The Effects of Using A Scripted or Unscripted Interview in Forensic Interviews With Interpreters

Nicole Pruss
University of Texas at El Paso, nicole03@alumni.trinity.edu

Follow this and additional works at: https://digitalcommons.utep.edu/open_etd
Part of the Cognitive Psychology Commons, and the Other Languages, Societies, and Cultures Commons

Recommended Citation
Pruss, Nicole, "The Effects of Using A Scripted or Unscripted Interview in Forensic Interviews With Interpreters" (2008). Open Access Theses & Dissertations. 335.
https://digitalcommons.utep.edu/open_etd/335

This is brought to you for free and open access by DigitalCommons@UTEP. It has been accepted for inclusion in Open Access Theses & Dissertations by an authorized administrator of DigitalCommons@UTEP. For more information, please contact lweber@utep.edu.
THE EFFECTS OF USING A SCRIPTED OR UNSCRIPTED INTERVIEW IN FORENSIC INTERVIEWS WITH INTERPRETERS

NICOLE PRUSS

Department of Psychology

APPROVED:

__________________________
James M. Wood, Ph.D., Chair

__________________________
Wendy S. Francis, Ph.D.

__________________________
Harmon M. Hosch, Ph.D.

__________________________
Christian A. Meissner, Ph.D.

__________________________
S. Fernando Rodriguez, Ph.D.

Patricia D. Witherspoon, Ph.D.
Dean of the Graduate School
THE EFFECTS OF USING A SCRIPTED OR UNSCRIPTED INTERVIEW IN FORENSIC INTERVIEWS WITH INTERPRETERS

by

NICOLE PRUSS, M.A.

DISSERTATION

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

THE UNIVERSITY OF TEXAS AT EL PASO

December 2008
Acknowledgements

I would like to thank my family for their support and encouragement to continue with school. I would especially like to thank my mother, Lucille Alimecco, for her advice to always do my best, and to complete this degree. I would not have been able to complete this without her constant support along the way.

A special thank you to Dr. Wood, chair of the committee for allowing me to carry out this line of research, and the countless hours he dedicated to this project. I would also like to thank Dr. Meissner for providing his research insights when the project was in its infancy. A thank you also to Dr. Francis for generously sharing scales from her lab, and her insights along the way. I would also like to thank Dr. Hosch and Dr. Rodriguez for their ideas and feedback on drafts. I would also like to thank Dr. Jacobson for her insights into the interpreting world, and working with me on senior student projects.

I would not have been able to complete this project without the other members of the lab allowing me to use the time in the lab space, and the help of research assistants who provided endless hours of coding and friendship along the way. Last but not least, I would also like to thank my friends who supported me along the way.
Abstract

The current study set out to replicate and expand the results of a study by Pruss (2007) which found that information is lost when interviews are conducted through interpreters. In the present study, Viewers (i.e., mock eyewitnesses) fluent in Spanish watched a video of a burglary and then were interviewed in Spanish about what they had seen. Half of Viewers were randomly assigned to be interviewed by an English-speaking Interviewer through a bilingual Interpreter (Interpreter condition), and the other half were randomly assigned to be interviewed directly by a Spanish speaking Interviewer with no Interpreter (No Interpreter condition). Within each of these two conditions, half of interviews were conducted following a script of open-ended questions (Scripted condition), and the other half were conducted without a script (Unscripted Condition). The total number of groups was 120 and the total number of participants was 300. Interviews were coded for the amount of information transmitted during the interview. Consistent with the findings of Pruss (2007), the present study found that Interviewers extracted more information when they questioned Viewers directly than when they questioned Viewers through an Interpreter. The open-ended script significantly increased the yield of information when Interviewers questioned Viewers directly, but not when Interpreters were used. More generally, the results of this study support the use of open-ended questions in investigative interviews and the practice of tape recording such interviews.
Table of Contents

Acknowledgements........................................................................................................iii

Abstract..........................................................................................................................iv

Table of Contents...........................................................................................................v

Introduction......................................................................................................................1

Method............................................................................................................................26

Results............................................................................................................................41

Discussion.........................................................................................................................63

References.......................................................................................................................75

Appendix..........................................................................................................................80

Vita.................................................................................................................................82
The Effects of Using a Scripted or Unscripted Interview in Forensic Interviews with Interpreters

Framer (2006), a court interpreter, has written:

The interpreter is the nexus between all those involved with the case and the administration of justice. When untrained and untested interpreters are used to bridge the communication gap, the competency of each and every player is placed at risk. That is why trained and qualified interpreters are necessary for all parties involved in judicial or quasi-judicial settings (p. 10).

Framer’s observations regarding the role of interpreters in the judicial system are equally relevant to educational, medical, and military settings.

Federal legislation governing interpreters

The Civil Rights Act of 1964 is often cited as a landmark piece of legislation which mandated that people with limited English skills be provided with interpreters in federal courts and when interacting with other agencies of the federal government (Dysart-Gale, 2007; Framer, 2006; Herndon & Joyce, 2004). The Act states in Title VI, "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance," (Avalon Project at Yale Law School, 2008). However, as this section of the Act shows, it did not explicitly proscribe discrimination on the basis of "language," and therefore left some residual ambiguity about the mandate for interpreters in governmental programs.

The Court Interpreters Act of 1974 was more specific, expressly stating that interpreters must be provided in federal courts, "The Director [of the Administrative Offices of the United States Courts] shall prescribe, determine, and certify the qualifications of persons who may serve
as certified interpreters, when the Director considers certification of interpreters to be merited, for the hearing impaired (whether or not also speech impaired) and persons who speak only or primarily a language other than the English language, in judicial proceedings instituted by the United States,” (Legal Information Institute, 2008). This act made it clear that interpreters must be provided for civil and criminal trials in the Federal Court system.

Executive Order 13166, signed in 2000 by President Clinton, states that in order to

…improve access to federally conducted and federally assisted programs and activities for persons who, as a result of national origin, are limited in their English proficiency (LEP), it is hereby ordered as follows…each Federal agency shall examine the services it provides and develop and implement a system by which LEP persons can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency (Department of Justice, 2001).

The Executive Order extends the language of the Civil Rights Act of 1964 by explicitly protecting people who are limited in their English as a result of their national origin. The Executive order mandates the use of interpreters in all federal programs or entities supported by federal money.

*The role of interpreters in police investigations*

The federal laws just cited do not generally regulate or mandate the use of interpreters in state or municipal courts. Particularly relevant to the present study, these laws do not affect the use of interpreters in law enforcement agencies outside of the federal government. For example, there has not been any effort at the federal level to standardize rules or procedures for use of interpreters in police investigations. Each police department has the right to develop their own
rules and regulations regarding limited English speaking witnesses. Therefore, in most
corporalities in the U.S., if a police officer must interview a witness who does not speak the
same language, a professional interpreter is not typically called to the scene. In the absence of a
policy to access interpreters, it is more likely that a family member or neighbor will interpret for
the witness. For example, in 2004, the U.S. Department of Justice audited the San Francisco
Police Department after citizen complaints that police officers were not using available
interpreter services and instead relied on bystanders to interpret (Hwang & Yasui, 2007).

The lack of standards for use of interpreters is consequential because inaccurate or
incomplete transmission of information from eyewitnesses can be detrimental to police
investigations. Kebbel and Milne (1998) found that police officers in the United Kingdom
considered many eyewitness descriptions to be incomplete, even when an interpreter was not
involved. Furthermore, the officers reported that eyewitnesses provided leads in one third of
investigations. In the United States, the potential unreliability of eyewitness testimony has
become a topic of concern, as the Innocence Project has drawn attention to dozens of innocent
people who have been freed from prison based on DNA evidence. One of the leading causes of
false imprisonment in these cases is eyewitness misidentification (Scheck, Neufeld, & Dwyer,
2000).

Such cases highlight the need for accurate information to reach the investigator.
Eyewitness manuals for law enforcement highlight the need for the witness to be interviewed
"correctly" so that memories are not tainted and false information is not provided (Technical
Working Group for Eyewitness Evidence, 1999). However, the investigator's job becomes more
complicated when an interpreter must be used because the investigator and witness do not speak
the same language.
**Interpreters in applied settings**

An interpreter is commonly regarded simply as someone who "works with the spoken word, transferring speech from a source language into a target language," (American Translators Association, 2008). This characterization suggests that the interpreter is like a machine that inputs sentences in one language and outputs sentences with the same meaning in another language. However, the American Translators Association points out that the task of the interpreter is more complex: being an interpreter is more than being bilingual. The interpreter must also take into account tone, expression, dialect, and cultural differences when transferring the words from the source to target language. Therefore, the individuals who speak the target language should hear the message from the interpreter as if the original message was in their own language.

Theory and research concerning the use of interpreters in applied settings has focused on qualitative analyses, which allow researchers to shed light on some of the complexities involved in interpretation. Much of this literature focuses on discourse analysis of medical interpreters who mediate between health care providers and patients.

Dysart-Gale (2007) has argued that medical interpreters should strive to minimize the impact of the third person (interpreter) on the patient-health care provider relationship, but this does not always happen. After conducting interviews with nurses and interpreters, Hatton and Webb (1993) proposed that the relationship between an interpreter and health care provider (in this case the nurse) could take different forms. Least satisfying to the interpreters was when they were cast in the role of "voice boxes." These interpreters tried to provide word for word translations of what the nurse said, and they felt they were giving up a part of themselves during
the interview process. Other interpreters cast themselves in the role of "excluders," because they excluded the nurse from the conversation and carried on their own conversations with the patient. This type of relationship was unsatisfying to the nurses, who wanted to know all of the details of the conversation even if the interpreters were clarifying information.

Hatton and Webb (1993) described the ideal relationship for both the interpreters and nurses as one of "collaborator." In this type of relationship the interpreter and interviewer took turns taking control of the conversation while on visits with the patient. At times the interpreter would ask questions that the nurse did not because she picked up on cultural non-verbal clues that the nurse might know. In this sense the interpreter acted as more than a "voice box" and expanded her role to a "cultural broker."

Many commentators agree that an interpreter is probably best viewed not simply as a "voice box" but can act as a gatekeeper of information. Murray and Wynne (2001) asserted that interpreters must select which words best convey the message of the speaker, or may be forced to summarize, because words do not always translate directly between languages. In the gatekeeper role, interpreters may edit information that they pass on to the Interviewer, because they are protecting a community or individual.

Interpreters are human beings and subject to the same biases as non-interpreters. As a result of these biases (either conscious or unconscious) the transmittal of the original message can be affected. The biases can be exacerbated when the interpreter has a personal relationship with the person being interviewed. When the interpreter and the person being interviewed know each other it is also possible that not all information will be reported to the interpreter, preventing the information from reaching the interviewer.
It is possible for the interpreter to take over the interview as in the "excluder" category mentioned by Hatton and Webb (1993), and decide what information is considered relevant. In this case the interviewer would receive filtered information, but would not know what information was lost, if any, because of the lack of knowledge of the language in which the questioning was being done. Some experts recommend that an interviewer should discuss the interpreter’s role with both the interpreter and the person being interviewed before beginning questioning so that the goal of the interview (to obtain the maximum amount of accurate information) can be achieved (Freed, 1998; Friedland & Penn, 2001). If a family member is used as an interpreter, there might be competing goals at hand.

According to many commentators, it is critical that the person being interviewed trust the interpreter. In fact, Edwards, Temple and Alexander (2005) define trustworthiness as the key characteristic of a quality interpreter. This trust exists on two levels; trust in the ability to interpret well, and the trust in the interpreter as an ally. Edwards et al. interviewed minorities who did not speak English on their experiences with professional interpreters and friends who acted as interpreters. Being able to trust the interpreter emerged as the common factor that led to a productive, satisfying experience.

Using full transcriptions of interviews and formal discourse analysis, Garcés (2005) examined three types of doctor-patient interactions, with several of the interactions occurring in a hospital in Spain. The first type of interaction involved a Spanish-speaking doctor and a patient with limited knowledge of Spanish. The second type of interaction involved a Spanish speaking doctor and an ad-hoc interpreter (a husband). The third type of interaction was examined in Minneapolis, Minnesota, and involved an English-speaking doctor, a Spanish-speaking patient,
and a trained interpreter. Six conversations were analyzed in total; two for each type of interaction.

In the conversations between a Spanish-speaking doctor and a patient with limited Spanish, the doctor spent more time talking about how to navigate medical institutions than discussing the actual medical concern of the patient. In this situation the doctor was forced to use simpler terms and language structures than would have been used with a native Spanish-speaking patient. These types of interviews were often characterized by frequent repetitions and use of drawings.

In the two interactions in which husbands were acting as interpreters for their wives, their roles shifted from husbands/interpreters to that of advocates for their wives, as they inserted their own personal comments about their wives’ conditions into the interview. The husbands frequently omitted information, or only passed on information to their wives after the doctor repeated it several times. Some of the same elements that had been observed in the interviews with limited Spanish speaking patients were evident in the interviews with the husbands as ad-hoc interpreters. These elements included frequent repetitions and simpler language in the form of "yes or no" questions.

Garcés (2005) reported that the interactions in which the doctor communicated with the patient through a trained interpreter differed from the other types of interactions in several important respects. When a trained interpreter was used, the doctor did not need to repeat, reformulate or simplify his language. The main advantage for the patient using the trained interpreter was that all questions the doctor and patient asked were passed along (60 questions across two interviews). In comparison, in interviews with the ad-hoc interpreter, one husband answered 5 or 43% of the questions intended for the patient. The other husband answered 12 or
43% of the questions intended for the patient. The professional interpreter also maintained neutrality during the interview and used the first person "I" when referring to the patient instead of the third person "she says" which was frequently employed by the ad-hoc interpreters. According to some experts on interpretation, it is important for interpreters to use the first person pronoun because it enhances accuracy, helps the interpreter to remain neutral, and maintains the illusion that the patient and doctor are speaking directly to each other (Dubslaff & Martinsen, 2005). It may also be important to promote the perception that the interview involves a dyad (doctor and patient) rather than a triad (doctor, patient, and interpreter), because there is evidence that acquaintances (in this case, the patient and doctor) are more likely to disclose intimate information in a dyad than in a triad (Taylor, De Soto, & Lieb, 1979).

Davidson (2000) also examined doctor-interpreter-patient interactions through transcripts, but his design also included dyads in which the doctor and patient were able to communicate effectively with each other in the same language. During 10 visits in which the doctor and patient spoke the same language, the patients asked an average of 55 questions, and the doctor answered 53 of them. During 10 visits where an interpreter was present, the patients asked an average of 33 questions, 15 of which were passed to the doctor. The doctor then in turn answered 12 of those questions. This means that a total of 18 questions were not passed on to the doctor, and 17 of these questions were answered by the interpreter. This tendency of the interpreter to answer questions, also observed in Garcés (2005), was problematic because the interpreter, who had no medical training, was answering medical questions. Davidson (2000) found that patients who spoke the same language as the doctor (English) had their concerns addressed more, and were offered a diagnosis more often than the Spanish-speaking patients.
Murray and Wynne (2001) used a qualitative analysis of interviews and noted that participant's responses were shorter when interacting with an interpreter and interviewer, since the flow of the conversation was interrupted by the exchange between the interviewer and interpreter. Friedland and Penn (2001) also identified interruptions as an element that hindered a conversation between a speech pathologist (interviewer), interpreter, and parents of a patient. They also identified errors on the part of the interpreter as another element that hindered interviews. Errors in interviews with interpreters could result from either wrong linguistic choices or from omissions. A similar phenomenon had been noticed in the Garcés (2005) study discussed earlier, in which trained interpreters had difficulty accurately translating some medical terminology.

Napier and Barker (2004) also examined interactions that involved interpreters. These researchers focused on omissions on the part of the interpreter. The interpreters were professionally accredited, and in this study they were using sign language to translate a lecture that was originally in English. Following the lecture, interpreters sat down with the researchers to review their omissions and their thoughts on those omissions.

Based on their interviews with the interpreters, Napier and Barker (2004) concluded that not all omissions by an interpreter are mistakes. Instead, they concluded, some omissions are part of a deliberate interpreting strategy to condense words under a time constraint without losing the original message. Napier and Barker counted omissions in five categories: (a) conscious strategic (b) conscious intentional (c) conscious unintentional (d) conscious receptive, and (e) unconscious. Conscious strategic omissions were used to enhance the effectiveness of the message. Conscious intentional omissions were made when the interpreters could not come up with an equivalent term. Conscious unintentional omissions occurred when the interpreter
wanted to “hold onto” a piece of information to wait for more contextual clues before translating it. As a consequence the interpreter forgot the information or ran out of time to report it. Conscious receptive omissions resulted from not being able to hear the original message. Unconscious omissions were omissions the interpreters were not aware they made. The last four categories of omissions resulted in a loss of information.

In Napier and Barker's (2004) study, 10 interpreters each translated 20 minutes of lecture. A total of 341 omissions occurred, and only 87 (26%) of these were categorized as strategic. The rest of the omissions resulted in an unintentional loss of information. Napier and Barker provided no further analysis on what kind of information was lost or how this affected the message as a whole.

These studies highlight that the dynamic of a conversation changes when an interpreter is involved. Interruptions, omissions, and lack of knowledge about appropriate words for interpretation can prevent information from reaching the interviewer. The conscious unintentional omissions from the Napier and Barker (2004) study highlight memory processes of the interpreter that can also affect the interview.

Memory and the interpreter

To become a skilled interpreter requires more than knowledge of two languages. With any interpretation, the meaning must be extracted from the source language of the speaker into the target language of the audience. Interpreting word-for-word does not always work; meaning must also be extracted. There are two types of interpretations that interpreters utilize.

In simultaneous interpretations the interpreter and speaker talk or sign at the same time. This means that the interpreter must comprehend input coming in, while at the same time producing an interpretation of what has just been verbalized by the speaker. This is taxing to
working memory, the mechanism responsible for processing and storing information currently in use. Simultaneous interpreters work in real time, so there is not much time to plan the wording of the speaker into a proper translation if the source language is difficult to understand.

The second type of interpretation is consecutive interpretation, and this is the type of interpretation that will be the focus of the present study. With this type of interpretation the speaker pauses, usually after a main idea has been stated, and the interpreter then interprets what has just been said. Sometimes the interpreter takes notes as a reminder. Consecutive interpretation taxes working memory in a different way than simultaneous interpreting, as it can be disrupted by the note-taking process. Since the consecutive interpreter is not listening and speaking at the same time, theoretically it is possible that the interpreter can devote more time to output monitoring (Gile, 1998).

Each of these types of interpretations encounters its own problems. Agrifoglio (2004) examined simultaneous and consecutive interpretations from English into Spanish by professional interpreters at conferences. Most of the failures in the simultaneous condition came from omissions (32%) and changes in meaning (30%). Mistakes were coded as omissions if the information was left out and changes in meaning if the information the interpreter included was incorrect. One third of the omissions occurred in dense areas of the passage, and the changes in meaning also occurred in dense passages. "Dense passages" were not operationalized by Agrifoglio so the reader must assume a dictionary definition of "particularly crowded (more difficult)" part of the passage. Dense passages did not account for all the failures in interpretation, so Agrifoglio suggested that the remaining failures were caused by limits on memory that affected the comprehension of the passages.
A different pattern was observed for consecutive interpretations. Failures were omissions (44%) and changes in meaning (29%). Unlike simultaneous interpretations where omissions were noun lists, modifiers, and short subordinate clauses, consecutive interpreters sometimes left out whole passages. Change of meaning in consecutive interpreters most often appeared as muddled interpretations regarding relationships between nouns in the passage. The author attributed the errors to the note taking process. Agrifoglio did not use the same coding scheme as Napier and Barker (2004), but it is clear from both studies that information is lost through interpretation.

Gile (1998) has proposed an Effort Model for consecutive interpretation, which takes into account the note taking process. In the first phase there is a "Listening Effort". During the Listening Effort the interpreter listens to incoming speech and decides which ideas are important to note. The note taking process is occurring at the same time as listening, using available short-term memory. Extensive word order changes between target and note-taking language can complicate this process.

In the first step of the "Reformulation Phase," the interpreter deciphers the notes. Then during the step of Long Term Memory Effort, the interpreter retrieves language information stored in long-term memory and interprets the information in the notes or in memory into the target language. The last step in the Reformulation Phase is the Production Effort, where the interpreter produces the message in the target language. If no notes are taken, then the interpreter must rely exclusively on memory. As can be seen, the Effort Model implies both a temporary and long term store of knowledge in the memory system.

Gile's (1998) model does not explain how the Efforts work, but his idea of working memory meshes well with a prominent theory of memory proposed by Baddeley (1986). As
stated earlier, working memory is the mechanism responsible for processing and storing information currently in use. It is thought that working memory plays a critical part in other cognitive processes such as language comprehension and long term learning (Gathercole & Baddeley, 1993).

Baddeley (1986) proposed that the first component of working memory is the central executive, which regulates attention and the flow of input. The central executive also retrieves information from other areas such as long term memory. The central executive has limited processing capacity, so efficiency of the system is reduced if multiple tasks are occurring at the same time. There are three other "slave" components of working memory that aid the central executive in processing information (Baddeley, 2000).

The first "slave" component is the visuo-spatial sketchpad, which as its name suggests, is involved in processing stimuli which have a strong visual or spatial component such as a map. Since this component is not thought to be involved in language processing or production, it will not be further discussed here (Gathercole & Baddeley, 1993).

The second "slave" component that is thought to aid the central executive in processing information is the phonological loop, which is a mechanism specialized for the storage of serial verbal material such as a phone number. Once a verbal message is received the central executive system transfers it to the phonological loop. The loop consists of a temporary phonological store, but for the information to remain active in the store it must be rehearsed. This design leaves the phonological information subject to decay over time, or interference from other incoming verbal information. The store only holds two seconds of information or about seven digits (Buchsbaum & D'Esposito, 2008). The phonological loop does not account for how we remember larger amounts of information such as sentences or a prose paragraph.
To account for larger pieces of incoming information Baddeley added a third slave component called the episodic buffer to the working memory model (Baddeley, 2000). If participants are asked to remember a series of unrelated words, memory span is about five or six words, but if words are in a sentence then a span of 16 is possible. Furthermore, participants are able to recall 15-20 ideas from a paragraph if asked to immediately recall its contents. The episodic buffer is also controlled by the central executive, and is a limited capacity storage system that integrates information from the visuospatial sketchpad and phonological loop and is able to feed and access information from long term memory. This might explain how we are able to remember prose; we are able to group or chunk the information together by accessing information from long term memory.

Baddeley's theory is not the only theory of working memory, but is discussed here because of the vast amounts of experimental research that it has inspired. Baddeley's theory is not accepted in its entirety without its critics (Ardila, 2003; Jones, Hughes, & Macken, 2007), and Baddeley himself admits there are some inconsistencies. Evidence regarding the existence of the central executive is based on patients with severe deficits and correlational research. An experimental paradigm has yet to be developed that directly tests its existence, but the phonological loop is more widely accepted (Gathercole & Baddeley, 1993).

Within Gile's (1998) Effort Model for consecutive interpretation, the target speech would go directly into the phonological store and episodic buffer until the speaker is finished talking. Longer target speech as measured by the time it takes to pronounce the words is more taxing to the phonological store. Long-term memory would be accessed (because the target language has been stored there), and the Production Effort is the final step. Several studies suggest the phonological loop is involved in the Production Effort as well. Neuropsychological evidence
suggests that the phonological loop is involved in the planning of speech output, but not the actual speech articulation (Gathercole & Baddeley, 1993).

The present experiment will not directly investigate theoretical issues regarding the central executive, phonological loop or episodic buffer, but it is necessary to understand how the system functions, its capacities and limitations, because working memory is an essential part of the consecutive interpretation task. Limitations within the phonological store might account for “conscious unintentional” and “unconscious errors” that Napier and Barker (2004) reported, as well as the omissions on the part of the interpreters in Agrifoglio’s experiment (2004). Neither Gile nor Baddeley elaborate on what happens when long-term memory is accessed. For this we turn to a discussion on how bilinguals operate within two language realms.

The Cognitive Psychology of Bilingualism

Research on cognition in bilinguals can be informative as to where errors might occur while interpreting. Francis (1999) reviewed over 100 articles to come to general conclusions concerning the literature on highly proficient bilinguals. The cognitive literature discusses several levels of representation. The first is the lexical representation, which involves knowledge of a word and its phonology. The second type of representation is the semantic level, which concerns the meaning or concept that a word generates. The semantic level is important to interpretation studies because the message must be delivered from the speaker to the audience, not word-for-word, but as a whole.

Bilingual students can learn new information without remembering in which source language they encoded the information. Having to remember the source language places additional strains on the students. In addition, learning items in one language can negatively affect learning and retrieval of words of similar meaning in their other language. If there were
two separate stores for each language then such tasks would not show effects of influence from
the other language.

Francis and Gallard (2005) studied Spanish-English-French trilinguals in order to
eliminate confounds that exist when studying bilinguals. Confounds are eliminated because
different language comparisons can be made within the same person when trilinguals are studied.
They concluded that the three languages share a common semantic/conceptual level store. The
same pattern occurred across three language combinations as has been observed with two
languages. This implies that when interpreters translate words (at least on a word by word basis),
they are not merely repeating back words in another language; they must process the words
conceptually before producing them.

Another study in an interpretation setting came to a similar conclusion. Christoffels and
de Groot (2004) in the process of studying simultaneous interpretations included a condition that
mimicked consecutive interpretation. They used a 3 x 2 design with task and time manipulated.
Participants shadowed, paraphrased or interpreted a passage. No professionals were included in
this study. Shadowing (i.e., repetition of words) and paraphrasing were performed in Dutch, but
the interpretations were from English into Dutch. Participants performed their task at the same
time as the source produced it or in a delayed condition. The interpreting-delayed condition
mimicked what occurs in consecutive interpretation.

In the study by Christoffels and de Groot (2004), the quality of the interpreters’
performance was coded by independent judges. The quality of performance was rated lower for
the simultaneous (69.35 out of 100) condition than for the consecutive interpreting condition
(84.44 out of 100). The shadowing task was of the highest quality, but the paraphrasing and
interpreting groups did not differ. Recall was also coded after participants completed their
assigned task, and was lower in the interpreting-simultaneous and paraphrasing simultaneous conditions than in the delayed condition. The results suggest that it is not necessarily the dual task that hinders performance, but having to reformulate the message, since participants performed better in the shadowing-simultaneous conditions than in the other two simultaneous conditions. Also in support of the conclusion is the fact that interpreting and paraphrasing performance decreased in the simultaneous condition compared to the delayed condition. Having to reformulate the input, whether or not in the same language, is taxing.

The previous studies included either interviews between two people or interviews with interpreters. Studies in the medical field have tended to attribute errors in interviews with interpreters to the differences in conversation dynamics between two- and three-person groups. Studies in cognition have focused on memory constraints and the demands of generating language as the problem areas.

Pruss (2007) examined the effects of interpreters on the amount of information communicated during an interview. Participants acted in a mock eyewitness interview paradigm in which a "Viewer" watched a video tape of a burglary and police chase. A second participant acted as an Interviewer, who was directed to question the Viewer and obtain as much information as possible concerning the robbery and police chase.

There were three interview conditions. First, in the Direct Same Language condition, the Viewer and Interviewer spoke directly to each other in Spanish. Second, in the Mediator condition, the Viewer and Interviewer did not speak directly to each other, but instead spoke through a mediator who also spoke Spanish.

Third, in the Interpreter condition, the Viewer and Interviewer did not speak directly to each other, but instead spoke through a Spanish-English Interpreter. The Interviewer spoke in
English to the Interpreter, who translated the English into Spanish for the Viewer. When the Viewer answered in Spanish, the Interpreter transformed the Viewer's answer into English for the Interviewer. The experiment was arranged so that the Interviewer and the Viewer could not hear what each other said, but instead had to rely on the translations through the Interpreter.

After completing the interviews, participants answered a Memory Questionnaire, which asked yes/no questions concerning the video of the burglary and police chase. In addition, tapes of the interviews were scored by the experimenters for the amount of correct information reported to the Interviewer by either the Viewer (in the Direct Same Language condition), the Mediator (in the Mediator condition), or the Interpreter (in the Interpreter condition).

The main dependent variables in the study by Pruss (2007) were (1) the scores of Interviewers on the Memory Questionnaire, and (2) the amount of information reported to the Interviewers, as scored from the interview recordings. The findings regarding these two dependent variables were substantially different. First, regarding Interviewers’ scores on the Memory Questionnaire, Pruss did not find a significant difference among the three experimental conditions. In fact, Interviewers’ scores were generally at the chance level (51%) in all groups, suggesting that either the Interviewers learned nothing from the interviews, or (as seemed more likely) the Memory Questionnaire was insensitive to what the Interviewers had learned.

The findings regarding the second dependent variable were more informative. Pruss (2007) found that approximately the same amount of information was reported to Interviewers in the Interpreter and the Mediator conditions, and that significantly less information was reported in both these conditions than was reported in the Direct Same Language condition. These findings seemed to indicate that social processes (i.e., having a mediator or interpreter interpose between the interviewer and viewer) can hinder the interview process.
In the study by Pruss (2007), the amount of information transmitted to Interviewers varied substantially even for groups within the same experimental condition. This variability may have been due to the fact that each interview involved two or three people, each of whom contributed some variability. Viewers differed on the quantity of information that they remembered and reported to the Interpreter or Interviewer. Interpreters differed on language skills, and how much information they could hold in short term memory. The Interviewers, who seemed to control the flow of the interview, differed on the number and type of questions they asked. Interviewers also varied on the information they thought important to gather. It is possible that these sources of variability could be controlled, at least in part, by having interviewers follow a structured interview script.

*The Cognitive Interview and Structured Interviewing*

Much of the research on structured interviewing of adult witnesses has come while examining the effects of the Cognitive Interview (CI) (Fisher & Schreiber, 2007). A main component of the CI is context reinstatement. This element of the CI will not be relevant to the current experiment, which does not involve an appreciable delay between the event witnessed and the subsequent interview. Instead, the discussion here will focus on another main component of the CI, the use of open-ended questions, which is relevant to the present research.

At a time when eyewitness interviewing was becoming a research topic of major interest among psychologists, Geiselman, Fisher, MacKinnon, and Holland (1985) compared the standard interviewing techniques used in law enforcement with the new CI. Participants watched an arousing crime scene video and then were interviewed by law enforcement officers. Before each interview technique was implemented, participants first described the video in their own words. For the standard interview, the interviewers were free to ask their own questions after the
initial free-recall. In the CI condition Interviewers told the participants "think about what the surrounding environment looked like at the scene…also think about what you were feeling," (Geiselman et al., 1985, p. 404). Participants were also told to report everything they remembered, even if they thought it was not important. Interviewers then asked the participants to recall the video in a different order, and to take the perspective of another while reporting all the details. At each segment of the interview, the participants freely recalled the scenario again in response to an open-ended prompt.

Geiselman et al. (1985) found that the CI elicited more correct details than the standard interview. There was no difference in the number of incorrect details or confabulations. The Interviewers using CI asked fewer questions than Interviewers using the standard interview, but the interviews using CI yielded more correct details. While it may seem counterintuitive that interviews with more questions would lead to fewer correct details, the nature of the questions in standard interviews was more likely to be close-ended rather than open-ended as in the CI.

An updated version of the CI, the Enhanced Cognitive Interview (ECI), has recently been developed. This new procedure follows the same basic principles as the CI, and adds several elements. In the ECI, the interviewer builds rapport with the witness, transfers control of the interview to the witness, and tells the witness that it is hard work to remember the details. The rest of the CI technique is then followed (context reinstatement, free recall, recall in different time order, and different perspective). The ECI was then revised into a Modified Cognitive Interview (MCI) where participants were asked to "again describe the crime," instead of the different CI techniques such as using a different time order and perspective (Davis, McMahon, & Greenwood, 2005)
Davis, et. al. (2005) compared the ECI and MCI with the Structured Interview (Köhnen, Thürer, & Zoberbier, 1994) as a control. In the Structured Interview (SI) participants were not instructed that the interview would be hard work, to report all details or "again describe," as in the ECI and MCI. As a control measure, in all Interviews the use of open-ended questions was maximized and close-ended questions were kept to a minimum.

Davis et al. (2005) found that witnesses who were interviewed with the two different versions of the CI recalled more correct information than did witnesses who were interviewed with the SI. Similar to Geiselman et al. (1985) there was no difference in the number of incorrect details or confabulations between the groups. In order to look at the effectiveness of each stage of the interview process Davis et al. (2005) examined the number of details recalled at each stage in the interview. Witnesses reported more correct details when interviewed with the ECI and MCI, which both use cognitive reinstatement and report everything instructions, than with the SI. Since all conditions utilized open-ended questions, this study suggests that context reinstatement and "report everything" instructions add to the quality of reporting on the part of the witness. Perhaps the "report everything" instruction reduces some of the variability in information that the witness chooses to report.

The studies with adults who are interviewed using CI techniques show that their answers are longer and more accurate when open-ended questions are used. Unfortunately, what is learned from research is not always carried into the field. Field studies from child interviewers who interview alleged victims of abuse can be informative on how to improve interviews with adults.

After several unsuccessful attempts at using semi-structured interview protocols with child interviewers, Lamb et. al. (2000) developed a fully scripted interview protocol modeled
after the National Institute of Child Health and Human Development (NICHD) professional recommendations. The protocol starts off with rapport building and a series of open-ended questions unrelated to the alleged abuse. The interview protocol then moves to the substantial portion (the part about the abuse), after the interviewer and child have already developed a pattern of the child divulging details while talking about positive and negative events. The script gives several prompts to engage the child in discussion. This allows the interviewer to focus more on the information the child is giving, rather than formulating the next question while the child is talking.

Accuracy cannot be verified when the NICHD protocol is used in forensic interviews of children, because “ground truth” is unknown. However, the amount of information obtained using the protocol can be compared to the amount of information typically obtained before the structured protocol was in place. Lamb et. al. (2000) found that interviewers used four times as many open-ended questions with the script (5% vs. 20%). The children also responded with free-narratives in response to the open-ended questions. Interviewers elicited more details with their first open-ended questions than with the other types of questions used in the interview. The researchers argued that with open-ended questions the witness or victim is able to recall information from memory rather than choose between options posed in a question, and this in turn leads to more accurate statements (Lamb et. al., 2000).

The studies discussed here show that open-ended questions are effective interviewing tools when used with both adults and children. The studies also show that using a protocol can enhance the use of open-ended questions. It is possible that using a script takes some stress off an interviewer, because the interviewer does not have to formulate the next question while also
listening to the response the witness is giving. The present study will incorporate a script using open-ended questions to study interviews with interpreters.

Memory for conversations

An earlier part of this Introduction discussed the memory processes of interpreters. Since an interview, with or without an interpreter, is a kind of conversation, it is worth considering memory from another perspective, the role that memory plays in how conversations are remembered.

Miller, deWinstanley and Carey (1996) studied memory for conversation in the context of social competence and social anxiety. Participants were randomly assigned to dyads, which then engaged in a problem solving task that was deemed of low or high importance. Afterward, participants’ were asked to recall their conversation with their partner while solving the task. Participants were coded for complete recall (exact memory for what their partners said) or gist recall (a summary or basic idea of what their partner said). Participants that scored higher on social competence and lower on social anxiety had a better memory for both sides of the conversation than people who were low on social competence and high on social anxiety. Overall, participants recalled more information they generated during the conversation, than information their partners generated. The longer the conversation lasted, the more gist details were recalled compared to complete idea units. This suggests that the longer conversations might have been more difficult to encode or to retrieve. The researchers speculated that participants who were low on social competence and high on social anxiety might have had a harder time remembering, because their memory resources were being used to get through the conversation, and not on the content of the conversation.
Campos and Alsono-Quecuty (2006) found similar results ten years later. As part of an "earwitness" study, participants listened to (audio condition), or simultaneously watched and listened to (audiovisual condition), a simulated conversation about a planned theft. Participants were tested using a free recall paradigm either immediately after hearing the conversation or four days later. The free recall was later scored into four categories: verbatim recall (similar to complete recall in the last study), gist recall, distortion (some parts true, some parts misrepresented), and fabrication. In all conditions, participant's gist recall was better than their verbatim recall. Both gist and verbatim recall were better at the immediate free recall than the delayed conditions. Gist recall at the immediate retention interval was not influenced by the mode of presentation, so participants in the audio and audiovisual condition performed at the same level. However, after the four day delay participants in the audio condition recalled less gist statements, and made more fabrications than those in the audiovisual condition.

These studies on memory for conversation show that very few exact details are remembered, while the basic information (gist) is better remembered. The quantity of information remembered diminishes over time. This has important implications for interviewers, since even immediate recall for verbatim information can be poor.

Current study

The current study integrated disparate literatures on interpreters and the use of open-ended questions in forensic interviews, and also built on knowledge gained from Pruss (2007). Participants were assigned to act as Viewers (i.e., witnesses), Interpreters or Interviewers. As in the study by Pruss, Viewers watched a video of a burglary and police chase, and were then interviewed. The interviews were conducted either through Spanish-English interpreters (Interpreter condition) or the Interviewers instead interviewed the Viewer directly in Spanish (No
Interpreter condition). In half the interviews, the Interviewers began by following a structured script that required the use of open-ended questions (Scripted condition), whereas in the other half, the Interviewers were not given a structured script to follow (Unscripted condition).

Two hypotheses were tested. First, it was hypothesized that the results of Pruss (2007) would be replicated, such that more information would be elicited by Interviewers who directly questioned the Viewers than by Interviewers who conducted their interviews through an Interpreter. Second, consistent with the research on the CI and on child interviews, it was hypothesized that the use of structured scripts with open-ended questions would increase the amount of information that was transmitted to the Interviewer.
Method

Participants

Participants were 300 students from the Introductory Psychology and Abnormal Psychology classes at the University of Texas at El Paso. Participants were recruited using Experimetrix, a web-based experiment tracking program and sign up sheets during class sessions. All participants participated for class credit.

Participants were 109 males (36.33%) and 183 females (61.00%) with an average age of 20.55 (SD=4.23). Eight people failed to report gender. A majority of the participants were Hispanic (95%). A majority of the participants were bilingual in English and Spanish (92.6%) and those participants who were bilingual reported that they learned Spanish at an average age of 1.79 years (SD=2.70) and learned English at 5.94 years (SD=4.08). An additional 85 participants were excluded because they or a member of their group did not meet the language requirements, did not follow the directions of the interview process, or experienced intercom malfunction.

Procedure

This was a 2x2 design. The first independent variable was the Presence of Interpreter, which had two conditions, Interpreter or No Interpreter. In the No Interpreter condition, Viewers were questioned directly by Interviewers in Spanish, whereas in the No Interpreter condition Viewers were questioned indirectly through an Interpreter. The second independent variable was Script Format, which had two conditions, Scripted or Unscripted. In the Scripted condition the interviewer began to question the Viewer by following a structured script that required the use of open-ended questions, whereas in the Unscripted condition the interviewer was not given a structured script to follow. The two independent variables were fully crossed with each other, thus creating four groups: Interpreter Scripted, Interpreter Unscripted, No Interpreter Scripted or
No Interpreter Unscripted. Each condition contained 30 groups. When groups of three participants arrived for the experiment, they were randomly assigned to one of these four experimental conditions. When a group of three participants was assigned to one of the No Interpreter conditions, two participants were used in the present experiment and the third was assigned to participate in another experiment unrelated to the present study. Thus the number of participants in the present study was 300, including 90 (30 groups of 3 participants) in both the Interpreter Scripted and Interpreter Unscripted conditions, and 60 (30 groups of 2 participants) in both the No Interpreter Scripted and No Interpreter Unscripted conditions.

*Interpreter Scripted Condition.* Participants in this condition acted in groups of three. At the beginning of the experimental session, the experimenter informed the participants that the purpose of the study was to study interviews that were conducted with and without interpreters. Participants then read and signed an informed consent form.

Participants next completed a demographics form, a Self-Rated Relative Proficiency Scale (Francis, Regalado, Sáenz, & Durán, 2006) and a portion of the Bicultural Involvement Questionnaire (BIQ) (Szapocznik, Kurtines, & Fernandez, 1980). The Self-Rated Relative Proficiency Scale is a measure of Spanish-English bilingualism, while the BIQ is a proxy for measuring language skills. While the students completed mazes, the experimenter scored the Self-Rated Relative Proficiency and BIQ bilingualism scales. On the basis of the bilingualism scores, the experimenter first determined that all three participants were fluent in English, and that at least two of the participants were fluent in Spanish. This was done by referring to a multiple choice question on the Self-Rated Relative Proficiency Scale that asks the participants to rate their fluency in Spanish and English. The experimenter then used the scores to determine which role the participants would assume as the experiment continued.
Participants who spoke only English or were not fluent in Spanish were assigned the role of "Interviewer." "Interviewer" roles were also assigned to people who spoke fluent Spanish, but scored lowest on the Self-Rated Relative Proficiency Scale, indicating a stronger skill for the English language. Participants who indicated a high proficiency in both Spanish and English were assigned "Interpreter" roles. "Interpreters" often scored approximately 32 on the Self-Rated Relative Proficiency Scale, indicating equal skill in both Spanish and English. The participant who spoke the most Spanish, and the least English was assigned the role of "Viewer."

The experimenter then returned to the room with the participants and explained the remainder of the task. The following script was used for each group:

You can stop working on your mazes now. We won't use them for the rest of the experiment. What I am going to do now, is divide you into different rooms and each person is going to have a different task. (To Viewer) You will be the Viewer. You are going to watch a video about a robbery and police chase. You will then answer questions about the video in Spanish. (To Interviewer) You will be the Interviewer. You are going to interview the Viewer, asking questions in English. It is like you have missed an episode of your favorite TV show, and in order to understand the next episode you have to get all the details surrounding the robbery and police chase. (To Interviewer and Viewer) Since we are studying interpreters you will not be able to talk directly to each other. (To Interpreter) You will be the Interpreter. You will translate the English questions from the Interviewer into Spanish. In Spanish you will ask the Viewer questions. The Viewer will answer the questions in Spanish. You (to Interpreter) will tell the answer back to the Interviewer in English. The Interpreter will hear the Viewer...
and Interviewer via intercom. The Viewer and Interviewer will also hear the Interpreter on the intercoms, but the Viewer and Interviewer will not be able to hear each other. Is everybody ok with their roles? Do you have any questions?

At this point in time participants were free to ask questions or clarify procedures. The Viewer was then escorted to a third room to watch a 5 minute video of a burglary in a house and a police chase. The Interpreter was escorted to a second room, while the Interviewer stayed in the first room. While the Viewer was watching the video, the experimenter showed the Interviewer and Interpreter the intercoms they would use and let them practice using them. At this point in time the experimenter introduced a script to the Interviewer, "I have some questions for you to ask the Viewer. You must first ask these questions in order, and then you can ask any other question you want. Please do not take notes on this paper—it is only for you to have a copy of the questions. I will go through the questions with you before the interview starts." The experimenter read the script aloud, while the Interviewer followed along. When the Viewer was done watching the video, the Interpreter and Viewer practiced with the intercoms.

After everyone was comfortable using the intercoms, and all questions were answered, the interview started according to the following format: (1) The Interviewer asked the Interpreter questions in English about the video seen by the Viewer. To avoid confounds based on language, the Interviewer did not hear the Viewer. (2) The Interpreter then asked the Viewer these questions in Spanish. The Interpreter had two intercoms and was able to hear both the Interviewer and Viewer. (3) After the Viewer answered a question in Spanish, the Interpreter then relayed this answer to the Interviewer in English.
Every Interviewer in the Interpreter Scripted condition had a copy of the following script to read:

"Hi my name is (NAME). I am going to ask you some questions. Please tell me all the details you remember, even if you think they are not important.

1. I understand you have seen a robbery. Please start at the beginning and tell me everything that happened in the video, from beginning to end.

2. Did anything happen after that?
   
   If Viewer says "yes" then

   2B. "Please tell me more about what happened after that”.

3. [If the Viewer has not described the police chase] Could you please describe everything that happened from beginning to end during the police chase?

4. [If the Viewer has not described the robbers] Could you please describe the thieves?"

If the interview did not end after 15 minutes, the experimenter let the Interviewer know they were permitted to ask one more question, and then the interview would be over. All interviews were digitally recorded with a recorder in each room.

After the interview was over all the participants completed a "Free Recall" task in which they were given a sheet of paper with the instructions, "On the next page(s) please write down all the details you remember from the video or interview. Please include details on events, people, and objects. When you are finished writing down everything you remember, please let the experimenter know." Participants were also told they could write in bullet points, and participants wrote in English. After the Free Recall task, participants answered a 23-item Memory Questionnaire. The Memory Questionnaire contained 23 questions about the video and was answered in "Yes" "No" or "Don't Know" format (more details regarding this Questionnaire
will be provided at a later point in the Method section). The participants were then debriefed, thanked for their time, and dismissed.

*Interpreter Unscripted Condition.* This condition was identical to the Interpreter Scripted Interview condition, except that the Interviewers did not receive a script, and therefore were free to ask their own questions for the entire 15 minute time slot. The participants received the same instructions as the Interpreter Scripted condition except the Interviewers did not receive a copy of the scripted interview. The following Experimenter script was used:

> You can stop working on your mazes now. We won't use them for the rest of the experiment. What I am going to do now, is divide you into different rooms and each person is going to have a different task. (To Viewer) You will be the Viewer. You are going to watch a video about a robbery and police chase. You will then answer questions about the video in Spanish. (To Interviewer) You will be the Interviewer. You are going to interview the Viewer, asking questions in English. It is like you have missed an episode of your favorite TV show, and in order to understand the next episode you have to get all the details surrounding the robbery and police chase. (To Interviewer and Viewer) Since we are studying interpreters you will not be able to talk directly to each other. (To Interpreter) You will be the Interpreter. You will translate the English questions from the Interviewer into Spanish. In Spanish you will ask the Viewer questions. The Viewer will answer the questions in Spanish. You (to Interpreter) will tell the answer back to the Interviewer in English. The Interpreter will hear the Viewer and Interviewer via intercom. The Viewer and Interviewer will also hear the
Interpreter on the intercoms, but the Viewer and Interviewer will not be able to hear each other. Is everybody ok with their roles? Do you have any questions?

No Interpreter Scripted Condition. The hallmark of this condition was the lack of an Interpreter, so that Interviewers and Viewers talked to each other directly in Spanish via intercoms. The participants involved were given the same instructions as the three person groups except the role of the Interpreter was omitted, and the participants were told they would talk to each other through the intercoms. The following Experimenter script was used:

You can stop working on your mazes now. We won't use them for the rest of the experiment. What I am going to do now, is divide you into different rooms and each person is going to have a different task. (To Viewer) You will be the Viewer. You are going to watch a video about a robbery and police chase. You will then answer questions about the video in Spanish. (To Interviewer) You will be the Interviewer. You are going to interview the Viewer, asking questions in Spanish. It is like you have missed an episode of your favorite TV show, and in order to understand the next episode you have to get all the details surrounding the robbery and police chase. I have intercoms for you talk to each other because you will be in different rooms. Is everybody ok with their roles? Do you have any questions?

While the Viewer watched the video, the Experimenter introduced a script to the Interviewer, "I have some questions for you to ask the Viewer. You must first ask these questions in order, and then you can ask any other question you want. Please do not take notes on this paper-it is only for you to have a copy of the questions. I will go through the questions with you before the interview starts." The experimenter read the script aloud, while the Interviewer
followed along. This time the script was in Spanish. The Interview was generated in Spanish by a translation student as part of a senior project, and then the Spanish version was translated back into English to ensure that the scripts were equivalent. The script read as follows:

Hola mi nombre es (NOMBRE). Le voy a preguntar unas preguntas. Por favor dígame todos los detalles que usted recuerde, incluso los que piense que no son importantes.

1. Tengo entendido que ha visto un robo. Por favor empiece desde el principio y dígame todo lo que ocurrió hasta el final.

2. ¿Alguna otra cosa pasó después de eso?

   Sí el testigo contestó “sí” entonces

2B. “Por favor dígame más sobre lo que pasó después del robo.”

3. ¿Por favor puede describir todo lo que pasó en la persecución de coches desde el principio hasta el final?

4. ¿Podría describir a los rateros?

5. Favor de continuar con preguntas hasta que ya llegado a una descripción detallada del video.

*No Interpreter Unscripted Condition.* This condition was equivalent to the No Interpreter Scripted condition, except that the Interviewer did not have a script, so they asked questions they felt were relevant to obtaining details about the robbery and police chase. The following Experimenter script was used:

You can stop working on your mazes now. We won't use them for the rest of the experiment. What I am going to do now, is divide you into different rooms and each person is going to have a different task. (To Viewer) You will be the Viewer. You are going to watch a video about a robbery and police chase. You will then answer questions about the video in Spanish. (To Interviewer) You will be the Interviewer. You are going to interview the Viewer, asking questions in Spanish.
It is like you have missed an episode of your favorite TV show, and in order to understand the next episode you have to get all the details surrounding the robbery and police chase. I have intercoms for you talk to each other because you will be in different rooms. Is everybody ok with their roles? Do you have any questions?

After the interview all participants again received the same materials that were mentioned above: the Free Recall task and the Memory Questionnaire. Participants wrote the Free Recall in English, and the Memory Questionnaire was also in English.

**Materials and Equipment**

*Crime Video.* The crime video watched by Viewers was originally designed to be used for training purposes by the Ohio State Police, and was approximately 5 min long. It started out with a thief inside a house and then a neighbor noticed a suspicious car. The neighbor called 911, and the police were alerted. When the thief came out of the house to his partner in crime and the getaway car, the police spotted them soon after they departed the house. A police chase ensued and the experimenter stopped the video at the point where the officers had the suspects cornered and had called for backup.

*Audio Apparatus.* An “Advance 3-Station FM Wireless Intercom System” from Radio Shack was used to transmit participants’ words to each other. The set-up enabled the Interpreter to talk to both the Viewer and Interviewer through 2 separate intercoms, but did not allow the Interviewer and Viewer to speak directly to each other or to hear what each other were saying.

*Self-Rated Relative Proficiency Scale.* Each person completed this scale in order to determine which role they would act out during the experiment (see Appendix A). The scale is a continuous measure of English-Spanish bilingualism (Francis, et. al., 2006). The scale starts off
with multiple choice questions on whether or the not the participants were fluent in English-Spanish and the degree to which they were fluent in each language. There was also a question on when the participant first learned English-Spanish and if any other languages were ever studied.

For the purposes of the present study, the most important part of the Self-Rated Relative Proficiency Scale was the subsection in which participants rated their own abilities of English-Spanish on a seven point scale. A rating of "1" meant "strong advantage for English" and a rating of "7" at the opposite end of the scale meant "a strong advantage for Spanish." Speaking, listening comprehension, reading, writing, pronunciation, spelling, and vocabulary were all areas rated on the seven point scale. These items plus a question regarding grammar contributed to 44% of the variance in comprehension and production asymmetries of a large bilingual sample ($N=645$).

*Bicultural Involvement Questionnaire.* Each participant completed a bilingual scale to assess his or her language abilities in English and Spanish. The questions were taken from the Bicultural Involvement Questionnaire (BIQ) (Szapocznik, et. al., 1980), which was designed to assess acculturation in Hispanic samples along several dimensions. The present study used two parts from the BIQ that assess English and Spanish proficiency. Participants answered the following questions for both Spanish and English, using a 7-point rating scale that ranged from 0 (I do not speak English or I do not speak Spanish) through 6 (Very comfortable).

1. How comfortable do you feel speaking Spanish (English) at home?
2. How comfortable do you feel speaking Spanish (English) in school?
3. How comfortable do you feel speaking Spanish (English) at work?
4. How comfortable do you feel speaking Spanish (English) with friends?
5. How comfortable do you feel speaking Spanish (English) in general?
Measures of the Amount of Information Exchanged Among Viewers, Interpreters, and Interviewers. An important aspect of the study was to determine how much information about the crime video was exchanged among Viewers, Interpreters, and Interviewers. The amount of information exchanged was measured at two different places in the interviews by scoring the audiotapes of what was said. The first measurement scored the amount of information that the Viewer reported to either the Interpreter (in the Interpreter condition) or to the Interviewer (in the No Interpreter condition). The second measurement scored the amount of information that was reported to the Interviewer by the Interpreter (in the Interpreter condition). To ensure that scoring was objective and consistent, a detailed scoring sheet was developed.

First, in order to develop this sheet, two research assistants listened to approximately 12 interviews from the study and coded each piece of information that the Viewer reported to the Interpreter or Interviewer. The information reported was broken down into its simplest units for the purposes of coding. For example, if the Viewer reported that the thieves had a "white Buick" this would count as two pieces of information transmitted; one piece of information is that the car is white, and the other piece of information is that the car is a Buick. If the Viewer said, "The police chased the robbers and then the police had to call for backup," this was coded as three pieces of information. One piece of information was counted for mentioning that the police were involved, the second piece of information was for the action that the police chased the robbers, and the third piece of information was for the police calling for backup. Through this coding procedure, approximately 130 separate details or pieces of information about the crime video were identified. Of these 130 details, the 32 most common ones were selected for coding all future interviews. See Table 1 for items used in coding.
Table 1.  

**Items used in coding for all interviews.**

1. Give 1 point for indicating that the theft occurred in a house.
2. Give 1 point for indicating that the theft took place during the day.
3. Give 1 point for saying that the theft involved some documents (papers/folders).
4. Give 1 extra point for saying the documents/papers/folders were important.
5. Give 1 point for saying the man looked in drawers.
6. Give 1 point for saying the thief was looking for money.
7. Give 1 point for saying that the thief took money.
8. Give 1 point for saying that some of the stolen objects were put into a bag or pillowcase.
9. Give 1 point for saying the bag was white.
10. Give 1 point for any indication that the number of thieves was 2
    (including any reference to "the other thief" or "the second one" etc.)
11. Give 1 point for saying the second thief was waiting outside.
12. Give 1 point for saying the first thief had long hair
13. Give 1 point for any mention that the thieves were "young" or any age less than 30.
14. Give 1 point for any mention of a thief wearing a jacket or vest.
15. Give an extra point for saying that the jacket was blue or made of jean/denim material.
16. Give 1 point for any mention of a thief wearing jeans or denim pants.
17. Give 1 point for any mention of a thief wearing a bandana.
18. Give 1 point for indicating that one or both thieves wore sunglasses.
19. Give 1 point for describing either or both of the thieves as.... Caucasian, Anglo, White, Hispanic, Latino, Mexican American, or equivalent categories
20. Give 1 point for saying that the thieves were both unarmed/no weapons.
21. Give 1 point for saying that a thief left the house through the back door (must mention the back door).
22. Give 1 point for mentioning that there was a neighbor (doesn't have to use word "neighbor"
Give credit for saying "there was a woman who saw" etc.).

23. Give 1 point for indicating that the neighbor contacted the police.

24. Give one point for saying the neighbor reported the plate numbers in her phone call.

25. Give 1 point for mentioning that the thieves had a car.

26. Give an extra point for mentioning that the car was a Buick or LeSabre.

27. Give another extra point for mentioning that the car was white.

28. Give 1 point for any mention of police.

29. Give 1 point for saying that there was more than one police officer.

30. Give 1 point for saying that the police chased the thieves.

31. Give 1 point for saying backup/more police arrived.

32. Give 1 point for saying the police caught the thieves.

TOTAL:

Then each portion of the Interviews was scored. Two raters coded what the Viewer reported (to either the Interpreter or Interviewer), and two additional raters coded what the Interpreter said to the Interviewer. Each rater listened to the recording independently and then their scores were compared. If rater matched exactly then that number was used for the database. If raters were within one point of each other (e.g., one rater scored a 15 and the other rater scored a 16) then the scores were averaged for the database.

If raters differed by more than one point, each rater listened to the interview again and recoded it, and again scores were compared. For coding the 120 interviews for the Viewers, 18 interviews had to be recoded before meeting the requirements to be included in the database. For coding the 60 interviews in which Interpreters were involved, five interviews had to be recoded.
Four out of the five interviews then met the requirements to be included in the database. If the raters did not agree after the scoring had been done twice, the Experimenter made a final decision on the scoring after discussing the score with each rater. This procedure was used for one interview for an Interpreter recording. Inter-rater reliability statistics (Intraclass Correlation Coefficients) were calculated using the initial ratings made by raters before recoding occurred.

**Memory Questionnaire (Recognition Memory).** Participants’ recognition memory for what they had seen or heard concerning the crime video was measured using the Memory Questionnaire. The Memory Questionnaire asked participants to answer 23 basic items about the video. Participants responded by answering "Yes," "No," or "Don't Know." Participants were instructed "do not guess" if they did not know the answer, and to choose the "Don't Know" option if they were unsure. Examples of questions included "Did the thieves rob a house?" and "Did the police catch the thieves?" This is not the same Memory Questionnaire that was used in Pruss (2007). The current Memory Questionnaire was designed to ask about central details of the video rather than minute details from the video.

**Free Recall Task (Recall Memory).** Participants’ recall memory for what they had seen or heard was measured by a free recall task. Immediately after the conclusion of the interview, but before the administration of the Memory Questionnaire, all participants were instructed, "On the next page(s) please write down all the details you remember from the video or interview. Please include details on events, people, and objects. When you are finished writing down everything you remember, please let the experimenter know."

Participants’ answers to the Free Recall Task will be scored using the same coding sheet that was used to score the taped exchanges of information among Viewers, Interpreters, and
Interviewers. Two raters will code the Free Recall responses of the Viewers, Interpreters and Interviewers.

At the time of this writing, the scoring of all Free Recall responses of all participants has been completed by one rater, but scoring by a second rater is still underway. Therefore, the Free Recall scores reported in the Results of this dissertation are based solely on the scores of the first rater.

In the future, scoring by both raters will be completed, following the same rules and procedures used in the scoring of the taped interviews. That is, if the scores of the two raters are within one point of each other, the scores will be averaged and used for the database. If the scores are more than one point away from each other, then each Free Recall will be scored again independently. If at this point, no consensus is reached, then the experimenter will make a final decision. As will be reported in the Results section the inter-rater reliability for the scoring of the taped interviews was excellent, therefore it appears likely that the inter-rater reliability for the scoring of the Free Recall measure will also be very high.
Results

Inter-Rater Reliability

As described in the Method section, audio recordings were made of the interviews of Viewers as conducted by either Interpreters (in the Interpreter condition) or Interviewers (in the No Interpreter condition). These 120 recordings were then scored independently by two raters for the number of correct Details Reported by the Viewer. Inter-rater reliability of these scores as assessed using the Intraclass Correlation Coefficient (ICC) was .94.

Similarly, audio recordings were made of the Interviewers’ interactions with the Interpreters (in the Interpreter condition) or Viewers (in the No Interpreter condition). These recordings were then scored independently by two raters for the number of correct Details Reported to the Interviewer. Inter-rater reliability of the scores assigned by the two raters as assessed using the ICC was .92.

Self-Rated Relative Proficiency Scale

Table 2 shows the scores for all participants on the Self-Rated Relative Proficiency Scale by role and condition. A score of 8 indicates an orientation for English, and a score of 56 indicates an orientation for Spanish. A score of 32 indicates an equal orientation toward Spanish and English. As intended, the mean scores for Viewers were higher (33.87 to 37.75) than for Interpreters (24.47 to 27.37) or Interviewers (15.90 to 30.46).
Table 2

<table>
<thead>
<tr>
<th></th>
<th>No Interpreter</th>
<th>Interpreter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unscripted</td>
<td>Scripted</td>
</tr>
<tr>
<td>Interviewer</td>
<td>30.46 (9.56)</td>
<td>25.65 (10.32)</td>
</tr>
<tr>
<td>Interpreter</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Viewer</td>
<td>37.75 (10.74)</td>
<td>33.87 (13.14)</td>
</tr>
</tbody>
</table>

Participants also rated how comfortable they felt speaking English and Spanish using the BIQ (Szapocznik, et. al., 1980). A score of 0 indicates no comfort in speaking the language, while a score of 30 indicates complete comfort in speaking the language. Tables 3 and 4 show the means and standard deviations for the Spanish and English subsections of the BIQ. As can be seen, participants were appropriately assigned to roles that matched their language abilities. Specifically, (a) all Viewers were highly comfortable in Spanish, (b) all Interpreters were highly comfortable in both English and in Spanish, (c) all Interviewers in the No Interpreter Condition were highly comfortable in Spanish, and (d) all Interviewers in the Interpreter condition were highly comfortable in English.
Table 3

Means and (SD) for all Participants on BIQ-Spanish

<table>
<thead>
<tr>
<th></th>
<th>No Interpreter</th>
<th></th>
<th>Interpreter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unscripted</td>
<td>Scripted</td>
<td>Unscripted</td>
<td>Scripted</td>
</tr>
<tr>
<td>Interviewer</td>
<td>26.83 (3.97)</td>
<td>26.47 (4.05)</td>
<td>17.93 (10.50)</td>
<td>18.80 (10.10)</td>
</tr>
<tr>
<td>Interpreter X</td>
<td>X</td>
<td>X</td>
<td>26.17 (5.19)</td>
<td>27.50 (3.58)</td>
</tr>
<tr>
<td>Viewer</td>
<td>29.13 (1.83)</td>
<td>28.37 (3.03)</td>
<td>28.97 (2.28)</td>
<td>28.07 (2.87)</td>
</tr>
</tbody>
</table>

Table 4

Means and (SD) for all Participants on BIQ-English

<table>
<thead>
<tr>
<th></th>
<th>No Interpreter</th>
<th></th>
<th>Interpreter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unscripted</td>
<td>Scripted</td>
<td>Unscripted</td>
<td>Scripted</td>
</tr>
<tr>
<td>Interviewer</td>
<td>25.90 (5.45)</td>
<td>28.24 (3.07)</td>
<td>28.43 (4.63)</td>
<td>28.93 (2.21)</td>
</tr>
<tr>
<td>Interpreter X</td>
<td>X</td>
<td>X</td>
<td>28.93 (2.03)</td>
<td>27.72 (2.84)</td>
</tr>
<tr>
<td>Viewer</td>
<td>24.93 (5.23)</td>
<td>25.46 (4.33)</td>
<td>23.66 (5.20)</td>
<td>24.50 (5.12)</td>
</tr>
</tbody>
</table>

Effect of Presence of Interpreter and Script Format on Details Reported by Viewers

The two independent variables in the present study were Presence of Interpreter (Interpreter vs. No Interpreter) and Script Format (Scripted with open-ended questions vs. Unscripted). This section will examine the effect of these two variables on the amount of information reported by Viewers when interviewed.
A 2x2 ANOVA was performed in which Interviewer Presence and Script Format were the independent variables and Details Reported by the Viewer was the dependent variable (as already reported, the number of correct Details Reported by the Viewer was scored from the tapes of the interviews). Means are shown in Table 5 and Figure 1, and the source table for the ANOVA is reported in Table 6. As can be seen in Table 6, a significant main effect was found for Script Format, $F(1,116)=34.56, p<.001, \eta^2=.230$. Specifically, Viewers in the scripted conditions reported more details ($M=18.67, SD=3.29$) than Viewers in the unscripted condition ($M=15.17, SD=3.60$). There was no significant main effect for Presence of Interpreter, $F(1,116)=.05, p=.833, \eta^2=0$, nor was there any significant interaction, $F(1,116)=1.90, p=.171, \eta^2=.016$.

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Scripted</th>
<th>Unscripted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Interpreter</td>
<td>Interpreter</td>
</tr>
<tr>
<td>Details Reported</td>
<td>19.37 (3.41)</td>
<td>18.37 (3.14)</td>
</tr>
</tbody>
</table>

Table 6

<table>
<thead>
<tr>
<th>Source</th>
<th>$F(df)$</th>
<th>$p$</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of Interpreter (No Interpreter v. Interpreter)</td>
<td>.05 (1,116)</td>
<td>.833</td>
<td>0</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>34.56 (1,116)</td>
<td>&lt;.001</td>
<td>.23</td>
</tr>
<tr>
<td>Presence of Interpreter x Script Format</td>
<td>1.90 (1,116)</td>
<td>.171</td>
<td>.016</td>
</tr>
</tbody>
</table>
Effect of Experimental Manipulations on the Amount of Information Reaching Interviewers

The central outcome of interest in the study was the amount of correct information that reached the interviewer, which was assessed by the three main dependent measures. The first and most important of these three Interviewer measures was the Number of Correct Details Reported to the Interviewer by either the Interpreter (in the Interpreter Condition) or by the Viewer (in the No Interpreter condition). As discussed in the Methods, this measure was scored from a recording of the interview, with a maximum possible score of 32. This outcome measure was of central interest because it was the outcome measure used in the study by Pruss (2007), which the present study was intended to replicate. For purposes of brevity, this measure will be referred to simply as “Details Reported.”

The second of the three Interviewer measures was the Number of Correct Details Freely Recalled. This measure was based upon the free recall task completed by participants immediately following completion of the interviews. For purposes of brevity, it will be referred
to simply as “Details Recalled.” The third dependent measure was the Number of Correct Answers by the participants on the Memory Questionnaire. As explained in the Method section, this measure reflected the number of correct “Yes” or “No” answers given by interviewers on the Memory Questionnaire following the end of the interview and the free recall task. The maximum possible score for this measure was 23. For purposes of brevity, it will be referred to simply as “Details Recognized.”

As already discussed, the two independent variables were Presence of Interpreter (Interpreter vs. No Interpreter) and Script Format (Scripted with open-ended questions vs. Unscripted). The main results for Interviewers are given in Tables 7 through 9. Specifically, Table 7 provides the MANOVA table for all three Interviewer outcome measures together. Table 8 reports the means and standard deviations of these three measures, by experimental condition, and Figure 3 presents the same means in graphic form. Table 9 provides the ANOVA tables for each of the three outcome measures.

In the MANOVA (see Table 7), significant main effects were found for both Presence of Interpreter $F(3,114)=8.84, \ p<.001, \ \eta^2=.092$, and for Script Format, $F(3,114)=3.87, \ p=.011, \ \eta^2=.189$. ANOVAs were then carried out for each of the three dependent variables to illuminate the MANOVA results. The results of these ANOVAs are discussed in the following paragraphs (see Table 9).
The first and most important dependent measure was Details Reported, the number of correct details that were reported to the Interviewer by either the Interpreter (in the Interpreter condition) or by the Viewer (in the No Interpreter condition). As can be seen in the ANOVA results in Table 9, for this dependent measure, a significant main effect was found for Presence of Interpreter, $F(1,116) = 10.91, p=.001$, $\eta^2=.086$. Specifically, more details were reported to the Interviewer when the Interviewer directly spoke to the Viewer ($M=17.08, SD=4.21$) than when the interview was conducted indirectly through an interpreter ($M=15.08, SD=3.15$). A significant main effect was also found for Script Format, $F(1,116) = 26.78, p<.001$, $\eta^2=.188$. Specifically, more details were reported to Interviewers who began the interview with a script that included open-ended questions ($M=17.65, SD=3.51$) than to Interviewers who did not use a script ($M=14.52, SD=3.52$). Finally, a significant interaction was found for Presence of Interpreter and Script Format, $F(1,116)=5.60, p=.02$, $\eta^2=.046$. Follow up tests conducted using t-tests with a Bonferroni corrected alpha of $p<.0083$ showed a significant difference between No Interpreter and Interpreter Scripted groups, $t(58)=4.37, p<.001$, while No Interpreter and Interpreter Unscripted groups did not significantly differ, $t(58)=.62, p=.54$. There was also a significant
difference between Viewers in the Scripted group \( (M=18.37, SD=3.11) \) and Viewers in the Unscripted group \( (M=15.53, SD=3.53) \), \( t(58)=4.67, p<.001 \), while Interpreters in the Scripted and Unscripted groups did not significantly differ, \( t(58)=2.15, p=.036 \).

The second dependent measure was Details Recalled, the number of details correctly recalled by the Interviewer immediately following the interview. As can be seen in the ANOVA results in Table 9, for this dependent measure there was no significant main effect for Presence of Interpreter, \( F(1,116)=1.68, p=.197, \eta^2=.014 \). The main effect of Script Format was significant, \( F(1,116)=9.52, p=.003, \eta^2=.076 \). Interviewers in the Scripted condition recalled a mean of 12.58 \( (SD=3.13) \) items, and Interviewers in the Unscripted Conditions recalled a mean of 10.85 \( (SD=3.02) \) items. The interaction of Presence of Interpreter with Script Format was not statistically significant, \( F(1,116)=1.39, p=.241, \eta^2=.012 \).

The third dependent measure was Details Recognized, the number of correct “yes” and “no” answers given by the Interviewer on the Memory Questionnaire. As can be seen in the ANOVA results in Table 9, for this dependent measure a marginally significant main effect was found for Presence of Interpreter, \( F(1,116)=3.59, p=.061, \eta^2=.03 \). Specifically, the Interviewer recognized more details in No Interpreter groups \( (M=12.75, SD=3.23) \) than in the Interpreter groups \( (M=11.77, SD=2.76) \). A significant main effect was also found for Script Format, \( F(1, 116) = 13.64, p<.001, \eta^2=.105 \). Specifically, more details were recognized by Interviewers who began the interview with a script \( (M=13.22, SD=2.77) \) than Interviewers who did not have a script \( (M=11.3, SD=3.00) \). No significant interaction was found when Details Recognized was the dependent measure, \( F(1,116)=2.28, p=.134, \eta^2=.019 \).
Table 8

*Means and Standard Deviations of Outcome Variables for Interviewers Only, by Condition.*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details Reported</th>
<th>Details Recalled</th>
<th>Details Recognized</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Interpreter Unscripted</td>
<td>14.80 (3.69)</td>
<td>10.85 (3.00)</td>
<td>11.40 (3.05)</td>
</tr>
<tr>
<td>No Interpreter Scripted</td>
<td>19.37 (3.41)</td>
<td>13.27 (3.11)</td>
<td>14.10 (2.87)</td>
</tr>
<tr>
<td>Interpreter Unscripted</td>
<td>14.23 (3.38)</td>
<td>10.82 (3.14)</td>
<td>11.20 (3.00)</td>
</tr>
<tr>
<td>Interpreter Scripted</td>
<td>15.93 (2.71)</td>
<td>11.88 (3.05)</td>
<td>12.33 (2.41)</td>
</tr>
</tbody>
</table>

*Figure 2.* Interviewers Only: Mean Number of Details Reported, Details Recalled and Details Recognized by Experimental Condition
Table 9

Three Different Measures of Information Reaching the Interviewer, ANOVA

<table>
<thead>
<tr>
<th>Source</th>
<th>F(df)</th>
<th>p</th>
<th>η2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Details Reported</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpreter Present (Interpreter v. No Interpreter)</td>
<td>10.91</td>
<td>0.001</td>
<td>0.086</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>26.78</td>
<td>&lt;.001</td>
<td>0.188</td>
</tr>
<tr>
<td>Interpreter Present x Script Format</td>
<td>5.6</td>
<td>0.02</td>
<td>0.046</td>
</tr>
<tr>
<td>Details Recalled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpreter Present (Interpreter v. No Interpreter)</td>
<td>1.68</td>
<td>0.197</td>
<td>0.014</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>9.52</td>
<td>0.003</td>
<td>0.076</td>
</tr>
<tr>
<td>Interpreter Present x Script Format</td>
<td>1.39</td>
<td>0.241</td>
<td>0.012</td>
</tr>
<tr>
<td>Details Recognized</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpreter Present (Interpreter v. No Interpreter)</td>
<td>3.59</td>
<td>0.061</td>
<td>0.03</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>13.64</td>
<td>&lt;.001</td>
<td>0.105</td>
</tr>
<tr>
<td>Interpreter Present x Script Format</td>
<td>2.28</td>
<td>0.134</td>
<td>0.019</td>
</tr>
</tbody>
</table>

Information Transmission from Viewers through Interpreters to Interviewers

Additional analyses were carried out to better understand what happened to information as it was transmitted at each step of interviews from Viewers through Interpreters to Interviewers. In these analyses, which included groups in the Interpreter condition only, the dependent variables were the number of correct Details Reported by the Viewer to the...
Interpreter, and the number of correct Details Reported to the Interviewer by the Interpreter, with both variables scored from audiotapes.

A mixed ANOVA was carried out with Stage of Interview (Details Reported by Viewer to Interpreter versus Details Reported by Interpreter to Interviewer) as a repeated measure and Script Format as a between-subjects factor (see Figure 3 and Table 10). There was a significant effect of Stage of Interview, $F(1,58)=47.96$, $p<.001$, $\eta^2=.453$. Specifically, Viewers reported significantly more details to the Interpreters ($M=16.95$, $SD=3.61$), than the Interpreters reported to the Interviewer ($M=15.07$, $SD=3.16$). There was also a significant effect for Script Format, $F(1,58)=8.48$, $p=.005$, $\eta^2=.127$. Specifically, participants reported more information ($M=17.15$, $SD=3.13$) in the scripted condition than in the unscripted condition ($M=14.88$, $SD=3.46$).

There was also a significant interaction, $F(1,58)=4.25$, $p=.044$, $\eta^2=.068$. Post-hoc comparison of cell means using Bonferroni-corrected probability values ($p = .05/4 = .0125$) revealed that Viewers in the Scripted group ($M=18.37$, $SD=3.11$) reported significantly more details than Viewers in the Unscripted group ($M=15.53$, $SD=3.53$), $t(58)=4.67$, $p<.001$, but that Interpreters in the Scripted groups ($M=15.93$, $SD=2.71$) did not report significantly more details than Interpreters in the and Unscripted groups ($M=14.23$, $SD=3.38$; ), although there was a trend in this direction, $t(58)=2.15$, $p=.036$. 

51
From Viewer to Interpreter

From Interpreter to Interviewer

Stage of Interview

Figure 3. Reported Details for Interpreter Interviews at Each Stage.

Table 10

Mixed ANOVA to Explore Details Reported At Different Interview Stages

<table>
<thead>
<tr>
<th>Source</th>
<th>F(df)</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage of Interview (Viewer Reports v. Interpreter Reports)</td>
<td>47.96 (1,58)</td>
<td>&lt;.001</td>
<td>0.453</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>8.48 (1,58)</td>
<td>0.005</td>
<td>0.127</td>
</tr>
<tr>
<td>Stage of Interview x Script Format</td>
<td>4.25 (1,58)</td>
<td>0.044</td>
<td>0.068</td>
</tr>
</tbody>
</table>

Interviewers’, Interpreters’, and Viewers’ Memory: Details Recognized

Measures of recognition and recall memory were used to assess how much information participants remembered immediately after completing the interviews. The present section will focus on recognition memory as assessed by the Memory Questionnaire, which consisted of yes/no questions regarding the video of the burglary and car chase. The next section will focus on recall memory.
The number of correct answers on the Memory Questionnaire, called Details Recognized, was analyzed for each of the three roles (Viewers, Interpreters, and Interviewers). Viewers scored an average of 19.45 ($SD=1.86$) Details Recognized or 84.57% correct. Interpreters scored an average of 12.33 ($SD=3.04$) Details Recognized or 53.61%, and Interviewers scored an average of 12.26 ($SD=3.03$) Details Recognized or 53.30% correct.

To further illuminate these findings, participants were then separated into groups according to Presence of Interpreter (No Interpreter vs. No Interpreter), Script Format (Scripted vs. Unscripted), and Role (Viewer, Interpreter, or Interviewer). Mean numbers of Detailed Recognized for the groups are shown in Table 11 and Figure 4.
Table 11

**Means and Standard Deviations for Details Recognized for All Roles and Conditions**

<table>
<thead>
<tr>
<th>Role</th>
<th>No Interpreter</th>
<th>Interpreter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unscripted</td>
<td>Scripted</td>
</tr>
<tr>
<td>Viewers</td>
<td>19.1 (1.67)</td>
<td>19.6 (2.11)</td>
</tr>
<tr>
<td></td>
<td>19.53 (1.76)</td>
<td>19.57 (1.92)</td>
</tr>
<tr>
<td>Interpreters</td>
<td>n/a</td>
<td>11.37 (2.65)</td>
</tr>
<tr>
<td></td>
<td>11.2 (3.00)</td>
<td>12.33 (2.42)</td>
</tr>
<tr>
<td>Interviewer</td>
<td>11.4 (3.05)</td>
<td>14.1 (2.87)</td>
</tr>
</tbody>
</table>

**Figure 4.** Mean Number of Details Recognized by Role and Condition
A 3x2 ANOVA was then performed for groups in the Interpreter Condition only, in which the independent variables were Role and Script Format and the dependent variable was Details Recognized. Groups in the No Interpreter Condition could not be included in this ANOVA because in these groups the Interpreter cell was empty. The ANOVA table for groups in the Interpreter condition is shown in Table 12. A significant main effect was found for Role, $F(2, 174)=176.22, p<.001, \eta^2=.669$. Tukey post-hoc comparison of means tests revealed that the Viewers outperformed both the Interpreters (mean difference=7.22, $p<.001$) and Interviewers (mean difference=7.79, $p<.001$). Specifically, in the Interpreter condition, Viewers recognized an average of 19.55 ($SD=1.83$) details, which was substantially more than the average for Interpreters, which was 12.33 ($SD=3.04$) details, and the average for Interviewers, which was 11.77 ($SD=2.78$) details. Interviewers and Interpreters did not significantly differ (mean difference=.57, $p=.440$). There was also a main effect for Script Format, $F(1,174)=7.50, p=.007, \eta^2=.041$, such that the participants recognized more details in the Scripted ($M=15.06,$ $SD=4.09$) than Unscripted ($M=14.03,$ $SD=4.64$) condition. There was no significant interaction, $F(2,174)=2.13, p=.122, \eta^2=.024$.

A similar ANOVA was then performed for groups in the No Interpreter condition only. The ANOVA table is shown in Table 12. A significant main effect was found for Role, $F(1,116)=211.19, p<.001, \eta^2=.645$. Specifically, Viewers recognized an average of 19.35 ($SD=1.90$) details, which was substantially more than the average for Interviewers, who recognized an average of 12.75 ($SD=3.23$) details. There was also a main effect for script, $F(1,116)=12.41, p=.001, \eta^2=.097$. Specifically, more details were recognized in the Scripted conditions ($M=16.85,$ $SD=3.73$) than in the Unscripted conditions ($M=15.25,$ $SD=4.58$). There was a significant interaction, $F(1,116)=5.87, p=.017, \eta^2=.048$. Follow up tests conducted using t-
tests with a Bonferroni corrected alpha of \( p < 0.0083 \), showed that Interviewers in the Scripted group remembered significantly more details than \((M = 14.1, SD = 2.87)\). Interviewers in the Unscripted group \((M = 11.4, SD = 3.05)\), \(t(58) = 3.53, p = 0.001\). No significant difference was found between Viewers in the Scripted group \((M = 19.6, SD = 2.11)\) and Viewers in the Unscripted group \((M = 19.1, SD = 1.67)\), \(t(58) = 1.02, p = 0.313\).

Table 12

<p>| Details Recognized by Role and Script for Interpreter and No Interpreter Groups, ANOVA |</p>
<table>
<thead>
<tr>
<th>Source</th>
<th>( F(df) )</th>
<th>( p )</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpreter Groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role (Viewer, Interpreter, Interviewer)</td>
<td>176.22 (2,174)</td>
<td>&lt;.001</td>
<td>0.669</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>7.50 (1,174)</td>
<td>0.007</td>
<td>0.041</td>
</tr>
<tr>
<td>Role x Script Format</td>
<td>2.13 (2,174)</td>
<td>0.122</td>
<td>0.024</td>
</tr>
<tr>
<td><strong>No Interpreter Groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role (Viewer v. Interviewer)</td>
<td>211.85 (1,116)</td>
<td>&lt;.001</td>
<td>0.645</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>12.41 (1,116)</td>
<td>0.001</td>
<td>0.097</td>
</tr>
<tr>
<td>Role x Script Format</td>
<td>5.87 (1,116)</td>
<td>0.017</td>
<td>0.048</td>
</tr>
</tbody>
</table>

**Interviewers’, Interpreters’, and Viewers’ Memory: Details Recalled**

Analyses similar to those reported in the previous section were repeated using Details Recalled as the memory measure (the number of correct items freely recalled by participants immediately following the conclusion of the interview). The number of correct Details Recalled was analyzed for each of the three roles (Viewers, Interpreters, and Interviewers). Viewers
recalled an average of 13.70 ($SD=3.64$) details. Interpreters recalled an average of 10.94 ($SD=3.10$) details, and Interviewers recalled an average of 11.71 ($SD=3.18$).

To further illuminate the findings regarding the number of details recalled, participants were again separated into groups according to Presence of Interpreter (No Interpreter vs. No Interpreter), Script Format (Scripted vs. Unscripted), and Role (Viewer, Interpreter, or Interviewer). Mean numbers of Detailed Recalled for the groups are shown in Table 13 and Figure 5.
Table 13

*Means and (SD) for all Participants on Free Recall by Role and Condition*

<table>
<thead>
<tr>
<th>Role</th>
<th>No Interpreter</th>
<th>Interpreter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unscripted</td>
<td>Scripted</td>
</tr>
<tr>
<td>Interviewer</td>
<td>10.85 (3.00)</td>
<td>13.27 (3.11)</td>
</tr>
<tr>
<td>Interpreter</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Viewer</td>
<td>12.90 (3.70)</td>
<td>15.03 (3.41)</td>
</tr>
</tbody>
</table>

*Figure 5. Mean Number of Details Recalled by Role and Condition*
A 3 x 2 ANOVA was conducted for Interpreter groups only, with Role (Viewers vs. Interpreters vs. Interviewers) and Script Format (unscripted vs. scripted) as independent variables. Interpreter groups were excluded from the ANOVA because they did not have any participants in the Interpreter role. As can be seen in Table 14, there was a main effect for script, $F(1, 173)=9.95, p=.002, \eta^2=.054$. That is, Viewers, Interpreters, and Interviewers in the scripted condition recalled more details than Viewers, Interpreters, and Interviewers in the unscripted condition ($M=12.67, SD=3.31; M=11.16, SD=3.43$). There was also a main effect for role, such that Viewers ($M=13.45, SD=3.60$) recalled more details than both Interpreters ($M=10.94, SD=3.10$) and Interviewers ($M=11.35, SD=3.11$), $F(2, 173)=10.56, p<.001, \eta^2=.109$. When Tukey post hoc tests were conducted, the Interpreters and Interviewers did not differ from each other, mean difference=.409, $p=.767$, while the Viewers recalled more details than both the Interpreters, mean difference=2.509, $p<.001$ and Interviewers, mean difference=2.100, $p=.001$. There was no significant interaction, $F(2, 173)=.257, p=.774, \eta^2=.003$.

A similar 2x2 ANOVA was conducted for No Interpreter Groups only, with script format (unscripted vs. scripted) and role (Viewer vs. Interviewer) as independent variables and Details Recalled as the dependent variable. As can be seen in Table 14, there were main effects for both script, $F(1, 114)=13.91, p<.001, \eta^2=.108$, and role $F(1, 114)=9.80, p<.001, \eta^2=.002$, but there was no interaction $F(1,114)=.055, p=.814, \eta^2=0$. To be more specific Viewers recalled more details than Interviewers ($M=13.95, SD=3.69; M=12.08, SD=3.27$). Viewers and Interviewers in the scripted condition recalled more details than Viewers and Interviewers in the unscripted condition ($M=14.14, SD=3.35; M=11.89, SD=3.50$).
Table 14

Details Recalled by Role and Script for No Interpreter and Interpreter Groups, ANOVA

<table>
<thead>
<tr>
<th>Source</th>
<th>F(df)</th>
<th>p</th>
<th>η2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpreter Groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role (Viewer, Interpreter, Interviewer)</td>
<td>10.56 (2,173)</td>
<td>&lt;.001</td>
<td>0.109</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>9.95 (1,173)</td>
<td>0.002</td>
<td>0.054</td>
</tr>
<tr>
<td>Role x Script Format</td>
<td>.26 (2,173)</td>
<td>0.774</td>
<td>0.003</td>
</tr>
<tr>
<td><strong>No Interpreter Groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role (Viewer or Interviewer)</td>
<td>9.80 (1,114)</td>
<td>0.002</td>
<td>0.079</td>
</tr>
<tr>
<td>Script Format (Scripted v. Unscripted)</td>
<td>13.91 (1,114)</td>
<td>&lt;.001</td>
<td>0.109</td>
</tr>
<tr>
<td>Role x Script Format</td>
<td>0.055 (1,114)</td>
<td>0.814</td>
<td>0</td>
</tr>
</tbody>
</table>

Retention of Information in Memory, by Interpreters and Interviewers

Analyses were then carried out to address the question: What proportion of information reported to Interviewers and Interpreters did they retain in memory, as assessed using the free recall measure? To begin to address this question, an Interpreter Retention Rate for each Interpreter was calculated by using the following equation: Number of Details Recalled by Interpreter/Number of Details Reported to Interpreter. As can be seen in Table 15, Interpreters in the Scripted condition retained 64.39% ($SD=13.31$) of the information they received, and Interpreters in the Unscripted condition retained 66.09% ($SD=17.47$) of the information they received, with no significant difference between these two groups, $t(57)=-.421$, $p=.675$.

Similarly, an Interviewer Retention Rate for each Interviewer was calculated by using the following equation: Number of Details Recalled by Interviewer/Number of Details Reported to
Interviewer. Across all groups, the Interviewer retention rate was 74.01% ($SD=16.68$). Retention Rates are reported by experimental condition in Table 15. As can be seen, there were no significant main effects for interpreter presence, $F(1,115)=2.71$, $p=.102$, $\eta^2=.023$, or script format, $F(1,115)=1.81$, $p=.181$, $\eta^2=.015$, and no significant interaction, $F(1,115)=.197$, $p=.658$, $\eta^2=.002$. For the Interpreter Groups a comparison of Retention Rates showed that the retention rate of Interviewers ($M=76.35\%$, $SD=19.13$) was higher than the retention rate of Interpreters ($M=65.23$, $SD=15.38$), which was a statistically significant difference, $t(58)=-3.47$, $p=.001$. This finding suggests that acting as an Interpreter may interfere with Interpreters’ immediate recall for the information they have transmitted.

Table 15

<table>
<thead>
<tr>
<th></th>
<th>memory retention rates and (SD) by role and condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Memory Retention Rates and (SD) by Role and Condition</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No Interpreter</td>
</tr>
<tr>
<td></td>
<td>Unscripted Scripted</td>
</tr>
<tr>
<td>Interviewer</td>
<td>74.23% (13.45)</td>
</tr>
<tr>
<td>Interpreter</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>77.88% (20.82)</td>
</tr>
<tr>
<td></td>
<td>66.09% (17.47)</td>
</tr>
</tbody>
</table>

Relationship Between Interview Length and Amount of Information Received

Analyses examined whether longer interviews resulted in more information being transmitted to the interviewer. Interviews ranged in length from 1 min 54 sec to 17 min 36 sec, with an average of 7 min 24 sec ($SD=4$ min 8 sec). No Interpreter Unscripted Interviews lasted an average of 4 min 32 sec ($SD=3$ min 36 sec). No Interpreter Scripted interviews lasted about 40 seconds longer, at an average of 5 min 13 sec ($SD=1$ min 58 sec). Interpreter Unscripted interviews lasted an average of 9 min 20 sec ($SD=3$ min 45 sec) and Interpreter Scripted
interviews lasted about a minute longer than that, at an average of 10 min 22 sec ($SD = 3$ min 43 sec).

The correlation between interview length and the amount of information received by the Interviewer (Details Received, as scored from audiotapes) is shown in Table 16 for each experimental condition. As can be seen, the relationship between interview length and Details Received was small and non-significant in the No Interpreter Scripted, $r(28) = .26, p = .159$, and Interpreter Scripted conditions, $r(28) = .28, p = .319$. However, there was a moderate correlation between interview length and Details Received in both the No Interpreter Unscripted $r(28) = .56, p = .001$, and Interpreter Unscripted conditions, $r(28) = .44; p = .015$. Thus interview length tended to be more strongly associated with the amount of information received by interviewers when no script was used.

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Interpreter Unscripted</td>
<td>30</td>
<td>0.56</td>
<td>0.001</td>
</tr>
<tr>
<td>No Interpreter Scripted</td>
<td>30</td>
<td>0.26</td>
<td>0.159</td>
</tr>
<tr>
<td>Interpreter Unscripted</td>
<td>30</td>
<td>0.44</td>
<td>0.015</td>
</tr>
<tr>
<td>Interpreter Scripted</td>
<td>30</td>
<td>0.28</td>
<td>0.319</td>
</tr>
</tbody>
</table>
Discussion

Four findings of the present study are particularly noteworthy. First, this study replicated Pruss (2007) in that the presence of Interpreters significantly reduced the amount of information that the Interviewers received. Second, Viewers reported significantly more information when they were interviewed using scripts with open-ended questions than when no script was used. Third, Interviewers in the No Interpreter condition (but not the Interpreter condition) received significantly more information when they used scripts with open-ended questions than when they did not use such scripts. Fourth, although more information was reported and received when open-ended scripts were used; the scripted interviews did not take much more time than unscripted interviews. Each of these four points will be discussed in detail in the following sections, followed by a discussion of the limitations and practical implications of the study.

The Use of Interpreters Had a Negative Effect on the Amount of Information Transmitted During Interviews

MANOVA and ANOVAs in the present study confirmed that Interviewers extracted less information when they used Interpreters than when they directly interviewed Viewers. This finding is consistent with results reported by Pruss (2007), which the present study was intended to replicate. This finding is also consistent with previous research on patient, interpreter and doctor conversations (Davidson, 2000; Garcés, 2005). These and other studies (Friedland & Penn, 2001; Murray & Wynne, 2001) often cite interruptions and unequal turn-taking in interviews with interpreters as the main reason that information is lost. However, in the present study it was not possible for Interviewers to interrupt the dialogue between Interpreters and Viewers, so the loss of information could not be explained by interruptions or unequal turn-taking. It may be that the loss of information was due to omissions of information, which
Agrifoglio (2004) reported to be common in consecutive interpretation. Napier and Barker (2004) also reported omissions as a source of error in interviews with interpreters.

The negative effect of using an interpreter did not reach the statistically significant level for all dependent variables. The effect was strongest when Details Reported to the Interviewer was the outcome variable. The effect was only marginally significant when Details Recognized on the Memory Questionnaire was the outcome variable, and the effect was weak or non-existent when Details Recalled by the Interviewer was the outcome variable.

While these dependent variables overlap substantially, they are not measuring exactly the same phenomenon. In the present study, the Reported Details variable reflected the number of correct pieces of information that the Viewer or Interpreter reported to the Interviewer. However, simply because these pieces of information were reported to the Interviewer and were therefore available to be encoded into memory, there was no guarantee that the Interviewer actually encoded them or could later recall them. The Free Recall task asked the Interviewer to report all the details from the interview immediately after it had occurred. Here the Interviewer generated information that had been stored in memory. With the Memory Questionnaire the Interviewer was asked to identify whether or not certain pieces of information were correct. Both the Details Recalled and Details Recognized variables were dependent on the Interviewer’s memory, while the Details Reported was not.

A study by Campos and Alonso-Quecuty (2006) may shed some light on the present negative findings regarding Details Recalled. These researchers had participants listen to a recorded conversation that was approximately 15 min long, which was also the same maximum time allotted for interviews in the present study. When the participants of Campos and Alonso-Quecuty engaged in a Free Recall task immediately following the conversation, they
remembered an average of 14 details. This is consistent with our findings that Interviewers’ average number of Details Recalled was 11.71 ($SD=3.18$). This is also consistent with Miller, deWinstanley, and Carey's (1996) study in which participants had an average recall of 13.29-20.20 idea units immediately after participating in a 15-20 min conversation. It may be that there is a natural ceiling on the amount of information that untrained individuals typically recall from a conversation. Thus, in the present study Interviewers may have received more information than they could recall. This claim is substantiated by calculating the Interviewer retention rate, which did not reach close to 100% in any of the conditions.

It appears that this information loss may be due to short term memory processes of the Interpreters as Gile (1998) and Baddeley (1986) described. The participants rated their own Spanish and English skills, and were assigned to roles based those ratings. After examining the ratings of the language skills, participants were indeed assigned according to their ratings as intended. Therefore it does not seem that the switch between Spanish and English languages is contributing to the information loss.

When Details Reported was examined, Viewers passed on more information to the Interpreters, than the Interpreters did to the Interviewers. This was true for scripted and unscripted conditions. Details Reported does not rely on the memory of the participants, and provided the most objective measure of the interpretation process.

Interpreter retention rate was 65.23%, which was lower than the average retention rate of 74.01% for Interviewers, which indicated memory was more of a problem for Interpreters than Interviewers. It is interesting to compare the Details Recalled for the Interpreters and Interviewers, because it is logical that if the Interpreters receive more information than the Interviewers, then the Interpreters should recall more, but the Interpreters did not recall
significantly more than the Interviewers. Although the premise was not tested, it might be that the process of reformulating the message or the length of the message used available working memory and left the Interpreters unable to recall more details than Interviewers (Baddeley, 2000; Christoffels & de Groot, 2004; Gile, 1998).

It is also important to note that even for the Details Reported variable, the negative impact of using an interpreter was inconsistent (see Table 8 in the Results section). Specifically, when open-ended scripts were used, Interviewers who conducted interviews through Interpreters extracted only about 80% as much information as Interviewers who interviewed Viewers directly (15.93 details versus 19.37 details). However, when no script was used, Interviewers who conducted interviews through Interpreters extracted almost the same amount of information as Interviewers who interviewed Viewers directly (14.23 versus 14.80 details). Thus, although the findings of Pruss (2007) and the present study leave little doubt that information loss occurs when Interpreters are used, it appears that under some circumstances this loss can be rather small.

*Viewers Reported More Information When Open-Ended Scripts Were Used*

The script used in this study started off with a quick introduction and an instruction to report all information. It was followed by four open-ended questions. Scripted interviews had a much larger impact on the conversation dynamic than the presence of an interpreter. Viewers reported approximately 30% more details when the script was used than when no script was used, and this effect persisted whether or not the interview was conducted through an Interpreter.

The open-ended script was based on scripts from previous studies, which have also found a positive impact on the amount of information extracted (Davis et. al., 2005; Geiselman, et al., 1985; Lamb et. al., 2000). However, before the present data were collected, it was unclear
whether open-ended questions would produce beneficial effects in interviews with interpreters. There was a possibility that open-ended questions would produce overly long statements from Viewers, taxing the ability of Interpreters to remember and convey everything they heard.

On the surface, Interpreters seemed to cope well with the use of open-ended questions. Interestingly two Interpreters in the scripted condition spontaneously asked the Viewer to take pauses so that the Interpreter could better translate information to the Interviewer. At least in these two cases, the long responses generated by the scripted interviews were apparently too long for the Interpreters to hold in short term memory (Gile, 1998). Some Interpreters while transferring information back to the Interviewer, asked for clarification from the Viewers on colors, numbers, or actions.

In settings outside the laboratory, consecutive interpreters are trained to take notes, and they often develop their own shorthand in order to recall target speech (Dam, 2004). Perhaps the Interpreters in the present study would have passed on more of the information they received from the Viewers had they been permitted to take notes. On the other hand, it is possible that taking notes would hinder or interrupt the process of listening to the target message and lead to omissions based on not encoding information rather than forgetting to pass it along.
Interviewers in No Interpreter Groups Received More Information When Open-Ended Scripts Were Used

As discussed in the previous session, Viewers reported more information when a script was used. It follows logically, of course, that in No Interpreter groups, the Interviewers also received more information when a script was used.

However, in the Interpreter groups, increased reporting by Viewers in response to scripts does not necessarily imply that Interviewers receive more information. For example let's say that Viewers in the Interpreter Unscripted condition report two pieces of information, whereas Viewers in the Interpreter Scripted condition report six pieces of information. It is possible the Interpreter in the Scripted condition will become overloaded and therefore pass on only two pieces of information, so that the advantage of using a script will be lost. In fact, as already discussed, even though the Interpreters in the Scripted condition passed on more information than Interpreters in the Unscripted condition, this difference was not statistically significant. Thus it appears that the advantage for Interviewers of using a scripted interview with open ended questions was largely or entirely lost when interviews were conducted through Interpreters.

These findings should not be understood to mean that the use of an open-ended script is valueless when interviews are conducted through an interpreter. In fact, the open-ended script in the present study successfully extracted more information from Viewers, even though not all of this information was successfully passed on by Interpreters to the Interviewers. One way to preserve the extra information extracted from Viewers would be to record interviews and replay them later, to identify information that may have been lost during the interpretive process.
Scripted Interviews Did Not Take Much More Time Than Unscripted Interviews

Police investigators often cite time concerns as a reason why interview techniques such as the CI are not used or are used incorrectly when they interview eyewitnesses (Kebbell & Wagstaff, 1996). In the present study, interviews conducted with Interpreters were longer than interviews conducted without interpreters, because of the time necessary to relay information. However, the scripted interviews with open ended questions were only 40 to 60 sec longer on average than unscripted interviews. Thus, interviewers who used scripts elicited substantially more information than interviewers who didn’t use scripts, but in approximately the same amount of time. Duration of the interview was correlated with information received in the unscripted conditions, which suggests that the longer the unscripted interviews lasted, the more information the Interviewer received, but this same pattern was not observed for the scripted interviews. It is possible that the most relevant information from the scripted interviews came in the first part of the interview with the open ended questions and longer descriptions by the Viewer, rather than through a series of follow-up questions (if any were used).

Limitations of the Current Study

The present study had several limitations. First, the Interviewers were not in the same room as the Interpreters and Viewers. This physical separation did not reflect the way that investigative interviews are usually conducted in the real world and could have affected the interview dynamic. In face-to-face contact, more interruptions might have occurred and resulted in patterns where the Interpreters excluded the Interviewers, or Interviewers interfered with the Interpreters (Hatton & Webb, 1993). It is also possible that all people in the same room would create the feeling of a dyad that can be conducive to sharing information (Dubslaff & Martinsen, 2005; Taylor, De Soto, & Lieb, 1979). A future study could possibly use a series of headsets so
that participants could all be in the same room and interact with each other, but without the Interviewers being able to hear directly what the Viewers are saying. In non-Western cultures non-verbal communication, body language, and words not said are especially important (Bos & Soeters, 2006). If the people involved in the conversation are not in the same room, this leaves more room for misunderstanding between the parties.

The Interpreters used in this study were not professionals and were not formally trained to serve in that role. On the other hand, the Interpreters’ self-rated proficiency in Spanish and English was valid (see Tables 2, 3, and 4). Furthermore, 47 (78.33%) of the 60 Interpreters indicated on a questionnaire that in the past they had informally served as an interpreter for someone they knew. Of these participants several acted as interpreters for phone conversations, in which the parties were linked through the phone but could not see each other. Thus, the task of serving as an Interpreter was not a novel one for most of the Interpreters.

*Future Research*

This study focused on Spanish-English interpreters. Future studies may examine interpreters for other language combinations. Some language combinations might be easier or more difficult to translate based on word order, similarity of the source and target language, and complexity of the message. For example, Nakane (2007) explained the difficulty of interpreting English-Japanese statements in a legal interrogation because the word order of sentences in Japanese and English is reversed, and also because some words available in English are not directly available in Japanese. Problems in English-Japanese interpretation can also arise in legal settings because of the difficulty of interpreting legal concepts from one language to another, since cultural differences in the legal systems carry over to the available vocabulary in each language.
Future research should also pay more attention to the training and motivation of participants who play the role of Interviewers. In the present study, Interviewers in the Scripted conditions often stopped questioning immediately after the script ended, because they couldn't think of anymore questions. Similarly, Interviewers in the Unscripted conditions ended their interviews abruptly with "OK, I can't think of anymore questions." However, after seeing the Memory Questionnaire, a large number of Interviewers stated "I should have asked more questions." Their comments suggest that Interviewers were not as familiar with their task as Interpreters were. Police are trained to ask certain routine questions regarding appearance of perpetrators, characteristics of vehicles, and other important details. Perhaps Interviewers in future studies can be given more explicit directions regarding the type of information that they should gather, or they can complete a brief training such as police receive. It is possible that in future studies Interviewers can be provided with incentives to gather more information.

The present study and the previous one by Pruss (2007) focused on interviews in which the witnesses/viewers were cooperative and reporting information that was not of particular personal importance to them. Many important interviews of eyewitnesses or in medical settings are of this type. In these types of interviews, trained interviewers are often paired with untrained interpreters, such as the husbands in the study by Garcés (2005). These interpreters tend not to follow conversation turn-taking rules and thus prevent important information from being communicated between the Interviewer and eyewitness/patient.

While it would seem that having a trained interpreter would solve this problem, this does not solve all the problems. There are several areas to be explored when trained Interviewers and Interpreters work together. As the United States military increases its presence abroad interpreters increasingly work with soldiers. While some of these interpreters are interpreters that
come with the troops, most of the interpreters are from the local population. The local
interpreters with more education and better language skills are assigned to more complex tasks.
Again the critical role of trust becomes an issue (Edwards et al., 2005). The interpreters involved
in peace-keeping missions in Bosnia and Afghanistan reported that they felt trusted as language
and cultural brokers and for security reasons they understood why they had to go through
checkpoints before entering the military base. They felt ostracized by the military at the same
time, because they could not enter private quarters, shop at the duty free centers, or receive the
same health care as the people they worked with daily. The interpreters were stuck between two
worlds as they were shunned by the local population because of their higher pay or because they
were seen a traitors, and yet were not afforded the same privileges as the soldiers even though
they worked side by side (Bos & Soeters, 2006). Interpreters in Afghanistan even kept their
interpreter occupation a secret because they feared for their lives. Such dynamics could have
important implications for the peace keeping mission at hand and how the soldiers and
interpreters interact with each other. With Homeland Security an important issue, it would be
relevant to expand the current research to examine military and law enforcement interrogations.
If interrogations are taking place after a long time delay from the event of importance, the
scripted questions become more important because of potential factors that could interfere with
the original memory.

Practical Implications

The findings of the present study have at least two practical implications. First, this study
highlights the importance of taping all interviews with eyewitnesses whether or not an interpreter
is involved. In the present study, it was found that information transmitted to Interviewers did
not necessarily find its way into memory, at least in a form that could be recalled or recognized
later. Memory for conversations is weak, especially after a delay (Campos & Alonso-Quecuty, 2006). In addition, if an interpreter is involved, a tape recording allows an interview to be played back at a later time in order to check for any unconscious omissions or words that might not have been translated properly because of the time constraints inherent in the interpreting task.

Second, the present findings confirm the value of using open ended questions in forensic interviews. Viewers in the present study who were interviewed with an open-ended script reported approximately 30% more information than Viewers who were interviewed without such a script, and this advantage persisted whether or not the interview was conducted through an Interpreter. This substantial gain in information was obtained without substantially increasing the length of interviews. Thus, the present findings clearly show that the use of open-ended questions can increase the informational yield from interviews in a time-efficient manner.

The use of open ended questions can prove beneficial in another manner as well. Information provided in response to open-ended questions is more likely to be accurate than responses provided in response to close ended questions because the witness recalls from memory, rather than answering based on a series of choices provided by the Interviewer (Lamb et. al., 2000).

Although the present findings support the use of open-ended questions, they also carry a caveat: In the present study, Interviewers in the Interpreter Scripted condition did not receive more information than Interviewers in the Interpreter Unscripted condition, even though Viewers in the Interpreter Scripted condition reported more information than Viewers in the Interpreter Unscripted condition. In other words, although the open-ended questions extracted more information, this “bonus” information was lost or overlooked during the interpretive process. These findings strongly suggest that it is important not only to record interviews, but also to
review the recordings afterwards, to identify information that may have been lost or overlooked while the interview was in progress.
References


Appendix A

1. What language do you consider your stronger language overall?
   _____ English    _____ Spanish    _____ Mixed English and Spanish

2. Please indicate which statement best describes your spoken proficiency in Spanish and English.
   a. I speak only English.
   b. I speak English, but I do not speak Spanish fluently.
   c. I speak both languages fluently, but my English is much better.
   d. I speak both languages fluently, but my English is a little better.
   e. I speak English and Spanish with equal fluency.
   f. I speak both languages fluently, but my Spanish is a little better.
   g. I speak both languages fluently, but my Spanish is much better.
   h. I speak Spanish, but I do not speak English fluently.
   i. I speak only Spanish.

3a. At what age did you begin to learn English?
3b. At what age did you begin to learn Spanish?
3c. Do you sometimes mix English and Spanish? _____ Yes    _____ No
   If yes, at what age did you begin to mix them? _____

4. Do you speak or have you studied any other languages? _____ Yes    _____ No
   Language:___________ Age learned _____ Fluent? _____ Yes    _____ No
   Language:___________ Age learned _____ Fluent? _____ Yes    _____ No

5. Over the past month what percentage of the time have you spoken
   English?    ________
   Spanish?    ________
   Mixture?    ________
   Other? (please specify__________) ________
   Total    100%
The next set of questions will use the scale below. You should circle the number that corresponds to your skill levels in Spanish and English.

English 1----2----3----4----5----6----7 Spanish
1= a strong advantage for English 5= a slight advantage for Spanish
2= a moderate advantage for English 6= a moderate advantage for Spanish
3= a slight advantage for English 7= a strong advantage for Spanish
4= equal skill in both languages

6. What language are you more skilled in for:
   a. speaking?  E = S
   b. listening comprehension?
   c. reading?
   d. writing?
   e. pronunciation/accent?
   f. spelling?

7a. In which language do you have the largest vocabulary?  
7b. In which do you make fewer grammatical errors?
Vita

Nicole Pruss, daughter of Lucille Alimecco, was born in Somerville, New Jersey and raised in Hillsborough, New Jersey. After she attended Hillsborough High School, she moved to San Antonio, Texas to attend Trinity University from 1999-2003. She received her B.A. in Psychology with a minor in Spanish. While she was there she studied memory aids.

After leaving San Antonio, she came to El Paso, Texas to attend the Legal Psychology program. While at University of Texas at El Paso she researched lineup instructions, and interpreters in forensic interviews. She taught a General Experimental Lab in the Psychology Department. She presented posters at the American Psychology Law Society, and Society for Applied Research in Memory and Cognition. Nicole also completed summer internships with the State of Connecticut and the State of New Jersey. She will apply to applied jobs in research, statistics and program evaluation.

Permanent Address: PO Box 2485
Flemington, NJ 08822

This dissertation was typed by: Nicole Pruss