. At the end of this training session, all the subjects who took part in phase one again took part in the second phase of testing. All subjects were again tested on their ability to recall previously seen faces. The results showed no evidence at all for any effect of the training course on the ability of the trainees to recognize the photographed faces. A follow-up study again demonstrated that the recognition training provided by the training course described above did not produce any improvement in the ability to match different versions of the same face.

Another factor which Loftus (1979a) has studied and which has also
been studied in some of the previously cited research is a phenomenon which Loftus calls "malleability of memory". This phenomenon occurs during the retention stage of the memory process and is related to exposure to new information about a previous witnessed event. After witnessing an event, a person will often encounter new information about it in the form of a newspaper or television account of the event, an overheard conversation about the event, or a discussion with some other person who also witnessed the event. Only recently has evidence been accumulating which demonstrates that these post event experiences can drastically affect our memory of the original event. Bird (1927) provided the first early example of this phenomenon. A newspaper reporter attended one of Bird's classes when he was discussing a series of experiments. An account of the lecture appeared in the newspaper two days later but contained many errors. Many of Bird's students read the account in the newspaper. When Bird gave an exam at the end of the week, he asked his students to indicate on their exams whether or not they had read the newspaper account. Those students who had read it made many more errors on the exam because they had remembered the erroneous information in the newspaper account and assumed they had learned it from the original lecture.

Loftus (1975, 1979a) and Loftus, Miller, & Burns (1978) have studied this "malleability of memory" and found that by simply mentioning an existing object, presenting a new piece of information which even conflicts with certain aspects of what was previously seen, or introducing non-existent
objects after the event, increases the likelihood that it will be recalled later on.

Lesgold & Petrush (1977) found that simply mentioning a nonexistent object to subjects immediately after they had viewed a series of slides depicting a bank robbery increased the likelihood that the subjects would think that they had seen the object.

According to Loftus (1979a, 1979b) some people are more suggestible and incorporate new information into their memory of an event more readily than others. Zanni & Offermann (1978) found that high neurotic subjects incorporated false information into their memories of a film more often than low neurotic subjects. Powers, Andriks, & Loftus (1979) found that females were more suggestible to false information than males. In the same study they found that there was no relationship between suggestibility and intelligence. Buckhout (1974) has demonstrated that people who are high in need for social approval are strongly influenced by suggestion. He further found that people can be persuaded to conform to a majority opinion even when they know that opinion is wrong. Buckhout believes that the effects of suggestion increase when the person giving out the false information is older or of a perceived higher status.

Thus far many factors which an individual brings with him to the observance of an event such as age, sex, intelligence, anxiety, neuroticism, and previous training have been examined as predictors of reliable eyewitness testimony. In addition, some of these same factors have been
examined in an attempt to determine which, if any, are related to suggestibility. However, other factors could also be investigated to see if they can be used as good predictors of eyewitness ability. One idea that has been around for a number of years is that field dependence is related to individual differences in memory and learning.

In theory, field dependence or independence is considered as one expression of a more general individual-difference dimension, defined at one extreme by an articulated mode of field approach and at the other extreme by a global mode of field approach. For people with a relatively articulated cognitive style, experiences can be structured and analyzed in new ways. According to Goodenough (1976):

Field dependence has been defined as the ability to overcome embedding contexts in perceptual functioning, and it is considered to be the analytical aspect of an articulated mode of field approach as expressed in perception. A central hypothesis of field dependence theory is that individual differences in expressions of articulated functioning in one area are related to expressions in other areas, and there is a considerable body of evidence in support of this hypothesis. For example, people who are analytical in one perceptual situation tend to be analytical in other perceptual and problem-solving situations as well. Further they are able to impose an organization on a relatively unstructured stimulus field. In contrast, people who perceive globally are likely to take the organization of the field in perceptual and problem-solving tasks as given. People with a global approach tend to use external referents in other situations as well. (pp. 675-676)

The fact that field dependent people are generally more socially oriented than field independent people has led to some general hypotheses about learning. One hypothesis concerns what is learned - if field dependent people pay more attention to their social surrounds, then they might acquire more social information than do field independent people (Goodenough,
DeVaris (as cited in Goodenough, 1976) showed subjects sets of cut out photographs of the various facial parts. One member of each of the sets presented was a partial photograph of the subject's own face. The subjects were asked to identify which cut out was their own facial part. Results indicated that field dependent people were superior at recognizing their own facial parts. In another study by Crutchfield, Woodworth, & Albrecht (as cited in Goodenough, 1976), Air Force captains were shown photographs of officers with whom they had spent some time as well as photographs of total strangers. Results indicated that field dependent officers were significantly better at identifying the photographs of the officers they had previously known than were field independent officers.

These studies were of special interest because the findings ran counter to the fact the field independent people were supposedly superior in learning/memory tasks. Further attempts were made to explain these findings. Adcock & Weberly (1971), Baker (1967), Mulgrave (1965), and Alexander (1970) all studied the relationship between memory and field dependence. Subjects were asked to learn the faces of strangers and were then tested for retention of these stimuli. Results demonstrated that field independent subjects were superior at these tasks than field dependent subjects. Although field dependent subjects were superior for faces and names of people with whom they had social interactions, it became clear that this superiority did not transfer to conditions of controlled, intentional memorization of faces and names. When studies have indicated that field dependent
subjects were superior, it was because they attended to socially relevant information.

A number of studies have indicated that incidental learning of socially relevant information was superior for field dependent people. However, incidental learning of non-social stimuli was superior for field independent people. Baker (1967) and Beijk-Docter & Elshout (as cited in Goodenough, 1976) found that field independent people performed better than field dependent people in recognizing incidentally learned photographs of faces. Gardner, Holzman, Klein, Linton, & Spence (1959), Goodenough & Karp (1961), Mendelsohn, Griswold, & Anderson (1966), Rosett, Robbins, & Watson (1968), and Schimek & Wachtel (1969) have all produced further data on this issue. Evidence from all these studies have indicated that incidental learning of non-social stimuli is equal to intentional learning of non-social material in relation to field dependency. Field dependent people show less incidental learning than field independent people. Field dependent people are not superior to field independent people in the intentional learning of non-social information. Field independent people pay less attention to social cues and therefore acquire less social information unless their attention is specifically focused on such cues by the experimenter.

Differing cognitive styles also characterize field independent and field dependent people. Evidence has been accumulating over the years that the cognitive styles of the field independent and dependent people are part of a broader psychological dimension. Witkin, Dyk, Faterson, Goodenough,
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& Karp (1962) found that individual differences in this cognitive style are often related to differences in body concept, in the nature of self, and in the controls and defenses used. These characteristics have been found to "go together" across psychological fields and appear to reflect a tendency toward differentiated or less differentiated psychological functioning.

Witkin et al. (1962) found that field independent people seem to have a well developed sense of separate identity. They have an awareness of needs, attributes, and feelings which they recognize as their own and which they identify as separate from those of others. Internal frames of reference have been formed and act as guides for the definition of self. Field dependent people have a less developed sense of separate identity and rely on external sources for definition of their attitudes, sentiments, judgments, and their views of themselves.

Studies have been conducted on the relationship between sense of separate identity and cognitive style. Crutchfield et al. (as cited in Goodenough, 1976) found that field dependent people were particularly attentive to the faces of the people around them. They looked at more faces and were better at remembering them. Konstadt & Forman (1965) and Messick & Damarin (1964) also confirmed this finding. To the extent that a person's face is a major source of cues about what another person is thinking and feeling, it is reasonable to expect that people who define their view of themselves by other people's reactions to them should be more attentive to faces.
Bell (as cited in Witkin, Oltman, Raskin, & Karp, 1971) conducted one of the first studies investigating inner-directed and other-directed attitudes. Bell had subjects express their views, in writing, on the use of antihistamines. Later they read a made up passage, supposedly from a well known medical journal, which contradicted their own written views. After reading the passage, they were asked to write out their views again. Results indicated that field dependent subjects were more likely to shift from their original views to the views attributed to the authority. Apparently the field dependent person is strongly influenced by the immediate social context in his experience of attributes of the self. As Witkin et al. (1971) state, the field independent person "has a feeling of himself as an individual distinct from others and has internalized, developed standards to guide his views of the world and himself" (p. 9).

The purpose of this study was to investigate the relationship between field dependence and performance on an eyewitness task. Previous research (Loftus, 1979b) has indicated that people have certain characteristics which affect the way they perform on an eyewitness task. Field dependency is one of these inherent characteristics. Research has shown (Witkin et al., 1962; Adcock & Weberly, 1971; Baker, 1967; Mulgrave, 1965; and Alexander, 1970) that field independent people are superior at the incidental learning of non-social stimuli and are less suggestible to new information than field dependent people. Therefore, it was hypothesized that field independent people will have fewer errors and be more accurate when
questioned about an incidental eyewitness event than field dependent people. It was further hypothesized that field dependent people would be more open to post event suggestion from a significant social figure than field independent people and will consequently incorporate more false information in their recall of an eyewitness event.

Method

Subjects

Sixty four psychology undergraduate students participated in the experiment. All the subjects received two hours of research credit for participation. The Group Embedded Figures Test (Witkin et al., 1971), one of three commonly used tests to determine field dependency, was administered to the five sections of introductory psychology classes by the experimenter during the regular class period. The GEFT was used as the criterion for determining field dependency. The cutoff scores for males and females was zero to ten for field dependent subjects and fifteen to eighteen for field independent subjects. It should be noted that these scores varied slightly from the scores used in previous research (Witkin et al., 1971, recommended zero to nine for field dependent males and zero to ten for field dependent females, and sixteen to eighteen for field independent males and fifteen to eighteen for field independent females). Eighty one subjects met the criteria; however, only thirty eight elected to participate in the experiment. Twenty six additional subjects meeting the criteria were obtained from a Learning and Memory psychology class and a Motivation
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psychology class. These subjects did not need the research credit and consequently did not receive it. The sixty four subjects that met the criteria were placed in one of two groups, field dependent or field independent, based on their scores on the GEFT. The subjects were unaware of the experimental condition to which they were assigned.

Apparatus/ Materials

Twenty four color slides depicting a wallet snatching incident in a small town were used. These slides were reproductions of the slides used in experiments by Loftus (1977, 1979b). A slide projector, a Standard Kodak Carousel 800, was set to present each slide for five seconds.

An accuracy questionnaire to be filled out after viewing the slides was used. This questionnaire consisted of thirty items that addressed diverse details of the wallet snatching incident. It was also a reproduction of the questionnaire used by Loftus (1977, 1979b) in her research. It asked about certain details in the scenes such as central characters, their clothing and actions, extraneous people, the surrounding environment and buildings, and traffic. The thirty items on the questionnaire were declarative sentences requiring a word or phrase to be completed. These items were completed with one of the five listed choices given on the questionnaire.

A suggestibility paragraph was also used. This paragraph was a version of the incident that was allegedly written by a professor in the psychology department who had seen the slides for thirty seconds each. This paragraph contained four pieces of erroneous information about four items in the slides.
For the filler activity, eight paired associate nonsense syllables were used. These nonsense syllables were on black and white slides as were the stimulus syllables used in this task. Eighty slides were used for this part of the experiment.

A final test, also used by Loftus (1977, 1979b), was used after the subjects had read the suggestibility paragraph. It contained twenty items in the form of declarative statements needing a phrase or a word to complete them. The items were completed with one of the three choices listed on the questionnaire.

Procedure

Subjects were run in groups of six to twenty eight in a group. The overall procedure consisted of six phases: (a) viewing the slides, (b) completing a filler activity, (c) filling out questionnaire one, (d) reading the suggestibility paragraph, (e) completing another filler activity, and (f) filling out questionnaire two.

The subjects entered the experimental room. After they arrived they were handed a packet of materials stapled together at the top and paper clipped together at the bottom. They were instructed not to remove the paper clip or turn the page until told to do so. They were asked to read the consent form (Appendix A) and to look up when they had completed this. Then the subjects were told:

You will see a series of twenty four color slides. Each slide will be presented for five seconds. Observe each slide carefully as you will be asked questions about the slides.
The subjects then saw the series of twenty four slides. After viewing the slides, the subjects participated in a filler activity which lasted approximately ten minutes. This filler activity was used to create visual and non-verbal interference similar to that used by Loftus (1977, 1979b). The purpose of the interference activity was to simulate the delay interference frequently encountered between witnessing an event and being questioned about it. This filler activity consisted of a paired associate nonsense syllable memory task (Appendix B). A form was provided for the subjects to complete this task on the first page of the packet of materials handed out (Appendix C). The subjects were told:

This is a memory task involving three letter nonsense syllables.

Eight pairs of nonsense syllables will be presented. Each pair will be presented for five seconds. Then you will be shown the first or the stimulus syllable of each pair for five seconds. You are to write down the second or the response syllable that was paired with the stimulus syllable under Trial 1 on your paper. If you cannot remember the response syllable, guess at it. If you absolutely cannot remember it, leave it blank and go on to the next one. The stimulus syllables will not be presented in the same order as you saw them. After Trial 1 is completed, the same set of eight nonsense syllables will be presented again for five seconds but in a different order. Again the stimulus syllable will be presented for five seconds and you are to write down the response syllable
under Trial 2. This procedure will be repeated through five trials. Once again, if you cannot remember the response syllable, guess at it. If you cannot guess, leave it blank and go on to the next one.

After the subjects completed this filler activity, they were told:

Now you will be asked thirty questions on the series of twenty four color slides. There is no time limit on answering the questions. Answer as accurately as possible. If you are not sure of the answer guess at it. Try not to leave any questions unanswered. Remove the paper clip, turn the page, and begin.

When the subjects completed the questionnaire ( Appendix D ), they were asked to turn it in and were then free to leave.

Two days later, at the same time, the subjects returned to the same experimental room. After they all arrived, they received one sheet of paper containing the suggestibility paragraph ( Appendix E ), and the same form for completing the filler activity as in the first phase of the experiment. The suggestibility paragraph was allegedly written by a professor in the psychology department who had seen the slides for thirty seconds each. This summary paragraph contained four pieces of erroneous information about four items in the slides. Only four pieces of incorrect information were used because Loftus ( 1979b ) had indicated that subjects became suspicious if too many items were found to be incorrect. Four appears to be the maximum number of incorrect items that can be used without arousing suspicions about the paragraph. To conceal the purpose
of the paragraph, the subjects were asked to rate the professor's summary paragraph on three attributes: clarity of writing style, organization, and detail. The subjects were told:

Although you will not see the color slides of the wallet snatching incident again, you will have the opportunity to read a summary paragraph on the slides. Read the following paragraph and respond to the statements after it. When you have finished, please look up so I will know when you have completed it.

When the subjects had all read the paragraph and responded to the statements following it, they were told:

Once again you will be completing the same memory task that you did two days ago. You will see the same eight pairs of nonsense syllables for five seconds each. Again you will be presented with the stimulus syllable and you are to write down the response syllable. As before, this task will be repeated through five trials.

When the filler activity was completed, the subjects were asked to pass their papers in. The second questionnaire (Appendix F) and the post event questionnaire (Appendix G) were passed out. The post event questionnaire was administered as a manipulation check. The subjects were instructed in the following manner:

You will now receive questionnaire two on the series of twenty four color slides depicting a wallet snatching incident. There is no time limit on answering the questions. Answer the questions as
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accurately as possible. If you do not know the answer, guess. Try not to leave any questions unanswered. When you have finished this questionnaire, please fill out the post event questionnaire, sign and date it, and hand it in.

When all the subjects had handed in both questionnaires, they were thoroughly debriefed. After that, they were free to leave.

Results

The individual scores for all the subjects on Tests 1 and 2 and on the critical items are presented in Appendix H.

A two factor repeated on one analysis of variance was performed. The dependent variable was subjected to an analysis of variance between two groups repeated across two trials. The means and the standard deviations for these measures are shown in Table 1. The summary table

Insert Table 1 about here

of the analysis of variance is presented in Appendix I. The $F_{\text{max}}$ test for the independent factor was not significant and the variances were assumed to be homogeneous. The analysis of variance of the mean test scores presented in Figure 1 yielded a nonsignificant test x field depen-

Insert Figure 1 about here
dency interaction, $F(1, 62) = .35, p > .05$. The main effect for the field dependency factor, $F(1, 62) = .05, p > .05$, was nonsignificant. However, the main effect for the test factor, $F(1, 62) = 52.60, p < .001$, was significant.

An analysis of variance for the scores of the two groups on the four critical items was performed. The means and standard deviations for these measures are also presented in Table 1. The summary table for this single factor, independent groups analysis of variance is presented in Appendix J. The $F_{\text{max}}$ test was nonsignificant and the variances were assumed to be homogeneous. The analysis of variance for the two groups on the four critical items was also nonsignificant, $F(1, 62) = 1.25, p > .05$.

Discussion

The results from the analysis of questionnaire scores reveal that both groups, field dependent and field independent, performed significantly better on test one than on test two given two days later. This significant decrease in accuracy scores for both groups is not surprising in view of past research. It is a well established fact that people are less accurate in their accounts after a long interval of time than after a short one. The classic research of Ebbinghaus in 1885 is the most frequently cited study that deals with the loss of retention with the elapse of time. Results of his many studies, which he plotted on the now famous forgetting curve, demonstrated that forgetting becomes more gradual as time passes. Loftus
(1979b) administered questionnaires to subjects twenty minutes, one day, two days, and one week after viewing a slide sequence. She found that performance on a test is quite high immediately after viewing the slide sequence, and gradually drops as the time interval increases. This drop occurred in all experimental conditions and is additional support for the claim that people are less accurate after a long interval than after a short one. The present study also confirms these previous findings.

From the analyses of the test scores and the critical item scores, it appears that field dependency is not related to performance on an eyewitness task or suggestibility. Individuals high and low in field dependency do not show differences in ability to recall an eyewitness event. The mean test scores of both groups on tests one and two are extremely close. There are less than two points difference in the mean test scores on both tests for both field dependent and field independent people. Results further indicate that there is no difference between the two groups as far as suggestibility is concerned. The field dependent people do not incorporate more false information from a significant social figure into their recall of an incident than do field independent people. Thus both hypotheses are not confirmed.

One possible explanation of the test results has to do with the experimental situation itself. This study may not have replicated the real world. There may be a difference in the ability of field dependent and independent people to accurately recall an event that actually happens. The experimenter's instructions to all the subjects to watch an event on slides, and the subjects
knowledge that they were going to be asked questions about the event may have counteracted any differences that were present. In the real world there is no one to focus people's attention on an event, and people cannot always know when they will be questioned about an event. In a real world situation, individual differences may be evident.

A possible explanation as to why field dependent people are not more suggestible to new information from a significant social figure than field independent people has to do with the significant social figure. Perhaps the subjects did not view the psychology professor as an authority on recall. They might have felt that the professor's recall of the event was not superior to their own recall, and they relied on their own judgments as to what was not in the slides. Unfortunately this present study cannot confirm either of the above explanations.

The post event questionnaire was given as a manipulation check (Appendix G). On question one, 84% of the subjects felt that the purpose of the experiment was to test a person's memory and/or ability to retain information. None of the subjects guessed the hypotheses asked for in question two. In fact, no subject mentioned the Group Embedded Figures Test and how it might have related to the experiment. Many answers were given as to what the hypotheses were ranging from an investigation to see whether a time interval helps or hurts recall to an investigation of how much information a person can store. On question three, only 5% of the subjects guessed that the filler activity served as a distraction.
Thirty eight percent felt that the purpose was to see if repetition aided memory, and 11% felt that the purpose was to study short term memory (filler activity of a paired associate word task) as opposed to long term memory (questionnaires). The answers to question four were surprising. Fifty eight percent of the subjects felt that the purpose of the suggestibility paragraph was to refresh their memories. Nine percent felt that the purpose of the paragraph was to see whether memory was more accurate after using visual stimuli (slides) or written stimuli (paragraph). When asked if they noticed anything about the paragraph and if so, what, the majority of the subjects commented on writing style (too concise, too long, etc.) or on the information it contained (not enough about colors, not enough about the people, etc.). Only 11% of the subjects guessed that something was wrong with the paragraph. Of the seven subjects who felt that the paragraph may have contained false information, none were able to specifically identify the four false pieces of information. Of these seven subjects, four were field independent and three were field dependent. Four of the subjects missed all the critical items on questionnaire two, two got one critical item correct, and one got two critical items correct. Thus it appears that even though the seven subjects knew the paragraph contained erroneous information, they could not specifically state what was wrong or how many items were wrong.

Question five asked how certain the subjects were of their answers on both questionnaires. On test one, 17% felt certain of their answers 90% of the
time as opposed to 9% on test two. Fifty three percent of the subjects felt certain 50% of the time on test one as opposed to 39% on test two. Twenty five percent of the subjects stated that they mostly guessed on test one and 48% of the subjects stated that they mostly guessed on test two. It should be noted that not all the subjects responded to all the questions. Results of this questionnaire indicate that the subjects knew the experiment dealt with memory, did not know what the hypotheses were, did not know the true purpose of the filler activity or the suggestibility paragraph, and did not feel confident of their answers most of the time.

Identifying reliable eyewitnesses is a definite problem in the real world. Woocher (1977) argues that as long as the possibility of convicting innocent people on the basis of mistaken identification exists, we must continue to search for additional safeguards. He proposes four ways in which this can be accomplished: (a) identify and exclude unreliable eyewitness testimony, (b) prohibit convictions based solely on eyewitness testimony, i.e., require corroborating evidence, (c) insist that cautionary instructions on eyewitness testimony be given to jurors, and (d) present expert psychological testimony on the unreliability of eyewitnesses to the juducial system. Buckhout (1974) believes psychologists can make needed contributions to the juducial system by applying contemporary research methods to real world problems. Loftus (1979b) agrees with Buckhout and points out the need for further research to determine individual factors that might relate to the quality of eyewitness testi-
mony. This can only be accomplished if one knows something about the prior orientations, characteristics, and interests of the witnesses. Research along these lines can have significant value in improving our ability to tell a good witness from a bad witness in any given situation.
References


Field Dependence

32


Appendix A

Informed Consent Form

I, __________________, agree to participate in this study. I understand that I will be taking two (2) paper and pencil tests in the form of two questionnaires concerning a series of slides that I will be viewing. None of these tests will pose any physical or psychological risks for me. The whole experiment will be divided into two (2) parts and I understand that I must participate in both parts to receive credit. The whole experiment should take about 70 minutes, and for my participation I will receive two (2) credits toward fulfillment of my requirement as a student in Introductory Psychology in the subject pool.

I understand that Sue Lerch, a graduate student in the Psychology Department at the University of Richmond, will be administering the tests. I know that I am volunteering for her study, and that I may quit at any time. My participation or lack of participation will in no way affect my status in school. I further understand that the results of the study will be kept confidential. My name will not be used in any report of this study. Debriefing will follow the experiment.

____________________________________  __________________________
Date                                               Signature
Appendix B

Paired-Associate Nonsense Syllables

JAL - DOK
TIB - GAF
BAW - NUL
SEK - CUZ
WUF - KEM
YIR - HEV
VOG - TAQ
ROZ - QIN
# Appendix C

## Data Sheet for Memory Task

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Appendix D

Questionnaire 1

Loftus

1979

1. The victim of the wallet snatching was wearing a brown:
   a) jacket
   b) hat
   c) shoulder bag
   d) sweater
   e) scarf

2. The action in the slides took place:
   a) on the main street of a big city
   b) on a side street of a big city
   c) on a main street of a small town
   d) in a residential area of a small town
   e) in the suburbs

3. After the thief took the wallet, he put it:
   a) in an outside jacket pocket
   b) in his hip pocket of his pants
   c) in a side pocket of his pants
   d) inside his jacket
   e) none of the above

4. The victim met her friend:
   a) as she (the victim) was waiting to cross the street
   b) as she was walking down the sidewalk
   c) while she was looking in a store window
   d) as she was picking up her dropped packages
   e) as she was waiting for a bus

5. The victim had _______ hair.
   a) short, light colored
   b) long, light colored
   c) short, dark
   d) long, dark
   e) red

6. The thief was wearing:
   a) Adidas tennis shoes
   b) brown loafers
   c) open sandals
   d) black boots
   e) tan suede shoes
7. The store buildings seen in the slides were:
a) painted white 
b) brick 
c) natural wood 
d) concrete blocks 
e) gray stone

8. The victim's shopping bag was:
a) brown 
b) yellow 
c) white 
d) blue 
e) gray

9. One eyewitness was wearing:
a) a straw hat 
b) a velvet beret 
c) a wool ski cap 
d) a scarf 
e) none of the above

10. The man who took the wallet had:
a) a beard 
b) a mustache 
c) a beard and a mustache 
d) long hair 
e) none of the above

11. As the victim was first walking down the main street, on the sidewalk behind her was:
a) an old woman 
b) a boy on a skateboard 
c) a girl with a dog 
d) a boy on a bicycle 
e) another young woman

12. On the back of the thief's jacket there was:
a) an embroidered design 
b) an American flag 
c) a number printed 
d) a word printed 
e) nothing

13. The victim was wearing:
a) prescription eyeglasses 
b) "mirror" type sunglasses 
c) dark sunglasses 
d) lightly tinted sunglasses 
e) none of the above
14. On display in the store window there was:
   a) furniture
   b) stationary
   c) clothing
   d) toys
   e) hardware

15. The color of the thief's jacket was:
   a) brown
   b) beige
   c) black
   d) green
   e) navy blue

16. The victim was wearing:
   a) a sweater
   b) a shawl
   c) a light jacket
   d) a raincoat
   e) a winter coat

17. The thief waited to cross the street while a _______ went by.
   a) taxi
   b) pick-up truck
   c) station wagon
   d) Volkswagon
   e) sports car

18. The two eyewitnesses across the street were standing in front of:
   a) an office building
   b) a store
   c) a restaurant
   d) a tavern
   e) a post office

19. The victim's friend's shoulder bag was:
   a) white
   b) beige
   c) brown
   d) black
   e) she didn't have one

20. The sidewalk where the incident took place was:
   a) brick
   b) cobblestone
   c) asphalt
   d) concrete
   e) dirt
21. The predominant color of the victim's friend's outfit was:
   a) navy blue
   b) yellow
   c) green
   d) rust
   e) black

22. The shawls worn by the two eyewitnesses were:
   a) blue and yellow
   b) red and green
   c) brown and red
   d) black and beige
   e) white and green

23. After the thief took the wallet and was walking away:
   a) he passed a store window
   b) he glanced in a window as he passed it
   c) he stopped and looked in a window
   d) he passed a person looking in a window
   e) he didn't pass a store window

24. The thief wore a:
   a) cowboy hat
   b) derby
   c) beret
   d) bandana
   e) none of the above

25. How many store windows did the victim either pass or look into?
   a) one
   b) two
   c) three
   d) four
   e) none

26. The victim's friend was carrying:
   a) a newspaper
   b) a shopping bag
   c) a notebook
   d) an umbrella
   e) none of the above

27. Were any of the women in the slide series wearing a skirt? If so, who?
   a) no
   b) the victim
   c) one of the eyewitnesses
   d) the victim's friend
   e) the victim and her friend
28. How many small plastic items fell out of the victim's shopping bag?
   a) one
   b) two
   c) three
   d) four
   e) five or more

29. The two eyewitnesses caught the attention of the victim after the crime occurred by:
   a) yelling at her
   b) running across the street in front of her
   c) yelling and waving at her
   d) quietly catching up with her, then discreetly gaining her attention
   e) honking the horn of their car

30. As the victim and the thief were saying goodbye:
   a) they both waved
   b) she waved to him
   c) he waved to her
   d) he tipped his hat
   e) none of the above
Appendix E

Post Event Suggestibility Paragraph

This summary of the wallet snatching slides that you previously saw was written by a professor in the Psychology Department who is interested in Learning and Memory. This professor viewed the slides for thirty (30) seconds each and has written the following summary:

"The slide sequence opens with a dark-haired, young woman walking down a busy street in a small town. She is casually dressed in slacks and a light weight jacket and is carrying a shoulder pocketbook and a shopping bag. This is probably a small town because she passes by several small shops - a boutique and a restaurant. She meets a friend and they stop to talk. Her friend is probably a student as she is carrying several books and a large, blue notebook. After they talk a while, look at some clothes in a store window, they part company. The woman continues walking down the street and is approached by a tall, thin man with a mustache who had previously been leaning against a white pick-up truck parked by the sidewalk. This man "accidentally" bumps into the victim causing her to drop her shopping bag. The contents of bag spill out on the street. The man and woman both stop to pick up the articles and when the woman is looking the other way, the man reaches into her shoulder bag and steals a red wallet. The woman does not notice and the two part. Soon, the victim becomes aware that her wallet is missing. At this point, two other women who had been waiting for a bus at a bus stop cross the street, come up to her, and gesture in the direction of the fleeing man."

Please rate the paragraph on the following items:

1. The paragraph was written in a clear and concise manner.
   _____ yes  _____ no

2. The paragraph relates the incident in the same order as it was presented in the slides.
   _____ yes  _____ no

3. I could tell you about the slides from this paragraph without ever having seen the slides.
   _____ yes  _____ no
1. The victim's jacket was:
   a) blue
   b) red
   c) black

2. The victim was carrying her shoulder bag in:
   a) her left arm
   b) her right arm
   c) both arms

3. The color of the gumball machine in front of the store was:
   a) green
   b) red
   c) blue

4. The stationwagon that passed the thief at the intersection was:
   a) red
   b) blue
   c) green

5. After the wallet snatching, how many people (not the eyewitnesses) could be seen behind the victim on the sidewalk?
   a) one
   b) two
   c) none

6. The person(s) just described were:
   a) male
   b) female
   c) not there

7. The notebook carried by the friend of the victim was:
   a) green
   b) brown
   c) blue

8. The color of the old Chevrolet parked near the intersection where the thief waited to cross was:
   a) white  b) black  c) red
9. The two eyewitnesses stood near:
   a) a bus stop
   b) a no parking sign
   c) a fire hydrant

10. The color of the doors and the window trim at the stores was:
    a) yellow
    b) black
    c) gray

11. The cards that fell out of the shopping bag were:
    a) white
    b) light blue
    c) yellow

12. The thief was:
    a) left handed
    b) right handed
    c) ambidextrous

13. The eyewitness with the hat was wearing a shawl that was:
    a) red
    b) green
    c) black

14. The victim passed under a _________ sign.
    a) tavern
    b) restaurant
    c) boutique

15. The eyewitnesses crossed the street by:
    a) waiting for the light, then crossing in the crosswalk
    b) "jay" walking
    c) walking in an uncontrolled, designated crosswalk

16. The jacket on display in the window that the victim passed was:
    a) black
    b) gray
    c) blue

17. The pick-up truck parked near the scene of the crime was:
    a) white
    b) brown
    c) green
18. The shirt on display in the window that the victim and her friend stopped to look at was:
   a) white
   b) yellow
   c) green

19. The thief wore:
   a) double-knit slacks
   b) blue jeans
   c) a garish belt buckle

20. The thief's age was approximately:
   a) between 18-25
   b) between 25-30
   c) between 30-35
Appendix G

Post Experiment Questionnaire

1. What did you feel was the purpose of the experiment?

2. What did you think the hypothesis was (i.e., what did you think we were looking for, trying to study, etc.)?

3. What did you think was the purpose of the nonsense syllable memory recall task both times in the experiment?

4. What did you think was the purpose of the paragraph summarizing the slides? Did you notice anything about the paragraph? If so, what?

5. How certain were you of most of your answers on the first questionnaire?

   Mostly guessed  Certain 50% of the time  Certain 90% of the time

6. How certain were you of your answers on the second questionnaire?

   Mostly guessed  Certain 50% of the time  Certain 90% of the time

7. Please make any other comments that you care to make about your reactions to this experiment, including your reactions to this questionnaire.

__________________________________________  __________________________
Date                                             Signature
### Appendix H

**Individual Scores (% Correct)**

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## Table 1

Means and Standard Deviations for all Groups

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Appendix I

Analysis of Variance

Questionnaire Scores

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Figure 1. Mean test scores for field dependent and field independent groups.
Appendix J

Analysis of Variance

Critical Item Scores

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