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Effects of Suggestive Questioning on Women's Self -Report of Pain Information Following Colposcopy.

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EFFECTS OF SUGGESTIVE QUESTIONING ON WOMEN'S SELF-REPORT OF PAIN INFORMATION FOLLOWING COLPOSCOPY

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
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in

The Department of Psychology

by
Jodie Rabalais Guth
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DEDICATION

To my daughters,
Hannah Grace and Hailey Celise,
whose impending arrivals
during the course of this project
motivated me to complete it.

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ABSTRACT

This study examined the effects of suggestive questioning on women's retrospective ratings of pain and anxiety experienced during colposcopy. The wording of questions was varied between participants (Pain Suggesting, Pain Denying, or No Suggestion). Number of recall sessions was also varied between participants in that some participants completed two ratings (Immediate and Delayed Recall) while others completed only one rating (Delayed Recall). Trait anxiety, pain severity at the time of the memory task, and medical procedure (whether or not the patient underwent a biopsy) were included in the analyses as covariates. Ratings of sensory and affective pain severity as well as pain frequency were the primary dependent variables in MANCOVA. Survey information was also collected regarding patients' suggestions for improving compliance with medical follow-up. Results indicated that the multivariate Suggestion effect was weak at Delayed Recall ($p<.077$) when the entire sample was included, but was highly significant when participants were excluded who were either incorrect or unsure as to whether or not they had undergone a biopsy ($p<.005$). Specifically, suggestive information was found to significantly alter ratings of affective pain severity in the direction of the suggestive information. No main effect of Number of Recall Sessions was noted, nor was there a significant Suggestion by Number of Recall Sessions interaction. Correlational data indicated significant associations between pain ratings and anxiety, but the relationship between current pain and retrospective ratings was not supported. Survey data indicated that women want more information about what to expect during colposcopic examination. Problems with the study are discussed, and suggestions for practical applications of the findings are offered.

INTRODUCTION

The relationship between memory and emotion has been in the spotlight of academic and public interest in recent years, largely due to allegations that memories of childhood trauma can be forgotten and later "recovered" in adulthood (Loftus, 1993; 1997a). Debate continues within medical and legal arenas as to whether accurate memories can truly be "delayed," or whether allegedly delayed memories are largely the products of misinformation and/or suggestion (Wakefield & Underwager, 1992). A result of the ongoing controversy is that memory researchers have continued to make advances in studying the accuracies and inaccuracies of memory for meaningful, emotional events. Innovative methodologies have been developed to examine the role of suggestive information on memory reports, and these are allowing increased generalizability relative to previous decades of memory research (Loftus, 1997a).

The research presented here addresses the accuracy of memory for a meaningful, naturally occurring experience. Women undergoing a screening procedure for cervical cancer were questioned about their pain experiences, and memory reports were examined as a function of the manner in which the questions were asked. As will be discussed, a substantial body of evidence points to the inaccuracy of human memory and its susceptibility to suggestive or misleading information (i.e., Loftus, 1993; 1997; Loftus, Donders, Hoffman, & Schooler, 1989; Zaragoza & Lane, 1994). Not only have memories of mundane details been altered by suggestive questioning, but entire events have been mistakenly "recalled" after the untrue events were suggested to the participants (Loftus, 1997a).

In the review that follows, I attempt to incorporate relevant findings from several domains of study to address the impact of suggestive questioning on participants' retrospective ratings of pain. Literature regarding emotion and memory, hypnosis, suggestibility, and memory for pain is reviewed, and a rationale for using colposcopy as a target of study is provided. I also address some of the pertinent ethical concerns relevant to this type of research and delineate the development of my study methodology based on findings from preliminary research. Finally, I present the results of the study and offer a discussion with suggestions for future work in this area. It is hoped that examining memory processes in the manner presented here will further our understanding of factors that increase or decrease the accuracy of memory for pain.

EMOTION AND MEMORY

Controversy regarding "delayed" memories has called into question the issue of whether highly emotional information is processed and remembered differently than nonemotional information. Since Freud's (1915/1957) early writings, the notion of repression has referred to the separation from conscious awareness of memories that are painful or threatening to the individual (as discussed in Holmes, 1990). Though widely accepted among mental health professionals as a common phenomena, repression has not been empirically supported (Holmes, 1990). Dissociation is another concept used to explain the ways that traumatic information is processed by the individual. A variety of definitions of dissociation have been offered, including mental detachment from the self or surroundings, lack of integration between mental processes, or a protective response in which consciousness is split into overt (conscious) and covert (nonconscious) states (Cardena, 1994). Like repression, however, the concept of dissociation can be explained without reference to nonconscious processes and has not been well supported in the empirical literature (Spanos, 1986).

The literature does indicate that memory for emotional information differs from memory for non-emotional information (Christianson, 1992a; Christianson & Loftus, 1987, 1991; Heuer & Riesberg, 1990). Memory for childhood sexual abuse, for instance, is commonly forgotten by persons with documented cases of abuse (Williams, 1994). Aspects of combat-related traumatic events are also poorly recalled by veterans (Southwick, Morgan, Nicolaou, & Charney, 1997). Explanations for these findings, however, are not limited to

repression or dissociation but include a wide range of possibilities including normal forgetting, intentional avoidance of unpleasant thoughts, and use of ineffective retrieval cues (Bower, 1990; Loftus, Garry, & Feldman, 1994).

Another difference between emotional and non-emotional memories is the perceived vividness of the memories. Emotional events have been consistently reported by participants as being more vividly recalled than nonemotional events (Christianson & Loftus. 1990; Reisberg, Heuer, McLean, & O'Shaughnessy, 1988; Robinson, 1980). "Flashbulb memories" (Brown & Kulik, 1977), for example, are memories for specific, highly emotionally charged events such as the assassination of President Kennedy (Brown & Kulik, 1977), the Challenger explosion (Bohannon, 1988), and the assassination attempt on President Reagan (Pillemer, 1984). Participants generally report having vivid memories of these events and having high levels of confidence in the accuracy of their memories. The relative increase in perceived vividness has been attributed to physiological processes involved in memory storage. Neurobiological advances have supported that emotionally charged experiences result in "stronger" memories due to activation of hormonal and neuronal mechanisms (McGaugh, 1992). However, the vividness of a memory is not commensurate with its accuracy.

Follow-up investigations of "flashbulb" memory data have indicated that vivid memories may in fact be inaccurate. Neisser and Harsch (1992) reexamined participants' memory reports of the Challenger explosion one year after the event and compared participants' responses to the original data collected immediately after the accident. None of the participants' memories were entirely accurate, and approximately one third of the

memories were grossly different from the original accounts. Another finding about emotional memories is that details of emotional events are consistently less accurately recalled than the details of neutral events. Loftus and Burns (1982), for instance, found that participants were less accurate in their memory reports about a traumatic film than were participants who viewed a neutral version of the same film (depicting the shooting of a young boy). Likewise, Kebeck and Lohaus (1986) found that memory for detail was more impaired among participants who viewed an arousing version of a film relative to those who viewed a neutral version of the story (depicting an argument between a student and a teacher). The finding was true for both immediate and delayed recall. Thus, memories for highly emotional events may be experienced as vivid, although vividness does not insure accuracy.

One explanation for inaccuracies in memory for highly emotional information is that emotional stress decreases available memory processing so that details of the event are less well remembered (Christianson, 1992b). This relationship between emotion and memory, however, is more complex than is often noted in the literature. Christianson (1992b) has proposed that memory is the result of several interacting factors, including the type of eyewitnessed event, type of detail information, time of the memory test, and type of retrieval cues. Further, Yuille and Cutshall (1986) reported findings that challenged the notion of memory's susceptibility to misleading information. Thirteen eyewitnesses were questioned 4 to 5 months after a shooting incident. Misleading questioning had no effect on witness reports of details of the incident. This is inconsistent with previous findings that misleading information exerts its greatest memory-impairing effect after long delays (Loftus, 1992).

Other researchers have also found high levels of memory accuracy following extended time intervals (Christianson & Hubinette, 1993), and repeated testing has been found to improve memory for negative emotional information (Bornstein, Liebel, & Scarberry, 1998).

THE POWER OF SUGGESTION

Hypnotic Suggestion. Hypnotic techniques have been discussed within the medical community since the early 19th century, but were not accepted into formal medical education in the United States until 1958 (Hilgard, 1986). Since that time, clinical techniques and applications have proliferated. Hypnotic induction techniques generally involve a health care professional or researcher giving suggestions to a patient or participant that he or she experience changes in perceptions, sensations, thoughts or behavior. Most induction procedures involve suggestions for calmness, relaxation, and a sense of well-being. Clinical applications of hypnotic techniques have varied widely, ranging from smoking cessation (Lynn, Neufeld, Rhue, & Matorin, 1993), reduction of fears and phobias (Crawford & Barabasz, 1993), weight loss (Levitt, 1993), treatment of dermatological conditions (DuBreuil & Spanos, 1993), and control of pain and anxiety during medical procedures (Genius, 1995). Preoperative hypnotic suggestions have been reported to reduce blood loss during maxillofacial surgery by up to 30% (Enqvist, Von Konow, & Bystedt, 1995), and suggestions administered via headphones to patients while under sedation have been associated with decreased severity of nausea and vomiting among women undergoing major gynecological surgery (Williams, Hind, & Sweeney, 1994). Case examples have also been reported of the hypnotic induction of an epileptic seizure with supporting EEG changes (Bryant & Somerville, 1995).

Perhaps the most controversial use of hypnosis has been memory recovery techniques used in psychotherapy. Memory recovery has been criticized because patients have

recovered memories which are implausible and later found to be untrue, and the conclusion is that the untrue "memories" were suggested by the therapist (Ceci & Loftus, 1994). Hypnosis is also widely used in police investigations to "refresh" the memories of witnesses to crimes (as discussed in Smith, 1983). However, support for memory enhancement via hypnosis is based on anecdotal data, and controlled laboratory studies investigating the effect of hypnosis on learning and memory have failed to indicate memory enhancement (Cooper & London, 1973; Dhanens & Lundy, 1975). Hypnotic hypermnesia, or enhanced recall over repeated recall trials under conditions of hypnosis, has been supported in the literature, but the findings appear due to repeated retrieval effort rather than hypnosis (Erdelyi, 1994). In a critical review of the literature, Smith (1983) argues that hypnosis cannot improve memory, and its use for memory enhancement purposes should be replaced with non-hypnotic techniques.

Some researchers have purported that participants are more responsive to the effects of suggestive information when in a hypnotic state than when in a non-hypnotic state (Hilgard, 1987). Research on hypnotic analgesia, for example, has indicated that hypnotized participants were able to increase their tolerance of a painful electrical shock by 45 percent, while participants who were instructed to pretend they were hypnotized but not enter a hypnotic trance were only able to increase pain tolerance by 16 percent (Greene & Reyher, 1972). This finding was statistically significant. This finding is interesting not only because hypnosis appears to be associated with greater responsiveness to suggestion, but also because non-hypnotized participants also experienced a substantial increase in their ability to tolerate a painful stimulus. Non-hypnotic instructions have been found to be as effective as hypnotic-

induction techniques in enhancing responsiveness to suggestions (Barber & Hahn, 1962; Evans & Paul, 1970). The degree of pain reduction in both studies (Barber & Hahn, 1962; Evans & Paul, 1970) was related to suggestion in both waking and hypnotic states rather than hypnosis per se. Thus, hypnosis does not appear essential for responsiveness to suggestion to occur.

Eyewitness memory studies have also indicated relative enhancement of suggestibility with hypnosis. Putnam (1979), for example, found that hypnotized participants were more likely than nonhypnotized participants to give erroneous "yes" answers to leading questions about a videotaped enactment of a bicycle-car accident. In a similar study, Zelig and Beidleman (1981) also found a greater tendency for hypnotized participants to give incorrect "yes" responses to misleading questions about a film that depicted graphic physical injuries. More recent studies, however, have indicated similar memory error rates among hypnotized versus non-hypnotized participants (as discussed in Barnier & McConkey, 1992). Hypnotizability rather than hypnosis per se was found to be significantly associated with false memory reports (Barnier & McConkey, 1992). What these data indicate is that hypnosis is not a requirement for participants to be responsive to suggestive information.

Implausible recollections have also been created by suggestion in empirical studies. Spanos and colleagues (unpublished manuscript, 1997, as discussed in Loftus, 1997a) conducted a study in which participants were presented with suggestions that a colored mobile was suspended above their cribs in infancy. Participants were assigned to either a hypnotized group, a guided imagery group, or a control group. Fifty-six percent of the

guided imagery participants reported remembering the mobile, as compared to 46% of the hypnotized participants (rate of false recollections for the control group was not reported). Interestingly, all of the control participants indicated that the infant "memories" were fantasy, while nearly 50% of the other participants who reported infant memories classified them as actual memories. Thus, false memories were created in approximately 50% of participants, regardless of whether they were hypnotized or not, but hypnotized and imagery participants were less able to differentiate their false memories from reality. Clearly, suggestion is powerful.

Loftus (1997a) and colleagues have extended the research initiated by Spanos to investigate whether participants would be more susceptible to suggestions related to events that allegedly occurred at age 5 (the first day of kindergarten) versus events of infancy (the first day of life). It was hypothesized that participants would be more likely to falsely recall events of kindergarten. However, the hypothesis was not supported. Approximately 60% of the infancy group reported recalling a mobile hung over their crib while only 25% of the kindergarten group recalled having a spiral disk hung in their kindergarten classroom. These findings have been interpreted as evidence for participants' ready susceptibility to misinformation, even for personally experienced events that are impossible to recall. Hypnosis does not appear to be a requirement for this to occur.

Theories of Hypnotic Behavior. Two primary theories of hypnotic behavior have been developed. Hilgard (1987) has developed a neodissociation theory which points to the centrality of the psychological process of dissociation in the attainment of a hypnotic state.

According to this and similar "special process" views, hypnotic behavior differs from nonhypnotic behavior in that it is driven by nonconscious processes rather than deliberate actions. In the case of hypnotic analgesia, Hilgard (1987) advocates that participants are able to reduce pain perception in very small degrees via purposeful behaviors such as relaxation or distraction, but significant pain reduction is only possible through dissociation. This theory is based on studies that have indicated superior analgesia in hypnotized versus non-hypnotized participants (Greene & Raher, 1972; Hilgard, 1987). However, within- participants designs have failed to indicate superior pain control in hypnotic versus non-hypnotic states, and other explanations for alleged superior pain reduction are possible (as discussed in Spanos, Carmanico, & Ellis, 1994).

An alternate view of hypnotic behavior is that participants entering a "hypnotic" state are simply responding to the social demands of the situation (Spanos, 1986). In this view, hypnotic behaviors are goal-directed and within the awareness of the participant. In the case of hypnotic analgesia, the social demands of the situation would be such that participants may pretend or deny pain that continues to exist (Spanos, 1986). In his sociocognitive hypothesis of hypnotic behavior, Spanos (1986) states that social demand factors (Orne, 1962) are critical in determining a participants' response to hypnotic suggestion. A participant may assume the role of someone who feels less pain but may actually continue to experience an unchanged level of nociceptive stimulation. Similarly, a participant may assume the role of the "good" participant who is not able to recall information presented during a study of hypnotic amnesia. As stated, studies have indicated no differences in analgesia levels between

groups of participants who were and were not given hypnotic inductions (T. Barber & Hahn, 1962; Evans & Paul, 1970; Price, 1996). Studies of hypnotic amnesia have also indicated that participants can learn to direct attention away from target information in order to meet the demands of "forgetting" the information (as discussed in Spanos, 1986).

Non-hypnotic Suggestion and Memory Impairment. A vast literature exists regarding the role of suggestive or misleading information on participants' memory reports in the absence of hypnosis (Garry & Loftus, 1994; Loftus, Feldman, & Dashiell, 1995; Loftus, 1997). Earlier experiments were designed for forensic applications (Loftus, 1979) and examined participants' abilities to respond accurately to leading questions. A consistent finding has been that participants' memories for details of events are influenced by information presented following the event. This is referred to as the "misinformation effect" (Loftus, 1979). In the classic misinformation paradigm, participants experience an event (i.e. view a slide sequence), receive misleading information about the event, and take a test of memory for the event. Misled participants have reported such errors as seeing yield signs instead of stop signs (Loftus, Miller, & Burns, 1978) or eggs instead of breakfast cereal (Ceci, Ross, & Toglia, 1987).

In a classic misinformation study, Loftus and Palmer (1974) presented participants with a film about car accidents and tested their memories for details of the film. The critical question asked by the experimenters was "How fast were the cars going when they hit each other?" The word hit was replaced with either "smashed," "collided," "bumped," or "contacted," and participants' estimates of the speed of the cars were compared. Speed

estimates varied as a function of the verbs used, and the finding was statistically significant ($p<.005$). Participants estimated that the cars traveled at 40.8 miles per hour when the word "smashed" was used, but only 31.8 miles per hour when "contacted" was used. In a second study, participants watched the same film but were divided into three groups. One third of the participants were asked the speed question using the word "smashed"; one third were asked using the word "hit"; and one third were not asked about speed at all. One week later the participants were asked a series of questions about the accident including whether or not they saw any broken glass in the film. While the actual film involved no broken glass, participants in the "smashed" condition were twice as likely as the "hit" or control participants to respond affirmatively to the misleading question. The findings were interpreted as evidence that verbal labels affect a "shift" in the original memory such that the memory is altered to be consistent with the new information.

Recent methodological innovations have resulted in improved generalizability to clinical and naturalistic settings (Loftus, 1997a). Loftus and others have developed paradigms for presenting entire untrue events as misinformation. One participant was led to believe that he had been lost in a shopping mall at the age of 5 and that he was reunited with his family with the assistance of an elderly person (Loftus, 1993). This finding was replicated with a group of 24 participants by having relatives supply information about actual events and having the experimenter suggest that the participant was lost in a mall or department store at the age of 5 (Loftus & Pickrell, 1995). Participants read a written description of four events (3 true, 1 untrue) and completed an immediate free recall task in writing. In interviews

conducted 1 to 2 weeks later, participants recalled approximately 68% of the true information and approximately 25% of the false information.

Participants have also "remembered" untrue events such as being hospitalized overnight for a fever and knocking over a punch bowl at a wedding reception (Hyman, Husband, & Billings, 1995). Participants who initially failed to recall the suggested event eventually "remembered" the event during a third interview. In another study, participants were repeatedly asked to recall their earliest memories until the participant twice denied having any earlier memories (Malinoski & Lynn, unpublished manuscript, 1996, as discussed in Loftus, 1997a). Participants were then told that most adults are able to recall their second birthday if only they concentrate hard enough. The mean age of earliest memory report was initially 3.7 years. After participants "tried harder" the mean age dropped to 1.6 years. These findings point to the possible role of demand characteristics in determining memory reports.

Theories of Memory Impairment. Memory impairment following suggestive or misleading information is supported by a substantial body of literature; however, researchers have not yet agreed on an explanation for the effect. One interpretation is that memory for the suggested information replaces or "overwrites" memory for the original detail (Loftus, 1997b). The original information is therefore changed and replaced by the new information. Another view is that memory inaccuracies are due to participants' misattributions regarding the source of the information (Lindsay & Johnson, 1989). According to this "source monitoring" view, misleading information erroneously becomes attributed to the actual event because the source of the misinformation is unclear (Johnson, Hastroudi, & Lindsay, 1993).

Another conceptualization of memory impairment is based on the differentiation of memory into episodic memory (i.e., memory for personally experienced events) and semantic memory (i.e., memory for general knowledge) (Tulving, 1985). One's recall of a personally experienced emotional events is generally thought to reflect episodic memory; however, studies of personal experiences have suggested that recall likely reflects both episodic and semantic memory stores (i.e., Niven and Brodie, 1995). In the context of misinformation experiments, the misleading information serves as the knowledge base (semantic store) upon which the participants derive recollections of their own experiences. Finally, memory impairment in the presence of misleading information may be a reflection of social demand factors as well as cognitive processes (Spanos, 1986).

A reconstructive view of memory encompasses many of the findings in the misinformation literature in that memory is a constructive process, and new information becomes integrated with previously stored information (Loftus & Palmer, 1974). Since Bartlett's (1932) early studies of memory for stories, the reconstructive view of memory has been challenged and revised but remains a guiding principle in memory research. According to Spiro (1977), reconstructive theory does not discount accuracies in recall, but allows conditions for accurate versus inaccurate recall to be examined. In a test of this view, Spiro (1980) presented participants with one of two stories about an engaged couple. In one story both partners wanted to have children and in the other story they disagreed about the issue. Following story presentation, participants were presented with no information or information that was either consistent or inconsistent with the story. As predicted by a reconstructive

view of memory, participants made more memory errors when they received information that was inconsistent with the story. This effect was enhanced by increased delay.

Essentially, memory reconstruction predicts that recall is determined by schematic states that are active at the time of recall. Cognitive schemas are general organizational sets of information (Bartlett, 1932; Shank & Abelson, 1979). When schemas at recall differ from schemas at encoding, participants make inferences about the schemas that were active at the time of encoding (Spiro, 1977). Changes in memory, or memory errors, therefore serve to reconcile the differences between schemas. As new information is continually added to existing knowledge stores, the likelihood of additional memory errors increases, particularly with longer delay between initial encoding and recall.

Memory Change versus Social Demand. One explanation for any change in memory reports in the presence of suggestive information is that participants simply go along with what they think the experimenter wants them to do. Demand characteristics refer to cues in the experimental situation that influence participants' perceptions of their role and the experimenter's expectations (Orne, 1962). Participants have been found to be particularly likely to volunteer for research when they believe they will be evaluated positively by the experimenter (Rosnow & Rosenthal, 1976). When given a choice to strictly comply with experimental demands versus portray a positive self-image, participants have been found to portray a positive self-image (Rosnow, Goodstadt, Suls, & Gitter, 1973). Thus, social cues in memory studies may lead participants to give responses that they believe will result in favorable evaluation by the experimenter.

Innovative methodologies are now making it possible to better differentiate the effects of social demand versus memory change in memory studies. Loftus and colleagues used a forced choice recognition memory task and asked participants to select actual events (seen in a slide sequence about a burglary) from suggested events (read in a misleading narrative presented after the slides) (Loftus, Donder, Hoffman, & Schooler, 1989). Participants who received misleading post-event information were as quick to make a response and were as confident in their responses when choosing correctly as when choosing incorrectly (Loftus et al., 1989). High confidence suggested that participants actually believed in their erroneous memories. However, other researchers have argued to the contrary on the basis that participants were not explicitly asked to differentiate what they think may have occurred in the slides from what they clearly remember seeing (Zaragoza & Koshmider, 1989).

In studies employing the source monitoring approach, participants are asked to select the source of their memory for critical items (Lindsay & Johnson, 1989; Zaragoza & Koshmider, 1989). Participants typically view a slide sequence, read a misleading narrative about the slides, and then answer questions as to whether an object occurred in the slide, the story, neither, or both. These studies have found that misled participants identified suggested memories (from the narrative) as memories from the original event (the slides). Unfortunately, this finding can be explained in terms other than that participants legitimately believed in their inaccurate memories. A social demand explanation is plausible given that participants are generally led to believe that the

narrative is accurate and developed by a credible person (i.e., a professor). Participants may attempt to appear attentive to the story by identifying the story as the source whether or not they actually recall whether the item was contained in the story (Lindsay, 1990).

These problems led to the development of a methodology in which the demand characteristics of the experiment are placed in opposition to memory effects. Lindsay (1990) adapted the "logic of opposition" paradigm (Jacoby, Woloshyn, & Kelley, 1989, cited in Lindsay, 1990) such that participants watched a slide sequence then listened to a recorded narrative that contained misleading information about critical details in the slides. The details were either not mentioned at all in the story or were mentioned erroneously. Participants were then asked questions about critical details in the slides (i.e., what brand of cigarettes was depicted in the slides?) and were explicitly told that the correct answer was not contained in the story for any of the details. This instruction makes it possible to say that if participants report a detail that was not contained in the slides but only mentioned in the story, then they must genuinely believe that they saw the suggested item. Indeed, misinformed participants were more likely than control participants to report seeing an item that they actually had not seen, suggesting a change in their memory for the slides.

Using a variation of this design, Weingardt, Loftus, & Lindsay (1995) conducted a series of three experiments in which participants were again presented with visual information (a slide sequence) followed by a misleading verbal description of the slides. In the first study the memory test consisted of having participants generate lists of 5 items in several

categories, and participants were explicitly instructed not to include any item that they saw in the slides. The results supported the authors' hypotheses that misled participants would list fewer suggested items (items heard in the narrative) and more event items (items seen in the slides) than control participants. The rationale offered by the authors is that the suggested items impaired participants' memories for the event items, making the event (seen) items available for participants to include in the lists despite instructions not to list items that they saw. This was further tested in a second experiment to rule out the possibility that having a limited number (5) of items to list affected participants' recall rather than actual memory impairment. In the second study, misled participants reported fewer suggested items which confirmed the hypothesis, but did not list more event items. In a final study the a manipulation check was included ensure that participants understood the logic of opposition instructions. Again, misled participants reported fewer suggested items than control participants, indicating that misled participants truly believed that they saw items that were only suggested to them. The authors posited that errors were due to source monitoring confusions rather than social demand factors or simple failure to follow instructions. These data represent an innovative attempt to separate the social demand versus memory issue. While this series of studies supports the memory change hypothesis, it is not possible to generalize these findings to other studies of different designs.

Factors Associated with Responsiveness to Suggestion. Several factors appear to increase participants' susceptibility to misinformation. These include: long delay between the event and the misinformation, high subtlety of the misinformation, and absence of

forewarning that the information may be misleading (Green, Flynn, & Loftus, 1982; Loftus, 1992). Additionally, misinformation appears to exert its most powerful memory impairing effect when presented at the time of memory testing rather than at the time of experiencing the event (Loftus, Miller, & Burns, 1978). Individual difference variables such as age (Ceci, Ross, & Toglia, 1987), hypnotizability (Sheehan, Statham, & Jamieson, 1991), and anxiety (Guenther & Frey, 1990) have also been found to mediate susceptibility to misinformation.

Literature on social persuasion has indicated that characteristics of the source of information can determine the influence of that information as much as the content (Chaiken, 1980; Eagly & Chaiken, 1984). Speaker credibility, for instance, has been found to affect participants' tendencies to agree with the speaker's message (Aronson & Golden, 1962). Misinformation has also been found to be more influential when presented by a seemingly credible source with samples of children (Ceci, Ross, & Toglia, 1987) and adults (Dodd & Bradshaw, 1980). Misinformation was more powerful when presented by an adult versus a child (Ceci, et al., 1987) and when presented by an unbiased eyewitness versus an involved party (Dodd & Bradshaw, 1980). Thus, variables unrelated to the suggestive information can mediate the effects of that information on memory reports.

MEMORY FOR PAIN

Research on memory for pain is particularly relevant to the study of emotion and memory, given that pain stimulation is by definition unpleasant and likely endured under conditions of heightened emotional arousal. Most studies of clinical pain have been interested in the reliability of pain reports over time, given that diagnostic and treatment decisions are based on subjective reports of pain and analgesia. From a memory perspective, the study of clinical pain is interesting since it a salient, naturally occurring, personally experienced event that can be studied without the ethical concerns of inducing pain and without the limited generalizability associated with many laboratory studies of memory.

The accuracy of memory for physical pain is subject to debate. It is difficult to draw conclusions from the literature for several reasons including limited number of studies, small sample sizes in existing studies, and differences in pain assessment techniques (Erskine, Morley, & Pearce, 1990). A conceptual problem with this research is that reports of memory for pain may differ from actual memory for pain. As discussed in Salovey and Smith (1997), the representation of pain in memory likely involves complex physiological responses that may be accurately remembered but inconsistently conveyed on a pain assessment measure. Despite these limitations, researchers have made progress in elucidating the accuracy of memory for pain.

Memory for Pain is Accurate. Several studies have reported high reliability of pain ratings in immediate and delayed recall conditions. In a study involving over 200 women, Rofe and Algom (1985) assessed memory for labor pain immediately postpartum and 1 or 2

days after delivery. Pain intensity, as measured on a 5 point verbal rating scale, did not differ significantly across recall trials (2.13 versus 2.23). High accuracy of memory for chronic pain was also indicated in a study of 100 patients who kept hourly pain diaries for 1 week and were asked to recall their average pain intensity (Jamison, Sbrocco, & Parris, 1989). The correlation between diary reported pain and recalled pain was .85.

Hunter, Philips, & Rachman (1979) assessed memory for acute head pain by having 16 participants recall their original pain descriptions (as measured by the McGill Pain Questionnaire) either 5 days or 1 and 5 days after the original assessment. It was predicted that memory for pain would decay over time and that repeated assessment would be associated with greater memory accuracy. This was not supported. Results indicated no significant differences in pain ratings between original assessment and recall for either the 5 day delay group or the 1 and 5 day delay group. Correlations ranged from .66 to .94. Further, participants who recalled their pain ratings on only one occasion (5 days later) were more consistent in their memory reports than participants who had their recall tested on two occasions. To help understand this finding, data were analyzed in terms of participants who "shifted" their responses. More shifters were found in the 1 and 5 day group than in the 5 day only group. The shifters tended to be female patients who endorsed high levels of sensory and affective pain intensity. It was therefore hypthothesized that high affective distress was associated with alterations in memory for original pain.

In another study Babul and Darke (1994) examined the accuracy and reliability of orthopedic patient's hourly pain ratings during a 48 hour postoperative period. Using a visual

analogue scale (VAS) patients rated their pain intensity every hour without reference to prior pain ratings. At the 24 and 48 hour intervals patients were asked to recall their worst, least, and usual pain VAS scores, and these scores were compared to highest, lowest, and mean pain ratings for that time period. Actual and recalled pain scores were all highly correlated ($r < 0.80$), and in a set of t-tests only one of the comparisons differed significantly. Recall of "worst pain" differed significantly from the actual maximum VAS score in the 48 hour test period ($p=.001$). Finally, memory for dental pain has been reported to be accurate, but only for patients with low anxiety (Kent, 1985). Correlations between actual and recalled pain after a 3 month period were approximately .80 (Kent, 1985).

Salovey and associates have concluded from their own research that memory for pain is more accurate than not (as discussed in Salovey & Smith, 1997). In a study of memory for pain behaviors, 107 chronic pain patients were divided into four groups and completed daily diaries over a 30 day period. Participants recorded either usual daily pain intensity, daily pain behaviors, or both pain intensity and behaviors. Control participants kept no records at all. Participants were asked to recall the number of days they experienced various levels of pain and engaged in certain pain behaviors. Results indicated no significant mean differences in actual versus recalled pain intensity ratings or in frequency ratings of any of 16 pain behaviors (Salovey, Smith, Turk, Jobe, & Willis, 1993).

Memory for Pain is Not Accurate. In a review of studies of memory for pain, Erskine and associates (1990) noted a trend in memory data in that chronic pain patients tend to overestimate original pain ratings while women who experienced childbirth tend to

underestimate earlier ratings. While this trend was supported in some studies, the pattern of memory inaccuracy remains unclear. As will be discussed, methodological differences between studies make it difficult to arrive at definitive conclusions. Linton and Melin (1982) reported that chronic pain patients overestimated their original pain rating by an average of 19% (69 versus 56 on a 0 to 100 point scale; $p<.010$). Given that other studies have claimed high rates of accuracy of memory for pain, Linton & Melin (1982) postulated that chronic pain is more difficult to recall accurately than acute pain.

In an investigation of postoperative pain, Beese and Morley (1993) concluded that memory reports were related to actual pain ratings at a level of only "fair" agreement. Using the McGill Pain Questionnaire and a mood questionnaire, the researchers assessed pain and mood 2 to 4 hours after recovery from anesthesia and participants were asked to recall their ratings 2 weeks later. Cohen's kappa (k) was computed and compared to Pearson correlation coefficients (r) for both measures. Reliability values were $k=.52$ (versus $r=.79$) for pain ratings and $k=.47$ (versus $r=.65$) for mood ratings. Thus, the accuracy of memory data is a function not only of experimental and participant variables but also of the choice of statistics used to analyze the data.

In his work with memory for dental pain (Kent, 1985) found only a moderate correlation ($r=.42$) between pain assessed at the time of a dental procedure and again 3 months later. Pain was rated on a Visual Analogue Scale, and patient anxiety was measured using the Dental Anxiety Scale. Highly anxious patients remembered higher pain levels than they initially reported, yielding a nonsignificant relationship between the two ratings ($r=$-

0.11). Low anxious patients, however, had much greater consistency between actual and recalled pain (r=.79). Thus, memory inaccuracy drifted in the direction of anxiety level. Similarly, Bryant (1993) reported data on 40 chronic pain patients' Visual Analogue Scale ratings of pain and affective information over a 6 week recall period following participation in a pain management program. Accuracy of recall was analyzed with regard to the influence of pain present at the time of recall. Patients who reported increased pain at time 2 tended to significantly overestimate their original pain ratings for both sensory and affective pain (p<.003). Also, increased ratings of anxiety and depression at time 2 were significantly associated with overestimations of original anxiety and depression ratings (p<.003). The data were interpreted as evidence that memory for pain is susceptible to distortion, and that memory is biased in the direction of the current pain or affective state.

Niven and Brodie (1995) assessed memory for labor pain using the McGill Pain Questionnaire. Women were asked to select pain descriptors at the time of birth and to recall their pain experience 3 to 4 years later. Data indicated low correlations between qualitative pain descriptors selected at times 1 and 2 (Cohen's Kappa=0.29). In order to compare the influence of semantic versus episodic memory on pain reports, women who had never given birth were asked to describe the quality of labor pain, and these responses were compared to the recall responses of the parous women. Findings indicated that recall responses were more similar to those of the nulliparous women than to the original responses of the parous women given at the time of birth. In other words, women who had given birth recalled the birth experience 3 to 4 years later in terms that were more similar to general impressions of labor

rather than to their own description given at the time of birth. This suggested that the decay of memory for personally experienced events (episodic memory) occurs in the direction of general semantic memory.

Additionally, Redelmeier and Kahneman (1996) conducted a study comparing participants' real-time pain ratings obtained during colonoscopy and lithotripsy with their retrospective ratings completed within one hour after the procedure. Results indicated that the duration of the procedure was not correlated with average pain intensity. Rather, patients' overall pain memories were most associated with the peak pain intensity and with pain intensity at the final part of the procedure. The data were interpreted as evidence of systematic biases in memory. "Duration Neglect" is one bias by which participants fail to consider the total duration of pain when assigning a rating of overall pain. In the Redelmeier and Kahneman (1996) study, participants' real-time pain ratings fluctuated during the course of the procedures; yet, their overall ratings were determined by peak pain and end pain rather than total duration of pain. The authors noted that memory for pain is extremely complex, and that distinct moments such as peak pain and end pain provide convenient anchors for comparison. The problem with this tendency is that mild pain is not necessarily brief and severe pain is not necessarily long-lasting.

Finally, Cohen & Java (1995) investigated the consistency of patients' reports of their own medical history. Following a 3-month diary-keeping phase, participants' free recall was tested with regard to the frequency, duration, dating, and severity of health symptoms. Immediately after the diary-keeping period, only 51% of health events (physical symptoms

such as back pain, headaches, etc.) were reported in free recall, while after a 3-month interval the percentage dropped to 39%. For those health events that were recalled, 65% of frequency estimates were correct, while 13% were overestimations and 14% were underestimations. Symptom severity ratings were accurate for 46% of recalled events, while 17% were overestimated and 14% were underestimated. Thus, while some of the literature has supported the accuracy of memory for pain, it is safe to say that pain memory is not immune to error.

Factors that Influence Pain Ratings. Several factors other than nociceptive stimulation have been found to mediate the pain experience. Cultural factors, for example, appear to influence responsiveness to pain. In a discussion of the cultural meaning of cancer, Barona (1995) likened the disease to a sleeping animal that can awaken at any moment and destroy the body. He stated that this image of a random force over which the patient has no control is a highly popular idea among Spanish speaking patients. The unfortunate implication is that the patient, upon learning of the possibility of cancer, would assume that he or she has no control over her fate and would avoid medical contact. Indeed, in quantitative and qualitative studies, locus of control has been found to interact with cultural background in mediating reported pain intensity (Bates, & Rankin-Hill, 1994).

Perhaps the most widely examined variable in pain research is anxiety. Not only does emotional distress exacerbate or cause physical discomfort, but it also results from and interacts with physical pain (Craig, 1994). As has been discussed, the accuracy of memory for pain is better understood when patient anxiety level is considered (Bryant, 1993; Kent,

1985). For this reason, it appears important that a measure of trait anxiety be included in studies of memory for pain.

Memory for past pain also appears to be affected by pain intensity at the time of recall. In a test of this idea, Eich and associates examined the pain diaries of 25 chronic headache patients and found a significant association between recollections of past pain and current pain intensity (Eich, Reeves, Jaeger, & Graff-Radford, 1985). Patients recalled their maximum, usual, and minimum levels of prior pain as more severe than the actual ratings when present pain intensity was high and recalled levels of prior pain as less severe when present pain intensity was low. This finding was interpreted as evidence of mood congruent memory bias. Mood congruency has not been universally supported, however. Salovey and Smith (1997) discussed findings from their lab that indicated no differences in recall of pain experiences as a function of induced mood (happy, sad, or neutral). Participants first participated in mood induction then were asked to recall their most painful experiences during the past year. No differences were noted in the types of painful experiences, frequency of pain, or intensity of pain. It is possible that the mood induction procedure conducted in the laboratory was not as powerful as the actual experiences studied in other experiments. Clearly, the fear of going to a dentist or the joy of having a child can be conceptualized as having a more powerful effect on memory than a laboratory induction procedure. For this reason, several authors recommend controlling for the effects of current pain on reports of pain memories (Bryant, 1993; Eich et al., 1985).

THEORIES OF PAIN

Specificity Theory. Historically, pain has been conceptualized as the result of a specific disease entity for which a medical treatment should be available (Turk, 1996). However, despite bold medical advances, there remains a substantial number of patients for whom medical treatments have failed to alleviate pain. Also, the experience of pain is highly variable in that physical pathology does not reliably predict severity of pain or associated disability. Labor pain, for example, has been rated as highly variable (Melzack, 1984). The medical model of pain has therefore been criticized for its failure to account for the disparity between patients' pain complaints and observable physical pathology (Engel, 1977).

Gate Control Theory. Dissatisfaction with biomedical models of pain led to the development in the 1960's of the gate control theory of pain by Melzack and colleagues (as discussed in Melzack & Katz, 1994). The gate control theory revolutionized the field of pain research by refuting the idea of a one-to-one correspondence between injury and subjective experience. The theory also led to innovations in pain measurement with new emphasis on the subjective pain experience rather than physiological markers (Melzack & Katz, 1994).

The gate control theory identifies three psychological aspects of pain: sensory-discriminative, motivational-affective, and cognitive-evaluative (as discussed in Melzack & Katz, 1994). Each of these dimensions is subserved by specific anatomical systems in the brain. The sensory-discriminative dimension is thought to be determined by the rapid firing of spinal transmissions. The motivational-affective dimension is associated with reticular and limbic structures that are affected by slowly conducted spinal signals. The cognitive-

evaluative dimension, which is the higher level stage of processing, is thought to be driven by neocortical or cortical structures. These three categories of activity are thought to operate interactively so that the organism's pain experience is influenced not only by nociceptive cues but also by factors such as mood state, attention, past learning, and motivation to escape pain. While this multidimensional, dynamic view of pain is clearly a more accurate and useful heuristic than previous medical models, it highlights the difficulty of studying such a complex phenomena.

ASSESSMENT ISSUES

Assessment of Pain. Given the complexity of the pain experience and given the inherent subjectivity of pain, its measurement presents several challenges. One problem is identifying which dimension of pain is being assessed. Another is the separation of chronic versus acute pain states. Finally, individual difference factors such as differences in language usage, perceptual threshold, and past pain experience complicate the assessment of pain in persons experiencing similar sensory phenomena (Turk & Melzack, 1992).

To circumvent some of these problems, objective measurements have been developed for use in analgesia research. These include brain-evoked potentials, electroencephalography, electromyography, and biochemical measures (Murrin & Rosen, 1985). However, self-report is considered the most valid index of pain. It is generally accepted that suffering can only be expressed by the individual experiencing the pain (Murrin & Rosen, 1985). Given this assumption, researchers have developed guidelines for maximizing the quality of subjective pain assessment methods. Price and Harkins (1992) cite the following seven criteria for an ideal pain assessment procedure: simplicity, reliability and generalizability, sensitivity, utility in clinical and research settings, having ratio scale properties, being free of bias, and having separate measurements for sensory and affective dimensions of pain. Among the most commonly used clinical pain assessment methods are: verbal pain scales, visual analogue scales, and numerical rating scales (Murrin & Rosen, 1985).

Verbal Pain Ratings. Simple verbal descriptors include asking whether the patient is or is not in pain, or asking him or her to rate the pain as "mild, moderate, or

severe." These methods are clearly easy to use but lack sensitivity and do not separately assess the sensory and affective components of pain (Murrin & Rosen, 1985).

To address these problems Melzak (1975) developed the McGill Pain Questionnaire (MPQ) which is a paper and pencil questionnaire comprised of 20 verbal descriptor items, a pain location drawing, and an overall intensity scale. The words used on the MPQ represent four major classes of pain descriptions (sensory, items 1-10; affective, items 11-15; evaluative. item 16; and miscellaneous, items 17-20). For each of the 20 items the patient is presented with a set of words that were ranked according to their implied severity. For item 1, for example, the patient must select among the words "flickering, quivering, pulsing, throbbing, beating, or pounding" and choose only those words that describe his or her current pain experience. A score of 1 to 6 would be assigned to each response, and scores from items 1 through 20 would be summed. The number of words selected as well as the total score are calculated. The patient is instructed to select only 1 word for each item and to select only those words that describe his or her current pain intensity (some items may be left blank) (Melzack, 1975). Due to the specific instructions and the sophisticated reading level of the MPQ, Melzack (1975) recommends that the examiner read the items aloud with the patient and clarify any uncertainty. Completion time is generally 15 to 20 minutes for initial presentation.

The MPQ is widely used in clinical and research settings. It has been found to distinguish among different pain syndromes and to have high response consistency over repeated administrations (approximately 75%) (Graham, Bond, Gerkovich, & Cook, 1980).

It is also sensitive to medical and nonmedical interventions for pain control such as that used during childbirth (Melzack, 1984). However, the measure has been criticized for providing only ordinal data, having poor discriminative validity, and being inappropriate as a measure of past pain (Duncan, Bushnell, & Lavigne, 1989). Further, practical matters such as time constraints and the sophisticated reading requirement make the MPQ a poor choice for use in busy clinics among patients with limited education.

Visual Analogue Scales. Visual analogue scales (VAS) generally consist of a line 10 centimeters in length with endpoints labeled as "no pain" and "pain as bad as it could be" (Jensen & Karoly, 1992). The line may be labeled with additional verbal or numerical markers. Patients are asked to mark the point on the line that best represents their current pain intensity. The distance from the "no pain" endpoint to the patient's mark is measured in millimeters. VAS measurements are sensitive to treatment effects and are well validated against other self-report measures of pain intensity (as reviewed in Price, Bush, Long, & Harkins, 1994). Unlike verbal ratings, VAS scores have the qualities of ratio data. Price (1988) presented evidence that VAS line length can serve as a reference continuum for pain intensity. Unlike words and whole numbers, the VAS provides an unlimited number of responses along a continuum, making it more sensitive and more appropriate for treatment as ratio data.

Limitations of the VAS include being difficult to understand for some patient populations (Ferraz, Quaresma, Aquino, Atra, Tugwell, & Goldsmith, 1990) and being tedious to score with much room for error. Further, the measure cannot be administered

verbally, and it is advised that the VAS not be photocopied because this would alter the line length (Jensen, Karoly, & Braver, 1986). Thus, it is recommended that the researcher provide a strong rationale for using a VAS over a numerical scale, and if a VAS is to be used. then practice with the scale may be helpful (Jensen & Karoly, 1992).

Numerical Rating Scales. Numerical rating scales (NRS) involve having the patient rate his or her level of pain intensity from 0 to 10 or from 0 to 100 with 0 representing "no pain" and the other endpoint representing "the worst pain imaginable." As with the VAS, the numerical scale has been well validated, is sensitive to treatment effects, and also has ratio properties (as discussed in Jensen & Karoly, 1992). Unlike the VAS, numerical rating scales are very easy to score, and patients generally do not have a problem understanding how to use them (Kremer, Atkinson, & Ignelzi, 1981). Further, in the event of interviewing patients over the telephone, a numerical scale is preferable because no writing or visual presentation are involved.

Methods of verbal, visual analogue, and numerical ratings have been found to provide essentially equivalent data in terms of rates of incorrect responding and in terms of predictive validity (Jensen, Karoly, & Braver, 1986). However, the 101 point numerical rating scale was found to be the most practical given its ease of administration and scoring, large number of possible response categories, and flexibility of verbal versus nonverbal administration (Jensen et al., 1986).

Assessment of Anxiety. Anxiety has been conceptualized by Cattell and others as both a transient state of arousal and as a stable personality characteristic (as reviewed in

Spielberger, 1983). State anxiety refers to situation-specific feelings of apprehension, tension, and worry, while trait anxiety refers to a person's general tendency to respond to stressful situations with fear and apprehension (Spielberger, 1983). Another construct has recently been developed called anxiety sensitivity (Reiss, Peterson, Gursky, & McNally, 1986), and it refers to the fear of experiencing anxiety symptoms. The construct of anxiety sensitivity (or "fear of fear") has been found to be useful in predicting the development of anxiety disorders, particularly panic disorder, and has been found to be conceptually distinct from trait anxiety (McNally, 1989). For purposes of this study, it appears that general trait anxiety is a more relevant individual difference variable than anxiety sensitivity.

State and trait anxiety are commonly measured using the State-Trait Anxiety Questionnaire, Form X (Spielberger, Gorsuch, & Lushene, 1970) or Form Y (Spielberger, 1983). Both forms are 40-item questionnaires consisting of two separate 20-item scales. Forms X and Y differ in that Form Y is viewed as having less overlap with depressive symptoms than Form X. The State scale is completed by selecting one of four descriptors on a 4-point scale indicating the intensity of current anxiety feelings: (1) not at all; (2) somewhat; (3) moderately so; (4) very much so. The Trait scale measures the frequency of general anxiety feelings using a 4-point scale: (1) almost never; (2) sometimes; (3) often; (4) almost always. Either the State or Trait scale can generally be completed in less than 10 minutes, and both scales require less than 20 minutes on initial presentation.

Norms are available for high school and college students, normal adults, and special populations including general medical and surgical patients (Spielberger, 1983). Forms X and

Y are highly correlated in the range of .96. The STAI has been found to be highly reliable and internally consistent, and evidence of concurrent, convergent, divergent, and construct validity has also been adequate (Spielberger, 1983). Form X is available for use with Spanish speaking populations (Spielberger, Gonzales-Reigosa, Martinez-Urrutia, Natalicio, & Natalico, 1971). The STAI has been widely used in studies of pain and appears to be an appropriate measure for use in the current study.

COLPOSCOPY

Colposcopy is a procedure used to diagnose malignant and pre-malignant conditions of the uterine cervix. It is indicated following abnormal findings on a Papanicolaou (Pap) smear or physical exam (Curry, Pfenninger, & Sarma, 1994). The procedure involves examining cervical tissue with the aid of a colposcope (i.e., a magnifying lens supported on a stand). Colposcopy is also recommended for women whose Pap tests have indicated benign cellular changes but who have increased risk of cervical cancer secondary to factors such as a history of engaging in early sexual intercourse or having multiple sexual partners. In a Pap test cells are sampled from the cervix with a brush or wooden spatula and are viewed under a microscope for cytologic abnormalities. In the event of precancerous cellular changes (dysplasia) or cancerous changes (neoplasia), colposcopy is recommended, and a tissue sample (biopsy) may be taken for diagnostic purposes (Curry et al., 1994). For management of high-grade lesions, colposcopic evaluation with cervical biopsy and endocervical curettage are generally accepted as the standard of care (McKee, 1997). More variability exists for management of low-grade lesions; however, if a follow-up Pap smear indicates atypical findings, then colposcopic examination is generally conducted (McKee, 1997). Colposcopy may be postponed if a woman is pregnant, menstruating, or has active cervical infection or inflammation (Curry et al., 1994). In postmenopausal women without estrogen replacement, colposcopy is delayed for two to eight weeks so that intravaginal estrogen can be applied.

Colposcopy is a brief outpatient procedure (Apgar, 1996). A speculum is inserted into the vagina and a solution of 3 to 5% acetic acid is applied to the cervix and vaginal wall

with a cotton swab. The colposcope is used to visualize the cervix and vagina under magnification, and any lesions are identified. Tissue samples are taken from the most severe lesions. Cervical biopsy involves taking a tissue sample approximately 3 mm deep using a metal forceps. If bleeding interferes with visualization of other biopsy sites, then mild pressure is applied with a cotton swab. Diagnosis of the severity of the disease is confirmed via histologic exam of the biopsied tissue. Endocervical curettage (ECC) involves taking a sample of tissue fragments by twice rotating a metal curette 360 degrees in the cervical canal. Following sampling of all biopsies, a thick mustard colored solution (Monsel's solution) is applied to reduce bleeding. Patients are warned that bleeding is likely to continue, and they may notice passage of a thick, black substance. The speculum is removed, and the patient is counseled to avoid sexual intercourse, douching, or tampon use for 1 week and to return to the clinic in the event of foul vaginal odor or discharge, pelvic pain, or fever. Topical benzocaine and nonsteroidal anti-inflammatory medications have been reported to reduce pain (Rodney, Huff, Euans, Hutchins, Clement, & McCall, 1992). However, findings have been mixed, and in some studies the application of the anesthetic was rated as more painful than the biopsy procedure itself (Clifton, Shaughnessy, & Andrews, 1998). Thus, analgesics are not uniformly recommended.

Widespread use of the Pap smear as a screening for cervical cancer has resulted in a 75% decline in the incidence of cervical cancer since 1943 when the Pap smear was introduced (McKee, 1997). However, the number of women affected by low-grade cervical abnormalities continues to increase, partly due to the spread of human Papillomavirus among

sexually active women and due to cancer-causing effects of tobacco use (McKee, 1997). Estimates provided by the American Cancer Society are that approximately 2.5 million women require annual evaluation for low-grade lesions, and approximately 15,000 cases of invasive cervical carcinoma are diagnosed each year (as cited in McKee, 1997). The importance of regular monitoring following an abnormal Pap smear is highlighted when the rate of progression of cellular changes is considered. Progression from mild dysplasia to carcinoma in situ has been estimated to occur within 58 months, from moderate dysplasia within 38 months, and from severe dysplasia within 12 months (Smith, Clarke-Pearson, & Creasman, 1985). Considerable variability has been reported for progression from carcinoma in situ to invasive cancer; rates have ranged from 8 months to 10 years. Fortunately, spontaneous regression from dysplasia to normal has been reported to occur in approximately 50% of patients with low grade lesions (Creasman and Parker, cited in Smith et al., 1985), and diagnostic techniques are often curative given that much of the affected tissue is removed during biopsy.

Patient Reactions to Colposcopy. Despite the reported effectiveness of screening techniques in cancer prevention, women's compliance with colposcopic examinations is poor. Rates of nonadherence with follow-up following an abnormal Pap smear range from 29% to 49% (McKee, 1997). Groups at increased risk of nonadherence include: minorities, women of low socioeconomic status, women with less than high school education, and women younger than 30 years of age. Barriers such as lack of transportation, child care, and health insurance; fears of cancer; fears of loss of reproductive functioning; and fears of undergoing

medical procedures all complicate the issue of compliance with colposcopy. Practical matters such as lack of telephones and incorrect addresses also account for poor attendance at appointments.

Women typically report negative emotional reactions to having an abnormal Pap smear and being referred for colposcopic evaluation (Beresford & Gervaize, 1986; Gath, Hallam, Mynors-Wallis, Day, & Bond, 1995; Nugent, Tamlyn-Leaman, Isa, Rearson, & Crumley, 1993). Fear of cancer, fear of losing sexual and/or reproductive functioning, and fear of medical procedures are among the most commonly reported concerns (Beresford & Gervaize, 1986; Lauver & Rubin, 1990). Depressive symptoms such as mood impairment, sleep disturbance, decreased libido, and impaired daily activity have also been reported, particularly among women who did not participate in adequate follow up following the abnormal Pap result (Lerman, Miller, Scarborough, Hanjani, Nolte, & Smith, 1991).

Nugent et al. (1993) had 149 women complete the State-Trait state anxiety scale (STAI-state) immediately prior to undergoing colposcopic examination. Mean STAI-state score of 50.95 ($t=64$) represented a significant elevation in state anxiety level relative to normative populations (Spielberger, 1983) and relative to a sample of 284 elective surgery patients (female $\underline{M}=42.9$; male $\underline{M}=38.2$; Badner, Nielson, Munk, Kwiatkowska, & Gelb, 1990). Gath and associates (1995) interviewed women prior to and following a visit to the colposcopy clinic and asked participants to describe their initial reactions upon learning of an abnormal Pap smear. Of the 102 women in the study, 51% used the words "shock," "panic," or "horror" to describe their emotional reaction. Specific fears included fear of cancer and of

need for hospitalization. Mood symptoms were reported as follows: fear and worry (90% of the women); depressed mood (67%); pessimism (65%); poor concentration (44%); irritability (43%); sleep disturbance (29%); and headache (22%). In spite of these reported symptoms, however, self-report measures prior to and following the colposcopy exam indicated levels of mood disturbance within the normal range. Mean State-Trait state scores were reported as 36.5 (4 weeks prior), 32.91 (4 weeks post), and 30.90 (36 weeks post). Mean STAI-trait score was 38.07. Relative to a control group, the colposcopy group did not significantly differ in rates of clinically significant anxiety or depression. One finding was significant, however, in that those patients who spontaneously used the words "shock," "panic," or "horror" to describe their initial reaction did have significantly higher STAI-state anxiety scores (40.67 versus 32.33; t=4.07, p=.000). The researchers concluded that women's emotional reactions to colposcopy are relatively minor and transient (Gath, et al., 1995).

Emotional state following colposcopy was investigated in another study in relation to patient information-seeking behavior (Barsevick & Johnson, 1990). Unfortunately, mood state was assessed using an adjective rating scale developed solely for the study, and mean scores were not reported. Information seeking was measured by the number of questions asked by the patient during the procedure, and this was not found to be significantly related to either positive or negative emotional state as measured by the mood questionnaire. Other studies, however, have found that increased information about colposcopy was associated with increased negative emotion (Miller & Mangan, 1983).

Rationale for Selecting Colposcopy for Study. As stated, memory research has been criticized for its artificiality and lack of meaningful stimulus materials. Obviously, the deliberate creation of emotional distress or physical pain for purposes of research is constrained by ethical considerations. Researchers are then left to find creative ways of circumventing these problems. Colposcopy provides a view of negative emotion as it naturally occurs in the real world. As stated, the women referred for colposcopic examination know that they are at risk of developing cancer. However, they do not know the severity of their condition, nor do they fully know what to expect during the medical examination. They are informed that the doctor might need to remove a sample of cervical tissue, and if this is done it is without the aid of any prior analgesic. Thus, colposcopy provides a model of an emotionally distressing and physically painful experience that occurs without any intervention or intrusion from the experimenter. The procedure is also brief and performed on sufficient numbers of patients that research with women undergoing the procedure can be conducted with reasonable ease. For these reasons, colposcopy was selected as a target of study.

ETHICAL ISSUES

The proposed study raises several questions regarding the ethics of this type of memory research. A general dilemma for researchers in the field of suggestibility and memory is balancing the ecological validity of a study with appropriate treatment of human participants (see Ceci, Bruck, & Loftus, 1998). Clearly, experimental methodologies are more readily interpretable when they closely approximate conditions of a real world memory situation. Yet, minimizing harm to participants is a primary concern. When misleading or suggestive information is included in a study, deception is inherent to the design and objectives of the study. It is therefore not possible to reveal the full purpose of a study when obtaining informed consent for research participation. Under accepted guidelines, a participant has the right to make free and informed decisions about his or her participation in a study based on adequate understanding of the risks and benefits of participating (The National Commission for the Protection of Human Participants of Biomedical and Behavioral Research, 1979). In the case of research involving suggestive information, a study's validity would be compromised if its tenets and hypotheses were fully disclosed prior to the participants' participation. Use of incomplete disclosure is deemed appropriate when 1) full disclosure would not allow the goals of the study to be reached; 2) the undisclosed risks to the participants are no greater than "minimal"; and 3) there is a plan for debriefing and for making results available to participants (the Belmont report, 1979).

This study was designed to examined memory for pain in the presence of suggestive information presented at the time of questioning. To make participants fully aware of this

intent would compromise their ability to respond in an unbiased manner and thus invalidate the study. In this study the potential for harm lies in the manipulation of the words used to ask participants about their pain. Pain suggestive questioning may increase participants' perceptions of their pain and could possibly cause increased psychological distress. To minimize this risk, participants were informed that they were not required to answer any question which they found offensive and that they could discontinue their participation at any time without loss of compensation. Further, the type of suggestive information used in the preface and in the questions was not unlike language that would be used to discuss the medical examination in real world situations other than the experiment. If suggestions of pain were to cause participants' perception of their pain to increase substantially, it is possible that their behavior, (i.e., willingness to return to the clinic for examinations) would be affected. For this reason, participants received a thorough explanation of the study design immediately after completing the delayed recall phase and also received a written debriefing letter with instructions for reporting further concerns about the study.

When evaluating risk to human participants, any risk must be considered against potential benefits of conducting the research, either to the individual participant or to society (The National Commission for the Protection of Human Participants of Biomedical and Behavioral Research, 1979). In the study described here participants benefited individually by receiving material and emotional support during the study period. Participants received fast food coupons as well as a calendar/planner for assisting them in tracking medical appointments. Additionally, participants were in contact with a caring professional and had

the opportunity to speak in confidence about their feelings related to a potentially unpleasant medical evaluation. This allowed participants to receive emotional support and also facilitated the relationship between the patient and her medical staff. Particularly in this busy clinic setting with this largely Spanish-speaking patient population, it is a benefit to the patients to have additional time and contact with someone who can aid them in obtaining information or assistance. As a final benefit to the clinic, patients were surveyed regarding their impressions of ways that compliance rates can be improved, and these data were made available to the clinic staff.

In addition to these individual benefits, there are more global benefits to society. This study allows a greater understanding of the influence of suggestive information on participants' memory reports. Knowledge of these effects can inform situations in which the accuracy of memory reports is deemed important such as in the courtroom or in the doctor's office. The data provided by this study regarding the effects of both pain enhancing suggestion and pain denying suggestion are also potentially useful in the development of non-medical pain management techniques.

PRELIMINARY STUDY

Pilot data were collected to aid in the development of the methodology for the main study. Participants were recruited from the same patient population as those involved in the full study. The central questions of interest in the pilot study were whether participants' ratings of pain experienced during colposcopy would be affected by the type of suggestive questioning used and/or by the language (English or Spanish) in which the questions were asked. It was hoped that any differences in pain ratings would be due to the effects of suggestive wording rather than due to inaccuracies in the translations of the questions from English into Spanish. Pilot data were collected in two phases. In Phase 1, participants were interviewed on only one occasion (immediately after their doctor visit). In Phase 2, participants were interviewed immediately after the doctor visit and again 1 week later by phone.

Participants. Women attending the Dysplasia clinic at John Peter Smith Health Center for Women in Fort Worth, Texas, were offered the opportunity to participate in the pilot study on a strictly volunteer basis. John Peter Smith Hospital is a tertiary care medical center serving an urban, medically indigent population. A substantial percentage of the patient population is exclusively Spanish-speaking. The hospital is a teaching facility with residency programs in several specialties including OB-GYN and Family Practice.

An unknown number of women were asked by the experimenter to participate in the pilot study. Women under the age of 18 and pregnant women were not eligible to give informed consent. No information was requested of those women who refused to read the

consent form. Of the 60 women who agreed to read and sign the consent form, 40 completed phase 1 (immediate recall only). Reasons given for refusing to complete phase 1 included being in a hurry, being in too much pain to talk, or having children at the appointment who needed attention. Several participants simply left the office without notifying the experimenter. For Phase 2 of the pilot study, 42 women gave informed consent. Of these, 25 completed the immediate recall part of the study, and their data was added to the data set for phase 1. Thus, the sample size for data set 1 was 65. Of the 25 who completed the immediate recall task, several could not be reached by phone. The final sample size for Phase 2 (participants who completed immediate and delayed recall) was 18.

Materials. Questions used to interview participants about their pain experience were designed by the author to represent either the exaggeration or minimization of pain during the medical examination. Suggestive information was included in preliminary statements made by the experimenter and in the words used to ask about pain experiences. The questions were translated into Spanish by the author with the assistance of a professor of linguistics who is fluent in Spanish. Translations were also verified by two native Spanish speakers.

Six questions were asked of each participant. See Appendices A through D. The first 3 questions concerned sensory pain severity during various aspects of the colposcopic examination: insertion of the speculum, application of acetic acid, and contact of cervical tissue with a medical instrument. Each rating was a numerical rating from 1 to 100. Questions 4 and 5 were ratings of pain frequency and pressure frequency. The last question was a numerical rating (1 to 100) of state anxiety during the medical examination. In the Pain

Suggesting condition women were told that the exam is typically perceived as painful. while women in the Pain Denying condition were told that the exam is not usually perceived as painful. Specific wording of pain questions was also varied across conditions. Words such as "shoved", "jabbed", and "acetic acid" were used in the Pain Suggesting condition as opposed to "inserted," "touched", and "vinegar solution" in the Pain Denying condition.

Design. In Phase 1 the independent variables were Suggestion (Pain Suggesting versus Pain Denying) and Language (English versus Spanish). Both of these were between participants factors. The dependent variables were participants' ratings of pain (3 ratings of sensory pain severity labeled "Instrument," "Solution," and "Touch", 2 frequency ratings labeled "Pain Frequency" and "Pressure Frequency") and anxiety (1 severity rating labeled "Anxiety").

In Phase 2 the independent variables were Suggestion (Pain Suggesting versus Pain Denying) and Time (Immediate versus. Delayed Recall). Suggestion was a between participants factor, and Time was a within participants factor.

Procedure. Upon arrival at the Dysplasia clinic, women were offered the option of volunteering to participate in the study. They were informed that participation would in no way affect their medical treatment. Informed consent was explained verbally and in writing in the patient's preferred language, and a copy of the consent form was given to the patient. Consent forms appear in Appendices E through F, and the appropriate form was used for Phase 1 or 2. If the patient agreed to participate, she completed a preliminary pain rating (see Appendix G) to introduce the method of pain assessment. She then proceeded with signing in

for the appointment, having an introductory interview with a nurse, waiting for the doctor, and having the medical exam. Information given to the patients by the clinic staff appears in Appendix H. Note that additional instructions were given to patients who underwent a biopsy.

After the medical exam, the patient was interviewed in her preferred language using either Pain Suggestive or Pain Denying questions. Assignment to condition was randomly determined. Responses were recorded in writing by the experimenter (see Appendix I). After the interview, participants in Phase 1 were thanked and given a small gift donated by the experimenter. Any questions were answered by the experimenter. For Phase 2, after the immediate recall interview, a time was established for conducting the delayed recall interview by telephone, and participants were given an appointment card. They were also thanked, given a small gift, and any questions were addressed. The delayed recall interview was conducted by telephone 7 days after the immediate recall task. Interview responses were recorded in writing by the examiner (Appendix J). Two participants could not be reached until 8 days after immediate recall, and the interview was completed at that time.

Results. Immediate recall data were first examined for all participants who completed the immediate recall interview (n=65). A 2 (Suggestion) x 2 (Language) between participants MANOVA was conducted for the six dependent variables of interest. In the multivariate analysis, the main effect of Suggestion did not reach statistical significance, $F(6,46)=1.47$, $p<.209$, power=.51. Thus, pain ratings did not significantly differ as a function of the suggestion manipulation. Relevant means are presented in Table 1. Note that there were

several instances of incomplete data, so sample sizes are reported for each mean. For all variables, mean ratings followed in the direction of the suggestion condition (Pain Suggesting higher than Pain Denying), although differences were not statistically significant. Thus, casual inspection of the data suggested that the Suggestion manipulation exerted an effect, but the effect was not supported by statistical analysis.

Table 1. Pilot Data Set 1: Mean Immediate Recall Ratings as a Function of Suggestion. (N=65)

	n	Pain Suggesting M (SD)	n	Pain Denying M (SD)
Instrument	34	42.03 (30.55)	31	33.00 (25.91)
Solution	34	37.65 (31.62)	29	34.34 (30.45)
Touch	30	51.40 (35.05)	29	40.24 (30.99)
Pain Frequency	34	3.31 (2.76)	31	2.03 (1.42)
Pressure Frequency	33	3.35 (2.71)	29	3.28 (4.90)
Anxiety	34	76.38 (95.57)	31	53.68(38.97)

Table 2 contains mean immediate recall ratings as a function of Language. The main effect of Language approached significance in the multivariate analyses, $F(6,46)=1.96$, $p<.090$, power=.66, and reached significance for one of the univariate tests, (Pressure Frequency), $F(1,51)=3.93$, $p<.050$, power=.49. The univariate test suggested that Spanish speakers reported fewer instances of pressure sensation during the exam than English speakers. However, this finding cannot be viewed as reliable since the multivariate effect failed to reach statistical significance. Finally, the multivariate Suggestion by Language interaction effect only approached significance, $F(6,46)=2.12$, $p<.069$, power=.70. The univariate tests indicated that the interaction was significant for Anxiety, $F(1,51)=8.91$,

p<.004, power=.83. Again, this interaction effect cannot be reliably interpreted given the failure of the multivariate effect to reach significance.

Table 2. Pilot Data Set 1: Mean Immediate Recall Ratings as a Function of Language.
(N=65)

	n	English M (SD)	n	Spanish M (SD)
Instrument	44	35.36 (28.13)	21	42.67 (29.56)
Solution	44	34.75 (29.57)	19	39.31 (34.35)
Touch	42	45.71 (33.94)	17	46.41 (32.70)
Pain Frequency	44	3.01 (2.56)	21	2.05 (1.47)
Pressure Frequency	42	3.94 (4.47)	20	2.00 (1.49)
Anxiety	44	58.75 (35.20)	21	79.81 (121.60)

A problem with the above analysis is that it did not take into consideration the amount of nociceptive stimulation to which each patient was subjected. Recall that screening for cervical cancer involves repeat Pap smears, cervical biopsy, and endocervical curettage, and combinations of these procedures may be conducted. It was therefore deemed important to statistically control for any variability in pain and anxiety ratings due to the different medical procedures. Medical records were reviewed to determine which procedures were undergone by each patient. A "Procedure' variable was created by coding the number of procedures to which each patient was subjected. Values ranged from 0 to 7: 0="unknown," 1= "colposcopy only," 2="colposcopy plus Pap smear," 3="colposcopy plus Pap smear plus endocervical curettage," 4="colposcopy plus Pap smear plus endocervical curettage plus 1 cervical biopsy," and so on, with values 5, 6, and 7 referring to all of the procedures of number 4 but with 2, 3, or 4 cervical biopsies respectively. This "Procedure" variable was

actually found to be poorly correlated with the dependent variables. Correlations were not significant for any of the 6 dependent variables with the exception of Touch (r=.32, p<.018). The low correlations were somewhat surprising given the intuitive notion that more nociceptive stimulation would be associated with more discomfort for longer periods of time. Yet, this finding is perfectly in keeping with the gate control theory of pain which refutes the idea of a one to one correspondence between nociceptive stimulation and pain perception.

It was then wondered if part of the variance in the MANOVA was due to whether or not the participant had a biopsy or not, regardless of the number of procedures that she experienced. Recall that patients who underwent biopsies were given additional written information that was not given to patients who did not require a biopsy (see Appendix H). It was speculated that having a biopsy might influence pain perception (and memory for pain) not only because of different information presented but also because these women have to await results of a medical test to determine their risk of developing cancer. Another variable, Biopsy, was then created, and this was coded simply as "yes" or "no" to indicate whether the participant experienced a biopsy. Correlations between the Biopsy variable and the 6 dependent variables were then examined. These were significant for 3 of the 6 dependent variables: Instrument (r=.36, p<.007), Touch (r=.30, p<.036), and Pain Occasions (r=.34, p<.009). The Biopsy variable was then included as a covariate in a second analysis.

The MANOVA was repeated with the addition of the Biopsy variable as a covariate. Unfortunately, the addition of the covariate resulted in decreased sample size for the analysis because data were not available for all participants regarding whether or not they had a

biopsy. Adding the covariate had the effect of reducing the significance of the multivariate interaction effect, $F(6,36)=1.94$, $p<.099$, power=.64, and of the main effect of Language, $F(6.36)=1.74$, $p<.140$, power=.58. However, the main effect of Suggestion was strengthened, $F(6,36)=1.69$, $p<.150$, power=.56. Thus, the addition of the covariate appears to have removed a portion of the error variance from the Suggestion analysis. This indicated that the effect of the Suggestion manipulation would be more clearly understood when controlling for variance due to whether the participant had a biopsy or not.

As stated, the primary goals of the pilot study were to assess differences in pain ratings as a function of suggestive information and preferred language. The data provided minimal support that the Suggestion manipulation was exerting an effect given that apparent differences in means failed to reach statistical significance. It was therefore necessary to examine the Suggestion manipulation over repeated recall trials to determine whether the Suggestion effect would differ in immediate versus delayed recall. Phase 2 of the pilot study (Immediate and Delayed recall) was conducted with a small sample (N=18) of participants.

Data were analyzed separately for ratings given at Times 1 (Immediate Recall) and 2 (Delayed Recall). Means are presented in Tables 3 and 4. Again, data were incomplete for some variables, and relevant sample sizes are indicated. A series of one way MANOVAs with Suggestion as a between participants factor indicated that the main effect of Suggestion was not significant at Time 1, $F(6.9)=1.23$, $p<.375$, power=.28. The Suggestion effect was also not significant at Time 2, $F(6,7)=1.18$, $p<.413$, power=.23. However, given the small sample size and resulting low power, it is possible that an effect

was present but could not be detected by this analysis. Visual inspection of the means at Times 1 and 2 suggested that the Suggestion manipulation exerted an effect in the expected direction for several of the dependent variables. In other words higher ratings were noted in the pain suggesting condition relative to the pain denying condition for some variables, although the differences did not reach statistical significance.

Table 3. Pilot Data Set 2: Mean Immediate Recall Ratings as a Function of Suggestion (Time 1). (N=18)

	n	Pain Suggesting M (SD)	n	Pain Denying M (SD)
Instrument	9	35.56 (35.89)	9	35.44 (27.71)
Solution	9	46.33 (33.76)	9	29.56 (34.53)
Touch	8	54.75 (40.1)	9	35.44 (30.97)
Pain Occasions	9	3.50 (2.87)	9	1.78 (1.39)
Pressure Occasions	9	3.83 (3.08)	8	4.00 (4.00)
Anxiety	9	44.22 (40.97)	9	64.67 (39.07)

Table 4. Pilot Data Set 2: Mean Delayed Recall Ratings as a Function of Suggestion (Time 2). (N=18)

	n	Pain Suggesting M (SD)	n	Pain Denying M (SD)
Instrument	9	52.44 (35.53)	9	36.00 (29.60)
Solution	9	40.25 (37.49)	9	24.00 (25.65)
Touch	8	69.00 (33.04)	9	40.11 (40.03)
Pain Occasions	9	5.00 (5.85)	9	5.00 (9.51)
Pressure Occasions	9	5.17 (5.90)	8	13.56 (24.94)
Anxiety	9	41.00 (46.09)	9	62.44 (38.82)

Correlations were computed between ratings given at immediate and delayed recall for all dependent variables. These were examined as to assess whether ratings were more or less consistent as a function of the type of suggestive questioning presented. As indicated in

Table 5. the correlations ranged from moderate to high, and reached statistical significance for 4 of the 6 variables in each suggestion condition. Mean correlations were computed for each suggestion condition and were compared to assess any differences in consistency of ratings as a function of suggestion. Means did not differ significantly according to values obtained using Fisher's z transformation, $z = -.518$, $p > .05$.

Table 5. Pilot Data Set 2: Correlations between Immediate and Delayed Recall Ratings. (N=18)

	Pain Suggesting (n=9)	Pain Denying (n=9)
Instrument	.51*	.98*
Solution	.83*	.97*
Touch	.55	.64
Pain Frequency	.94*	.46
Pressure Frequency	.81*	.86*
Anxiety	.92*	.87*
Mean Correlation	.76	.80

*$p < .01$

Finally, immediate and delayed recall data were subjected to a Repeated Measures MANOVA with Time as the within participants factor and Suggestion as the between participants factor. The model indicated no significant interaction effects or main effects. The analysis was repeated with the addition of Biopsy as a covariate. Again, sample size was reduced due to having incomplete information regarding which participants had a biopsy. However, the addition of the covariate strengthened the effect of Suggestion (from $p < .650$ to $p < .580$) and weakened the effect of Time (from $p < .330$ to $p < .850$). This suggested again that the effect of Suggestion is more apparent when the effect of Biopsy is controlled.

Discussion. Pilot data offered minimal support that the suggestion manipulation exerted an effect. When immediate recall data were examined for all 65 participants, means did not differ significantly across suggestion conditions but appeared to follow in the expected direction. In other words, suggestions of pain enhancement appeared to be associated with higher pain ratings than suggestions of pain minimization, but this casual observation was not statistically supported. When delayed recall data were examined, the suggestion effect again failed to reach statistical significance, although small sample sizes make it difficult to draw conclusions from that set of data. While it is possible that suggestive information does indeed affect retrospective ratings of pain, the effect was not detected in the pilot data.

It was therefore recommended that the suggestion manipulation be strengthened in the full study so that Pain Suggesting and Pain Denying conditions would differ more markedly. It was also apparent that any effect of suggestion would be complicated by whether or not the patient experienced a biopsy. This was either due to the fact that having a biopsy results in increased trauma to the cervical tissue (and likely increased pain) or that women who experience a biopsy are given additional precautionary instructions and must await the results of a test to determine their risk of developing cancer. It was deemed necessary to measure the effect of Biopsy in the full study and to statistically control for the effect in the analyses.

Pilot data also indicated that ratings did not consistently differ as a function of Language. Therefore, Language was not included as an independent variable in the full

study, but women were offered the opportunity to participate in either English or Spanish. Given that the multivariate interaction effect between Suggestion and Language approached significance in the pilot data, it was deemed important to examine the relationship between preferred language and the dependent variables in the full study.

In addition to aiding in the development of the study methodology, the pilot study was helpful for other practical reasons. The examiner was able to assess the feasibility of conducting research in the busy clinic setting and with this medical population. Potential obstacles such as language barriers and lack of telephones did not appear to be significant problems with regard to data collection. Patients were generally cooperative with the study even with minimal compensation, and the process of data collection did not interfere with the flow of medical care at the clinic. Medical staff were also very receptive to having the full study conducted.

THE PRIMARY STUDY

Findings from the pilot data led to the development of the primary study. Several modifications were made including strengthening the Suggestion manipulation in order to maximize the differences between the Pain Suggesting and Pain Denying conditions. A third level of the Suggestion variable was also added to include a No Suggestion control group. This allowed for examination of pain ratings in the absence of any suggestive information. Another change was in the number and type of pain questions asked of each participant. Pilot participants were asked to rate only the sensory dimension of three aspects of the medical exam (i.e., speculum insertion, application of acetic acid, and contact of medical instrument with cervical tissue). However, the pain assessment literature suggests that multiple dimensions of pain be assessed (Melzack & Katz, 1994). Thus, in the full study women were asked to rate both sensory and affective dimensions of their pain. The question about acetic acid was deleted because not every participant was aware of having experienced that part of the exam. In the full study questions were presented in different orders at immediate versus delayed recall for each participant. One of five orders was randomly selected to minimize recall of the specific questions. Finally, the numerical rating scale was changed from "1 to 100" to "0 to 100" to indicate more clearly that the lowest possible rating "0" represented an absence of pain or anxiety.

As stated, Language was not included as an independent variable in the full study. However, another variable was added in order to assess whether responsiveness to suggestion was due to the effects of repeated questioning or simply due to the passage of

time. The independent variable Number of Recall Sessions was added as a between participants factor, with half of the participants questioned on one occasion only (8 days after the doctor visit), and half questioned on two occasions (immediately after the exam and again 8 days later). The change in recall period from 7 to 8 days was based on the experimenter's schedule.

As noted in the pilot data, patients' pain ratings appeared to have been affected by whether or not they underwent a Biopsy. Thus, the Biopsy variable was measured in the full study with the intent of statistically controlling for its effects in the analyses. Other variables including trait anxiety (Kent, 1985) and present pain level (Eich et al., 1985) were reported in the literature to affect retrospective pain ratings. These variables were also measured and considered for inclusion in the analyses as covariates.

Design. The two independent variables were Suggestion (Pain Suggesting versus Pain Denying versus No Suggestion) and Number of Recall Sessions (Immediate and Delayed versus Delayed Only). Three covariates were measured. These were: Biopsy (whether or not the patient underwent a biopsy procedure), Trait Anxiety (as measured by the STAI), and Present Pain Intensity (as measured on a 0 to 100 Numerical Rating Scale of sensory pain intensity at the time of recall). The dependent variables were numerical ratings of sensory pain intensity (2 ratings), affective pain intensity (2 ratings), pain frequency (2 ratings), and state anxiety (1 rating). The 7 questions used to generate the ratings are discussed in the method section.

Hypotheses. It was predicted that relative to control participants, participants in the Pain Suggesting condition would report higher pain ratings, and participants in the Pain Denying condition would report lower pain ratings. This prediction was based on findings that suggestive information presented at the time of recall becomes incorporated into the original memory and alters memory for the event. Change in pain ratings should follow the direction of the suggestion. It was also predicted that having multiple recall sessions would result in higher pain ratings for participants in the Pain Suggesting condition and lower ratings for participants in the Pain Denying condition (relative to participants who have only one recall session). This is also based on the idea that memory is a reconstructive process, and that with each act of recollection, new information has the opportunity to become embedded in that memory. Thus, two recall trials involving two exposures to the suggestive information were predicted to influence memory to a greater degree than only one recall trial. Though statistically significant, the trends in the pilot data offered support for these predictions.

Method.

Participants. Women attending the Dysplasia clinic at John Peter Smith Health Center for Women in Fort Worth, Texas, were offered the opportunity to participate in the study. John Peter Smith Hospital is a tertiary care medical center serving an urban, medically indigent population. A total of 123 women participated in the study. An additional 180 women were approached by the experimenter but were excluded from the final sample. Reasons for exclusion were as follows: refusal (42), consented but quit or could not be reached by phone (30), attended clinic for reasons other than colposcopic examination (25),

pregnant (21), under the age of 18 (11), incarcerated (8), already participated in study (10), patient deaf or spoke a language other than English or Spanish (5). Spanish translations of the study materials were not available during the initial weeks of the study, and this excluded 25 additional participants. The final inclusion rate for the study was 40.46%. Data for one participant were excluded because she appeared not to understand two of the questions despite repeated clarification.

Of the 123 participants, ages ranged from 18 to 69, with 50% of the sample falling between the ages of 18 and 28. Ethnic composition was as follows: Hispanic (34.9%), Caucasian (33.3%), African-American (29.3%), Asian (3.2%) and other (4.1%). Over two-thirds of the sample attained at least a high school diploma or equivalency degree. Preferred language was English for 100 participants and Spanish for the remaining 23.

Materials. All materials were translated into Spanish by a native speaker and were verified for accuracy by a professor of linguistics who is fluent in Spanish. An anchored Numerical Rating Scale was used to assess sensory and affective pain intensity. Patients were asked to rate their pain on a scale from 0 to 100, with 0 being 'no pain at all', 50 being 'a moderate amount of pain,' and 100 being 'the worst imaginable pain.' Participants were instructed to use any number from 0 to 100. Ratings were asked verbally rather than in writing so that administration was standardized across participants and over time regardless of the patient's literacy status or whether the interview was in person or by phone.

Interview questions developed by the author were used to represent suggestions of pain enhancement or pain minimization. Suggestive information was presented in the form of

preliminary statements and in the words used to ask about pain ratings. In the Pain Suggesting condition, for instance, participants were told at the beginning of the interview that most women regard the colposcopic examination as very painful and anxiety provoking. In the Pain Denying condition participants were told that most women do not find the exam to be particularly painful and that most women are not especially nervous. Specific words used to ask about pain were also varied across suggestion groups. The verb "shoved" was used in the Pain Suggesting condition to ask about insertion of the speculum, while "inserted" was used in the Pain Denying and No Suggestion conditions. Similarly, the verb "jabbed" was used to ask about contact with the medical tool in the Pain Suggesting condition versus "touched" in the other two suggestion groups. The word "distressing" was used in the Pain Suggesting condition to ask about affective pain severity while "upsetting" was used in the other suggestion groups.

The 7 specific questions used to assess pain were similar to those used in the pilot studies with the addition of affective pain ratings. Affective pain refers to the degree of emotional distress associated with the pain experience versus the degree of sensory pain or nociceptive stimulation. The 7 questions were as follows: 1. Rating of the severity of sensory pain upon speculum insertion (0 to 100), 2. Rating of affective pain severity upon speculum insertion (0 to 100), 3. Rating of sensory pain severity upon contact between cervical tissue and the medical instrument (0 to 100), 4. Rating of affective pain severity upon contact between cervical tissue and the medical instrument (0 to 100), 5. Rating of the number of times the patient experienced pain during the exam, 6. Rating of the number of

times the patient experienced a pressure sensation during the exam, 7. Rating of state anxiety during the exam (0 to 100). For some patients, the examination may have involved multiple occasions of contact between cervical tissue and a medical instrument (i.e., if multiple biopsies were taken). In those situations the patient was asked to rate the most severe levels of sensory and affective pain experienced (for questions 3 and 4). See Appendices K through P for specific wording of questions in each Suggestion condition at immediate and delayed recall.

Patient trait anxiety level was assessed using the State-Trait Anxiety Inventory, Form X (STAI), in the patient's preferred language (see Appendix Q). Permission to photocopy the STAI was obtained in writing (see Appendix R). Pain intensity at the time of recall was assessed using a 0-100 verbal, anchored numerical scale (Appendix S). Clinic records were reviewed to determine what procedures were undergone by each patient.

Procedure. The study was approved by the Institutional Review Boards of both the sponsoring university and the hospital where the data were collected (see Appendix T). The procedure for the full study was similar to that of the pilot study. Upon arrival to the clinic, women were greeted by the examiner who was seated in the hallway. Patients were asked to participate in the study on a volunteer basis. Patients first completed a statement of informed consent in their preferred language (see Appendix U). They then were asked to rate their present pain intensity (PPI) and complete the STAI-trait form and a brief demographics questionnaire (Appendix V). Patients then entered the waiting area and proceeded with their medical exam. They first informed the clerk that they had arrived and were given written

information regarding dysplasia (see Appendix H). This information included a statement that a biopsy might be needed if any abnormalities were noted during colposcopic exam. Patients who did undergo a biopsy procedure received additional written instructions which also appear in Appendix H.

Following the medical examination, participants in the Immediate and Delayed recall condition were asked the 7 pain questions in one of three Suggestion conditions (see Appendices K through P). Assignment to condition was randomly determined. Data were recorded in writing by the examiner (see Appendix W). After the interview a time for the telephone appointment was set. Participants in the Delayed Only condition were simply asked to set a time for the delayed recall interview. All participants received a pocket calendar (see Appendix X). Delayed recall interviews were completed by telephone 8 days following the clinic appointment. Ten of the participants could not be reached by phone on the eighth day, and data were collected 9 days after the clinic visit. Recall data did not differ as a function of the 8 versus 9-day delay period. Following the delayed recall interview, survey data were collected regarding patients' perceptions of ways to help with attending clinic appointments. A convenience sample of 73 participants completed the survey. See Appendix Y for the 10 survey items and 2 open-ended questions. Participants were debriefed by phone and given the opportunity to ask questions about the study. Finally, a debriefing letter (Appendix Z) and McDonald's coupon (Appendix X) were mailed to each participant.

RESULTS

The dependent variables in this study were patients' responses to 7 questions used to assess pain and anxiety immediately following the medical exam and again 8 days later. Immediate Recall ratings were labeled I1 through I7, and Delayed Recall ratings were labeled D1 through D7. Note that ratings 1, 2, 3, 4, and 7 were numerical ratings ranging from 0 to 100 while ratings 5 and 6 were frequency ratings. In the event that a participant reported an imprecise response (i.e., "about 60 or 70" or "it hurt 2 or 3 times"), the response was coded as the mean value (i.e., 65 or 2.5). As stated, delayed recall ratings did not differ as a function of the 8 versus 9-day delay period, $F(7,114)=.957$, $p<.466$. Ratings also did not differ as a function of the order of question presentation at either immediate, $F(28,216)=1.03$, $p<.433$, or delayed recall, $F(28, 456)=.92$, $p<.584$.

Demographic Data. Suggestion groups were compared for equivalence with regard to demographic composition. Groups were not found to differ as a function of age, $F(2,120)=.20$, $p<.820$, education, $X^2(14)=11.46$, $p<650$, race, $X^2(8)=6.30$, $p<.610$, language, $X^2(2)=3.06$, $p<.220$, or trait anxiety, $F(2,120)=1.52$, $p<.220$.

Demographic variables were examined in relation to the dependent variables. Age did not correlate significantly with any variables measured at Immediate Recall but did correlate significantly with anxiety level measured at Delayed Recall (D7) ($r=-.19$, $p<.037$). Younger age was associated with higher state anxiety ratings at delayed recall. Education correlated significantly with patients' immediate recall ratings of their level of distress upon contact with the medical instrument (I4, $r=-.26$, $p<.045$). Education also was significantly correlated with

patients' delayed recall ratings of pain severity upon speculum insertion (D1, r=-.2394, p<.008) and their level of distress upon speculum insertion (D2, r=-.1981, p<.028). In all three cases, lower education was associated with higher ratings. Language was the primary demographic variable of interest given findings in the pilot data that the Language by Suggestion interaction approached significance. Point-biserial correlations were computed with "English" coded as 1 and "Spanish" coded as 2. Language was significantly correlated with patients' immediate recall of their level of distress upon speculum insertion (I2, r=.39, p<.002) and upon contact with the medical instrument (I4, r=.30, p<.019). Language was also significantly correlated with participants' delayed recall ratings of their sensory pain severity upon speculum insertion (D1, r=.30, p<.001) and level of distress upon speculum insertion (D2, r=.29, p<.001). In all of these cases, the correlations were positive, indicating that Spanish was associated with higher ratings than English.

Delayed Recall Data, Correlational Findings. Delayed recall data were obtained for the entire sample of 123 participants and were the primary dependent variables of interest in the analyses. For these reasons, delayed recall data are presented first, followed by immediate recall data and additional findings that pertain only to subsets of the study sample.

Before proceeding with the multivariate analyses, intercorrelations were examined among the 7 delayed recall ratings. As indicated in Table 6, ratings D1 (sensory pain severity upon speculum insertion), D2 (affective pain severity upon speculum insertion), D3 (sensory pain severity upon contact with the medical tool), D4 (affective pain severity upon contact with the medical tool), and D7 (anxiety level during the medical exam) were all significantly

intercorrelated at the p<.01 level. In other words, higher sensory pain was associated with higher affective pain when the speculum was inserted and when the cervix was touched with a medical instrument. Higher ratings of pain and distress upon speculum insertion were also associated with higher ratings of pain and distress upon contact with the medical instrument. Further, patients' recollections of the severity of their pain, measured in terms of both sensory stimulation and emotional distress, were significantly associated with their recalled level of anxiety during the exam. Rating D5 (pain frequency) was significantly associated with all other variables, indicating that the number of times the patient recalled feeling pain was closely related to how severe they recalled their pain and anxiety to be.

Table 6: Intercorrelations among 7 Delayed Recall Ratings. (N=123)

	D1	D2	D3	D4	D5	D6	D7
D1	--	.64*	.55*	.44*	.19**	.04	.27*
D2		--	.55*	.65*	.28*	.05	.43*
D3			--	.80*	.32*	.11	.47*
D4				--	.29*	.12	.48*
D5					--	.41*	.26*
D6						--	.05
D7							--

*Significant at p<.01.
**Significant at p<.05.

Rating D6 (pressure frequency) was least associated with the other variables. The only variable with which D6 (pressure frequency) was significantly correlated was D5 (pain frequency) (r=.41, p<.010). Thus, participants' judgments of pain severity at delayed recall were associated with the number of times they felt pain but were not associated with the number of times they felt a pressure sensation. Also, patients' level of anxiety during the examination (D7) was significantly associated with all of the other ratings except pressure frequency (D6). Higher state anxiety was therefore associated with higher recalled ratings of pain severity and pain frequency, but not pressure frequency.

Delayed recall ratings were also examined in relation to the 3 covariates. These data are presented in Table 7.

Table 7: Correlations of Covariates with 7 Delayed Recall Ratings. (N=123)

	(Procedure)	Biopsy	PPID	Trait Anxiety
D1	-.03	.04	.04	.38*
D2	.08	-.07	-.03	.35*
D3	.09	-.13	.11	.23*
D4	.13	-.16	.03	.21**
D5	-.01	-.08	.15	.01
D6	-.02	.01	.20**	.14
D7	-.16	-.16	.01	.23*

*Significant at p<.01
**Significant at p<.05

In the pilot study, there was a significant relationship between pain ratings and whether or not the patient had a biopsy. However, pilot ratings were not significantly correlated with the number of procedures to which participants were exposed. In the full study, medical procedure was examined both in terms of a binary variable labeled "Biopsy" (yes/no whether or not the patient had a biopsy) and a continuous variable labeled "Procedure". The "Procedure" variable was coded as follows: 0=colposcopy only, 1=Pap smear, 2=cervical biopsy, 3=endocervical curettage, 4=endocervical curettage and 1 cervical biopsy, 5=endocervical curettage and 2 cervical biopsies. This information was obtained from the clinic records. The "Procedure" variable was considered a continuum ranging from 0=colposcopy only (which involved minimal contact with vaginal or cervical tissue) to 5=endocervical curettage and 2 cervical biopsies (which involved repeated sampling of cervical tissue). The number of patients who underwent each procedure was as follows: colposcopy only (22), Pap smear only (43), 1 cervical biopsy (1), endocervical curettage (10), endocervical curettage and 1 cervical biopsy (34), and endocervical curettage and 2 cervical biopsies (13). Thus, according to medical records, 58 patients underwent at least 1 biopsy, while the remaining 65 did not. As noted in Table 7, neither Biopsy nor Procedure was significantly correlated with any of the delayed recall ratings. Participants' recollections of the severity and frequency of pain were apparently not related to the actual procedures that were conducted. This finding will be further examined in the section "Additional Findings."

The two other variables considered for inclusion as covariates were Present Pain Intensity at the time of delayed recall and Trait Anxiety. Of the 123 women in the study, 94

rated their present pain level at delayed recall as "0" on a 0 to 100 scale. This resulted in a low mean for the entire sample (M=11.86, SD=26.04). For those 29 patients who reported pain at delayed recall, mean intensity was 50.34 (SD=30.94). Of these, 14 women reported having abdominal pain and 15 reported having pain at other sites. Pain intensity at delayed recall correlated significantly with ratings of pressure frequency (D6) (r=.20, p<.020) but not with any of the other variables. Thus, present pain intensity did not appear to be closely associated with this set of retrospective pain ratings. This finding will be further discussed.

The third covariate, Trait Anxiety, was derived from participants' scores on the trait form of the State-Trait Anxiety Inventory. Mean STAI-trait raw score for the entire sample was 42.93. Raw scores were converted to t-scores using normative data from the STAI manual (Spielberger et al., 1970). The mean STAI t-score for the overall sample was 51.25 which corresponded to a level of trait anxiety within the normal range. Trait Anxiety correlated significantly with 5 of the 7 delayed recall ratings: sensory pain severity upon speculum insertion (D1) (r=.37, p<.001), affective pain severity upon speculum insertion (D2) (r=.35, p<.001), sensory pain severity upon contact with medical instrument (D3) (r=.23, p<.010), affective pain severity upon contact with medical instrument (D4) (r=.21, p<.020), and state anxiety level during the examination (D7) (r=.23, p<.010). Patients' judgments of the severity of their pain and anxiety during the examination were therefore associated with their general tendency to be anxious. Trait anxiety did not, however, correlate significantly with ratings of pain or pressure frequency. These findings will be elaborated in the discussion.

Delayed Recall Data, Multivariate Findings. Delayed Recall data for the entire sample were analyzed in a series of 3 (Suggestion) x 2 (Number of Recall Sessions) between subjects MANOVAs. The first MANOVA included no covariates and 7 dependent variables. The multivariate interaction effect between Suggestion and Number of Recall Sessions was not significant, $F(14, 222)=1.17$, $p<.296$, power=.71. The main effect for Suggestion approached significance in the multivariate analysis, $F(14,222)=1.54$, $p<.099$, effect size=.09, power=.85, and was significant for four of the seven univariate tests. Those univariate tests that indicated a significant suggestion effect were as follows: D2, the rating of how distressing or upsetting was the speculum insertion [$F(2,116)=3.78$, $p<.026$, power=.68]; D3, the rating of sensory pain severity when the medical tool contacted cervical tissue [$F(2,116)=3.03$, $p<.052$, power=.58]; D4, the rating of how upsetting or distressing was the contact between the medical tool and cervical tissue [$F(2,116)=4.82$, $p<.010$, power=.79], and D7, the rating of state anxiety during the exam [$F(2,116)=3.33$, $p<.039$, power=.62]. In other words, for some variables delayed recall ratings of pain differed significantly as a function of the manner in which the questions were asked.

Specific differences were assessed using post-hoc comparisons. Means are presented in Table 8. When recalling the degree of emotional distress experienced during speculum insertion (D2), participants in the Pain Suggesting condition recalled significantly higher ratings ($M=40.24$) than participants on the Pain Denying condition ($M=22.12$), $t=2.66$, $p<.009$, and significantly higher ratings that participants in the No Suggestion condition ($M=26.46$), $t=1.97$, $p<.051$. Also, when recalling their degree of sensory pain experienced

during contact with the medical instrument (D3), Pain Suggesting participants reported significantly higher ratings (M=59.22) than Pain Denying participants (M=42.33), t=2.34, p<.021. When recalling their degree of emotional distress experienced upon contact with the medical tool (D4), Pain Denying participants recalled significantly lower ratings (M=30.47) than Pain Suggesting participants (M=53.38), t= -3.02, p<.003 and significantly lower ratings than No Suggestion participants (M=46.10), t= -2.06, p<.042. Finally, when recalling state anxiety level during the medical exam (D7), Pain Denying participants recalled significantly lower ratings (M=35.64) than No Suggestion participants (M=54.79), t= -2.48, p<.014). For each of these significant differences, means were in the directions predicted by the experimental hypotheses. Suggestions of pain enhancement were associated with higher ratings than suggestions of pain minimization or no suggestion at all, and suggestions of pain minimization were associated with lower ratings than no suggestion..

Table 8: Mean Delayed Recall Ratings as a Function of Suggestion. (N=123)

	Pain Suggesting (n=40) M (SD)	No Suggestion (n=39) M (SD)	Pain Denying (n=44) M (SD)
D1	42.28 (26.61)	37.27 (31.99)	34.61 (34.10)
D2* **	40.24 (32.92)	26.46 (33.32)	22.12 (26.77)
D3*	59.22 (32.46)	55.14 (34.70)	42.33 (34.52)
D4* **	53.38 (33.26)	46.10 (37.42)	30.47 (34.18)
D5	2.87 (2.93)	2.62 (2.08)	2.22 (2.51)
D6	3.71 (4.87)	2.69 (2.29)	2.20 (1.85)
D7*	49.47 (33.82)	54.79 (36.99)	35.64 (33.81)

*Significant univariate effect in MANOVA (p<.05) before addition of covariates.
**Significant univariate effect in MANOVA (p<.05) after addition of covariates.

Those variables for which the univariate Suggestion effect was not significant were as follows: D1, rating of sensory pain severity upon insertion of the speculum [$F(2,116)=0.61$, $p<.547$, power=.15]; D5, pain frequency rating [$F(2,116)=0.73$, $p<.481$, power=.17]; and D6, pressure frequency rating, [$F(2,116)=2.30$, $p<.104$, power=.45]. The other factor, Number of Recall Sessions, did not produce a significant main effect in the MANOVA, $F(7,110)=0.40$, $p<.902$, effect size=.025, power=.17. Participants who rated their pain on two occasions did not report ratings that were significantly different from participants who rated their pain on only one occasion. Relevant means are presented in Table 9.

Table 9: Mean Delayed Recall Ratings as a Function of Number of Recall Sessions. (N=123)

	Immediate and Delay (n=62) M (SD)	Delay Only (n=61) M (SD)
D1	36.65 (32.55)	39.27 (29.69)
D2	26.55 (31.89)	32.27 (31.52)
D3	47.62 (34.59)	56.22 (34.01)
D4	38.74 (35.94)	47.08 (35.89)
D5	2.47 (1.85)	2.64 (3.08)
D6	2.82 (1.89)	2.87 (4.29)
D7	45.62 (35.93)	46.82 (35.40)

The MANOVA was repeated with the addition of Trait Anxiety, Present Pain Intensity (at Delayed Recall), and Biopsy as covariates. As expected, covariates were significant for those variables with which they were found to correlate significantly. Trait anxiety was significant for variables D1, sensory pain upon speculum insertion, [$t=4.45$, $p<.001$], D2, affective pain upon speculum insertion, [$t=4.34$, $p<.001$], D3, sensory pain

upon contact with the medical tool [t=2.44, p<.016], D4 affective pain upon contact with the medical tool [t=2.19, p<.031], and D7, state anxiety during the exam [t=2.23, p<.027]. Present Pain Intensity at Delayed Recall was significant for D6, pressure frequency [t=2.25, p<.026]. Biopsy approached significance for D7, state anxiety during the exam [t=-1.90, p<.059]. In other words, Trait Anxiety was contributing a significant portion of the variance for 5 of the 7 variables, while the other covariates were each contributing to only 1 variable.

Inclusion of the covariates did not substantially change the multivariate interaction term F(14,216)=1.20, p<.270, effect size=.072, power=.73. However, the multivariate Suggestion effect changed from being significant at the p<.099 level to being significant at the p<.077 level, F(14,216)=1.61, p<.077, effect size=.09, power=.87. This indicated that controlling for variance due to the covariates made the effect of Suggestion stronger. Of the univariate analyses, only 2 out of 7 remained statistically significant when the covariates were included. These were: D2 which was the rating of how distressing or upsetting was the speculum insertion, F(2,113)=4.44, p<.014, power=.75; and D4 which was the rating of how distressing or upsetting was the contact with the medical instrument, F(2,113)=4.27, p<.016, power=.73. Refer to Table 8 for means. Post-hoc comparisons indicated that when recalling their level of emotional distress upon speculum insertion (D2), Pain Suggesting participants recalled significantly higher ratings (M=40.24) than participants in the Pain Denying condition (M=22.12), t=2.62, p<.010, and participants in the No Suggestion condition (M=46.10), t=2.56, p<.012). Also, when recalling their level of emotional distress upon contact with the medical tool (D4), participants in the Pain Suggesting condition recalled significantly greater

ratings (M=53.38) than participants in the Pain Denying condition (M=30.47), t=2.87, p<.005. Suggestions of pain enhancement were therefore associated with significantly higher ratings of affective pain relative to suggestions of pain minimization or no suggestion at all.

The fact that the univariate analyses changed from being significant to nonsignificant for variables D3 and D7 suggested that Trait Anxiety was accounting for much of the noted differences for those variables. In other words, participants' ratings of sensory pain intensity when the medical instrument made contact with cervical tissue (D3) and state anxiety during the medical examination (D7) were largely a function of the patients' general tendency to be anxious. The nonsignificant univariate analyses were as follows: D1 [F(2,113)=0.82, p<.442, power=.19], D3 [F(2,113)=2.56, p<.082, power=.50], D5 [F(2,113)=0.70, p<.499, power=.17], D6 [F(2,113)=2.34, p<.101, power=.47], and D7 [F(2,113)=2.70, p<.071, power=.51]. The effect of Number of Recall Sessions remained nonsignificant with the inclusion of the covariates, F(7,107)=0.70, p<.675, power=.29.

Immediate Recall Data, Correlational Findings. Note that only half of the study sample (n=62) completed immediate recall ratings. Intercorrelations among the 7 immediate recall ratings are presented in Table 10. As with the delayed recall ratings, the following immediate recall ratings were significantly intercorrelated: I1 (sensory pain severity upon speculum insertion), I2 (affective pain severity upon speculum insertion), I3 (sensory pain severity upon contact with the medical tool), I4 (affective pain severity upon contact with the medical tool), and I7 (state anxiety during the exam). Most of these were significant at the p<.01 level (see Table 10 for values). Again, this indicated

that participants' immediate recall ratings of sensory pain were significantly associated with ratings of affective pain. Ratings pertaining to the insertion of the speculum were significantly associated with ratings pertaining to contact between cervical tissue and the medical instrument. Ratings of sensory and affective pain severity were closely associated with the level of anxiety the patients recalled experiencing during the examination.

Table 10: Intercorrelations among 7 Immediate Recall Ratings. (n=62)

	I1	I2	I3	I4	I5	I6	I7
I1	--	.49*	.51*	.56*	.19	.09	.28**
I2		--	.57*	.73*	.30**	.14	.58*
I3			--	.69*	.32*	.21	.37*
I4				--	.40*	.16	.37*
I5					--	.53*	.17
I6						--	.04
I7							--

*Significant at $p<.01$.
**Significant at $p<.05$.

The pain frequency rating (I5) correlated significantly with I2 ($r=.30$, $p<.019$), I3 ($r=.32$, $p<.011$), and I4 ($r=.40$, $p<.001$) and with the pressure frequency rating (I6) ($r=.53$, $p<.001$). Patients' ratings of pain severity were apparently closely related to their immediate recollections of how many times they felt pain during the exam. Unlike at

delayed recall, pain frequency (I5) did not correlate significantly with I1 (sensory pain severity upon speculum insertion) (r=.194, p<.130). However, given that the value of the correlation was actually greater than that at delayed recall (r=.188), the failure to find a significant correlation may be due to the reduced sample size at immediate recall (n=62) versus delayed recall (n=123). As with the delayed recall ratings, pressure frequency (I6) was not significantly associated with any other variables except pain frequency (I5) (r=.41, p<.001). Again, ratings of sensory and affective pain severity did not appear closely associated with ratings of pressure frequency.

Table 11 contains correlations of the 3 covariates with the 7 Immediate Recall ratings. A variable labeled "Procedure" was again created to examine the relation between participants' pain ratings and the degree of nociceptive stimulation to which the patient was subjected. The Biopsy variable was a binary variable to code whether or not the patient underwent a biopsy. As with the Delayed Recall ratings, Procedure and Biopsy did not correlate significantly with any of the Immediate Recall ratings. This again indicated that patients' retrospective ratings of their pain and anxiety were not associated with the type of procedures done during their examination.

Pain intensity at the time of the immediate recall task (PPII) represents participants' ratings of pain *before* the medical examination rather than exactly at the time of the immediate recall task. This was intended to assess patients' preexisting pain levels unrelated to the procedure that may have affected ratings of pain endured during the medical examination. This variable is therefore more accurately labeled Preexisting

Pain Intensity at the time of Immediate Recall (PPII) and is a different variable from the present pain intensity rating measured at the time of delayed recall. Of the 123 women in the study, 86 rated their pain immediately before the exam as "0" on a 0 to 100 scale. The overall mean for the entire sample was 12.00 (SD=25.54). Of the 37 women who reported having pain, 13 described the site of pain as "abdominal", 1 as "vaginal", and 23 as "other". Mean pain intensity for those 37 participants was 39.89 (SD=32.66).

Table 11: Correlations of Covariates with 7 Immediate Recall Ratings. (n=62)

	(Procedure)	Biopsy	PPII	Trait Anxiety
I1	-.11	.11	-.01	.39*
I2	-.04	.03	-.00	.18
I3	-.05	.01	.20	.31*
I4	-.11	.13	.17	.30*
I5	-.04	.04	.31*	.14
I6	-.01	-.01	.46*	.07
I7	-.05	-.03	.07	.20

*Significant at p<.01.
**Significant at p<.05.

As indicated in Table 11, PPII correlated significantly with ratings of pain frequency (I5) (r=.31, p<.014) and pressure frequency (I6) (r=.46, p<.001). This differed from findings with the delayed recall ratings in that pain intensity at the time of delayed recall was only significantly correlated with pressure frequency. Immediately after the

medical examination patients' preexisting pain levels were associated with their recollections of pain and pressure during the examination, while at delayed recall, the patients' current pain level was only associated with their recollections of pressure sensations.

The third covariate, Trait Anxiety, was significantly correlated with 3 of the immediate recall ratings. These were: I1 (sensory pain severity upon speculum insertion, $r=.39$, $p<.002$), I3 (sensory pain severity upon contact with the medical tool, $r=.31$, $p<.013$), and I4 (affective pain severity upon contact with the medical tool, $r=.30$, $p<.020$). As with delayed recall ratings, immediately after the medical exam, patients' recollections of sensory and affective pain severity were significantly associated with their general propensity for anxiety. However, Trait Anxiety was not significantly correlated with the immediate recall rating of state anxiety (I7).

Immediate Recall Data, Multivariate Findings. Immediate Recall ratings were subjected to a series of one way MANOVAs with Suggestion as a between participants factor. See Table 12 for means. In the first MANOVA with no covariates, there was no main effect of Suggestion, $F(14,108)=0.85$, $p<.610$, effect size=.10, power=.51. Mean ratings did not significantly differ as a function of how the questions were asked. When Trait Anxiety, Biopsy, and Preexisting Pain Intensity (at Immediate Recall) were added as covariates, the Suggestion effect was slightly strengthened but failed to approach significance, $F(14, 102)=0.91$, $p<.550$, effect size=.11, power=.54. This finding will be discussed in the following section.

Table 12: Mean Immediate Recall Ratings as a Function of Suggestion. (n=62)

	Pain Suggesting (n=20) M (SD)	No Suggestion (n=21) M (SD)	Pain Denying (n=21) M (SD)
I1	25.25 (28.20)	34.38 (36.54)	38.19 (33.03)
I2	25.05 (31.16)	23.14 (32.99)	23.33 (25.21)
I3	38.80 (36.00)	39.33 (39.16)	40.43 (37.29)
I4	38.65 (38.92)	24.67 (34.61)	29.76 (31.68)
I5	2.57 (2.22)	2.36 (1.81)	2.52 (1.83)
I6	2.35 (2.11)	2.47 (1.70)	2.76 (2.34)
I7	38.60 (35.53)	51.05 (45.02)	32.86 (33.41)

Immediate and Delayed Recall Data. For those participants who completed two sets of ratings (n=62), data were subjected to a series of repeated measures MANOVAs. Suggestion was a between subjects factor and Time was a within subjects factor. In the first analysis with no covariates, there were no main effects of either Suggestion, $F(14, 108)=0.70$, $p<.765$, effect size=.084, power=.42, or Time, $F(7, 53)=1.02$, $p<.430$, effect size=.12, power=.40, and the interaction effect was not significant, $F(14, 108)=1.37$, $p<.180$, effect size=.15, power=.77. When Trait Anxiety, Biopsy, and Preexisting Pain Intensity (at Immediate and Delayed Recall) were added to the analysis, the findings were not substantially changed. Again, there were no main effects of either Suggestion, $F(14,100)=.67$, $p<.801$, effect size=.085, power=.39, or Time, $F(7, 53)=1.02$, $p<.426$, effect size=.12, power=.40, and there was no interaction effect, $F(14, 108)=1.37$, $p<.179$, effect size=.15, power=.77. Thus, subjects' ratings did not differ significantly from Time 1 (at Immediate Recall) to Time 2 (at Delayed Recall), even when variance due to the 3 covariates was controlled.

Finally, correlations were examined between ratings completed at Time 1 (Immediate Recall) and Time 2 (Delayed Recall). Data are presented in Table 13. Correlations were examined across Suggestion groups to attain a sense of the reliability of ratings for each group. Mean correlations were computed individually for each level of the Suggestion variable. These were: Pain Suggesting ($\underline{r}$=.71), Pain Denying ($\underline{r}$=.61), and No Suggestion ($\underline{r}$=.55). Casual inspection of these data suggested that ratings completed by No Suggestion participants were less reliable than the other two groups. However, these differences were not significant at the $\underline{p}$<.050 level according to Fisher's $\underline{z}$ transformation.

Table 13: Correlations between Ratings Given at Times 1 and 2. (n=62)

	Pain Suggesting (n=20)	**Pain Denying (n=21)**	**No Suggestion (n=21)**
I1 with D1	.63*	.65*	.50**
I2 with D2	.77*	.46**	.72*
I3 with D3	.64*	.72*	.39
I4 with D4	.73*	.55*	.60*
I5 with D5	.84*	.70*	.37
I6 with D6	.76*	.65*	.78*
I7 with D7	.62*	.51*	.48**
Mean Correlation	.71	.61	.55

*$\underline{p}$<.01
**$\underline{p}$<.05

Additional Findings. Recall that the variables "Biopsy" and "Procedure" were not found to correlate significantly with any of the immediate or delayed recall ratings, suggesting

that pain ratings were independent of what was actually done to the patient. Information on the medical procedures was obtained from clinic records. However, after completion of the 7 interview questions, each patient was asked whether or not she underwent a biopsy. When self-report data were compared to clinic records, several discrepancies were noted. When asked whether they underwent a biopsy, 71 women said "yes," 40 said "no," and 12 were unsure. According to clinic records, however, only 58 patients underwent biopsies. The 65 remaining patients experienced either colposcopy only or a Pap smear.

These data were further examined in terms of how many subjects were correct or incorrect with regard to their medical procedure. Six outcomes were possible. The patients' responses were either "yes," "no," or "unsure," and the medical records indicated either "yes" or "no" as to whether a biopsy was done. The number of patients in each of the 6 categories was as follows: 1) medical record "yes"/patient "yes" (n=48); 2) medical record "yes"/patient "no" (n=5); 3) medical record "yes"/patient "unsure" (n=5); 4) medical record "no"/patient "yes" (n=23); 5) medical record "no"/patient "no" (n=35); 6) medical record "no"/patient "unsure" (n=7). In other words, 48 participants correctly stated that they underwent a biopsy, and 35 correctly stated that they did not. Five patients actually underwent biopsies but stated that they did not, and 23 others did not have biopsies but reported that they did. Of those who were unsure, 5 did undergo biopsies and 7 did not. The total number of "correct" women was 83 while the remaining 40 women were either incorrect or unsure.

Demographic data were examined in relation to whether patients were correct, incorrect, or unsure about their procedure. Groups did not significantly differ by age,

F(2)=1.19, p<.306, or level of education, X^2(14)=16.42, p<.288. When race was examined, the Chi square was significant, X^2(8)=15.99, p<.040, but not interpretable given that expected frequencies were less than 5 and given that standardized residuals did not exceed 2.0. Racial groups were reexamined in terms of women who were correct versus women who were either incorrect or unsure, and there were no significant differences as a function of race, X^2(4)=4.25, p<.370. Groups also did not differ by trait anxiety, F(2,120)=.160, p<.852, or state anxiety ratings given at delayed recall, F(2,120)=.877, p<.419. However, groups did differ significantly as a function of preferred language. Spanish speakers were significantly more likely to respond "I don't know" than expected by chance, X^2(2)=10.21, p<.006. This could mean that Spanish speakers were less likely to understand the meaning of the term "biopsy" or that Spanish speakers were not informed of what was happening in the exam room during the procedure.

Groups were also examined with regard to assignment to experimental condition. The composition of correct, incorrect, and unsure women was not found to differ across Suggestion groups, X^2(4)=1.24, p<.871. However, groups did vary significantly across Number of Recall Sessions, X^2(2)=10.50, p<.005. The number of women who responded "I don't know" (11) in the Delay Only group was significantly greater than expected by chance. This finding will be further discussed in the following section.

A final comparison between "correct" participants and "incorrect or unsure" participants was that of the consistency of pain ratings from time 1 to time 2. This was

done to investigate the hypothesis that women who were incorrect or unsure about whether or not they had a biopsy were simply giving random responses to questions. If correlations between immediate and delayed recall ratings were found to be significantly lower for the incorrect or unsure participants versus the correct participants, then random responding would be supported. Of the 83 women who responded correctly to the biopsy question, 48 completed pain ratings at both immediate and delayed recall. Of the 40 women who responded incorrectly or were unsure, 14 completed both immediate and delayed recall ratings. Correlations were computed between immediate and delayed recall for each of the 7 questions, and a mean correlation was derived. For the sample of 48 "correct" participants, the mean correlation was .64 and for the sample of "incorrect or unsure" participants, the mean correlation was .51. These correlations were not found to differ significantly according to Fisher's z transformation (z=-.60, p>.05). Thus, the consistency of responding to the 7 interview questions did not differ as a function of whether or not participants responded correctly to the biopsy question. Random responding by incorrect or unsure participants was not supported.

The fact that 40 out of 123 women either did not know or were incorrect about what was done to them was important because patients' recollections of their pain (and their responses to the 7 questions asked in the study) may have differed simply as a function of whether or not they understood the medical procedure. Delayed recall data were examined as a function of the six categories previously described. This variable was labeled "Know" to indicate whether the patients knew what was done. In a one way MANOVA with Know as a

between subjects factor, there was a significant multivariate main effect, $F(35, 570)=1.58$, $p<.019$. For two of the delayed recall ratings, the univariate Know effect was significant. These were: the rating of sensory pain severity upon contact with the medical tool (D3), $F(5, 116)=2.40$, $p<.041$, and the rating of affective pain severity upon contact with the medical tool (D4), $F(5. 116)=3.59$, $p<.005$. Participants' delayed recall ratings of pain associated with the medical procedure were significantly different as a function of whether they were correct about what procedure was done to them.

Contrasts were then examined to determine which specific groups differed. Means are presented in Table 14. For rating D3 (sensory pain severity upon contact with the medical tool), participants who correctly reported that they did not undergo a biopsy differed significantly from three other groups. Specifically, the mean delayed recall rating for D3 ($M=36.97$) was lower than that recalled by patients who correctly reported having a biopsy ($M=54.95$), $t= -2.40$, $p<.018$, patients who stated they did not have a biopsy but in fact did ($M=73.80$), $t= -2.29$, $p<.024$, and patients who stated they had a biopsy but in fact did not ($M=63.06$), $t=-2.89$, $p<.004$. In other words, patients who correctly reported that they did not have a biopsy reported significantly lower ratings of pain regarding the moment of contact between the medical instrument and cervical tissue than did patients who correctly reported having a biopsy or who were incorrect about having a biopsy. This finding will be further elaborated in the discussion. For rating D4 (affective pain upon contact with the medical tool), the same pattern of findings was noted. Patients who correctly reported not having a biopsy rated their pain significantly lower ($M=25.71$) than patients who correctly

reported having a biopsy (M=45.48), t= -2.59, p<.011, patients who denied having a biopsy but in fact did (M=82.00), t= -3.43, p<.001, and patients who reported having a biopsy but in fact did not (M=53.74), t=3.03, p<.003.

Table 14: Mean Delayed Recall Ratings as a Function of whether the Participant Correctly Reported having or not having a Biopsy. (n=123)

	1	2	3	4	5	6
	Correct: Medical Record yes/ Patient yes (n=48)	Incorrect: Medical Record yes/ Patient no (n=5)	Unsure: Medical Record yes/ Patient not sure (n=5)	Incorrect: Medical Record no/ Patient yes (n=23)	Correct: Medical Record no/ Patient no (n=35)	Unsure: Medical Record no/ Patient not sure (n=7)
D1	35.54 (32.40)	37.80 (29.14)	44.00 (28.81)	42.65 (29.29)	35.28 (30.14)	48.14 (40.83)
D2	32.62 (32.58)	10.40 (13.81)	46.00 (36.47)	34.78 (34.46)	18.98 (24.49)	43.21 (42.20)
D3 *	54.95 (34.45)	73.80 (19.16)	54.00 (36.47)	63.06 (32.87)	36.97** (32.16)	51.57 (40.07)
D4 *	45.48 (36.65)	82.00*** (20.49)	50.00 (30.82)	53.74 (37.15)	25.71** (30.09)	42.14 (34.62)
D5	2.87 (2.21)	2.40 (1.52)	2.00 (1.41)	2.30 (1.45)	2.68 (3.61)	1.00 (1.41)
D6	2.88 (2.24)	2.30 (0.97)	2.75 (1.71)	2.37 (1.52)	3.41 (5.31)	1.78 (1.73)
D7	49.38 (36.12)	63.60 (41.17)	70.00 (27.39)	46.56 (33.22)	35.57 (34.08)	47.14 (41.52)

*Significant univariate effect in MANOVA (p<.05).
**Significantly different from columns 1, 2, and 4 (p<.05).
***Significantly different from columns 1 and 6 (p<.05).

Another specific finding was that the 5 patients who denied having a biopsy (but in fact did) differed significantly from two other groups on their mean D4 ratings. Patients who incorrectly denied having a biopsy reported significantly higher ratings of distress upon contact with the medical tool (M=82.00) than did patients who correctly reported having a biopsy (M=45.48), t= 2.26, p<.026. This was interesting because both groups experienced

biopsies yet patients who responded "no" when asked "did you have a biopsy?" reported significantly higher levels of affective pain at the point of the procedure than did patients who responded "yes." Patients who incorrectly denied having a biopsy also reported significantly higher ratings than patients who did not actually have a biopsy but were unsure (M=42.14), t=1.98, p<.049. The point of this set of data is that patients' perceptions of what was done to them, whether accurate or not, were, in part, determining pain ratings. Why some women did not understand what actually occurred during the exam will be later discussed.

Given that a substantial number of women were either incorrect or unsure about what procedure was done, it was questionable whether patients' ratings of pain endured at various points in the medical procedure were in fact valid representations of those pain episodes. Thus, the analyses were repeated for only those 83 patients who correctly reported having or not having a biopsy. Intercorrelations were examined among the 7 Delayed Recall ratings. These are presented in Table 15. The pattern of interrelatedness was similar to that for the entire sample (as presented in Table 6). The only change in the pattern was that D1 (sensory pain severity upon speculum insertion) was no longer significantly correlated with D5 (pain frequency) or with D7 (state anxiety level). Delayed recall ratings D1, D2, D3, and D4 remained intercorrelated at the p<.001 level, indicating that ratings of sensory and affective pain severity were significantly associated in the positive direction. Ratings D2, D3 and D4 were again significantly correlated with D7 (state anxiety level), indicating that recollections of higher sensory and affective pain were associated with recollections of higher anxiety level during the medical examination.

Table 15: Intercorrelations among 7 Delayed Recall Ratings for only those Participants who Correctly Reported having or not having a Biopsy. (n=83)

	D1	D2	D3	D4	D5	D6	D7
D1	--	.59*	.50*	.40*	.15	.04	.15
D2		--	.52*	.72*	.28*	.02	.44*
D3			--	.78*	.30*	.14	.42*
D4				--	.29*	.13	.44*
D5					--	.41*	.25**
D6						--	.03
D7							--

*Significant at $p<.01$.
**Significant at $p<.05$.

Correlations were also examined between delayed recall ratings and the 3 covariates for this sample of 83 patients. See Table 16. In this set of correlations, Biopsy was significantly correlated with 3 of the 7 variables. These were: affective pain severity upon speculum insertion (D2) ($r=.22$, $p<.040$), sensory pain severity upon contact with the medical tool (D3) ($r=.26$, $p<.018$), and affective pain severity upon contact with the medical tool (D4) ($r=.28$, $p<.011$). Thus, having a biopsy was significantly associated with higher recalled ratings of pain and distress than was not having a biopsy. Note that this was different from data for the entire sample in which none of the delayed recall ratings were significantly correlated with Biopsy (refer to Table 7). Interestingly, ratings of the frequency of pain or

pressure were not significantly correlated with Biopsy, even when accounting for whether or not the patient was correct about what procedure was done.

Table 16: Correlations of Covariates with 7 Delayed Recall Ratings for only those Participants who Correctly Reported having or not having a Biopsy. (n=83)

	(Procedure)	Biopsy	PPID	Trait Anxiety
D1	.02	.01	-.01	.39*
D2	.20	.22**	-.10	.37*
D3	.21	.26**	.22**	.25**
D4	.24**	.28*	.14	.20
D5	-.06	.03	.20	-.05
D6	-.09	.07	.24**	-.23**
D7	.15	.19	-.08	.23**

*Significant at $p<.01$.
**Significant at $p<.05$.

The Procedure variable correlated significantly with only one Delayed Recall rating (D4, affective pain severity upon contact with the medical tool) ($r=.24$, $p<.032$). Thus, for patients who knew whether or not they underwent a biopsy, there was a significant relationship between the number of procedures that was conducted and the patients' level of emotional distress at the moment of the most distressing procedure. It thus appeared that part of the reason that Biopsy and Procedure did not correlate significantly with any of the delayed recall ratings for the entire sample was that some patients did not know what was

done. However, even when excluding patients who were incorrect or unsure, the Biopsy and Procedure variables only correlated with a few of the ratings. Other explanations for this finding will be offered in the discussion.

Trait anxiety was again correlated significantly with variables D1 (sensory pain severity upon speculum insertion), D2 (affective pain severity upon speculum insertion), D3 (sensory pain severity upon contact with the medical tool), and D7 (anxiety level during the exam). Unlike with the entire sample, trait anxiety was not significantly associated with D4 (affective pain severity upon contact with the medical tool) and was significantly associated with D6 (pressure frequency). Thus, when patients correctly reported what was done to them, their general tendency to be anxious was not associated with their level of distress at the moment of contact with the medical tool but was associated with the number of times they felt a pressure sensation during the exam. The remaining covariate, Present Pain Intensity at the time of delayed recall, was significantly correlated with D3 (sensory pain severity upon contact with the medical tool) and D6 (pressure frequency).

Delayed recall data were next reexamined to assess the effect of the study manipulations for only those 83 participants who correctly reported what was done to them. A series of 3 (Suggestion) x 2 (Number of Recall Sessions) between subjects MANOVAs was again conducted. The suggestion effect was markedly different from the original analysis that included the entire sample. When no covariates were included in the analysis, the multivariate Suggestion effect was highly significant, $F(14, 144)=2.38$, $p<.005$, effect size=.188, power=.97. Univariate analyses were significant for 3 of the 7 delayed recall

ratings. These were: D2, affective pain severity upon speculum insertion, $F(2, 77)=3.63$, $p<.031$; D4, affective pain severity upon contact with the medical tool, $F(2,77)=3.93$, $p<.024$; and D7, anxiety level during the exam, $F(2,77)=4.89$, $p<.010$. This pattern of significant univariate effects was similar to that obtained with the entire sample. This repeated analysis, which excluded participants who may have given invalid responses, adds confidence that the suggestion manipulation was indeed having an effect.

Contrasts were examined to identify specific differences in means. Means are presented in Table 17. When recalling their level of distress upon speculum insertion (D2), participants in the Pain Suggesting condition reported higher mean ratings ($M=38.05$) than participants in the Pain Denying condition ($M=23.62$), $t=2.08$, $p<.040$, or the No Suggestion condition ($M=19.40$), $t=2.53$, $p<.013$. When recalling their level of distress upon contact with the medical tool (D4), participants in the Pain Suggesting condition recalled significantly higher ratings ($M=49.42$) than participants in the Pain Denying condition ($M=26.66$); $t=2.78$, $p>.007$. Finally, when recalling their level of anxiety during the exam (D7) Pain Suggesting participants reported higher ratings ($M=49.96$) than Pain Denying participants ($M=30.23$), $t=2.35$, $p<.021$, and Pain Denying participants ($M=30.23$) reported ratings that were significantly lower than No Suggestion control participants ($M=53.96$), $t=2.88$, $p<.005$. Thus, means followed in the direction of the suggestive information for some variables, with suggestions of pain enhancement associated with higher ratings than suggestions of pain minimization or no suggestion at all. This was consistent with the pattern predicted by a priori hypotheses.

Table 17: Mean Delayed Recall Ratings as a Function of Suggestion for only those Participants who Correctly Reported having or not having a Biopsy. (n=83)

	Pain Suggesting (n=26) M (SD)	No Suggestion (n=25) M (SD)	Pain Denying (n=32) M (SD)
D1	40.96(28.63)	28.58 (27.83)	36.29 (35.53)
D2	38.05 (31.26)*	19.40 (27.55)	23.62 (29.19)
D3	55.92 (35.07)	48.96 (35.03)	39.17 (32.72)
D4	49.42 (33.62)**	37.80 (39.16)	26.66 (30.75)
D5	3.06 (3.47)	2.84 (2.24)	2.55 (2.83)
D6	4.35 (5.80)	2.80 (2.72)	2.33 (1.96)
D7	49.96 (37.00)**	53.96 (37.50)	30.23 (29.64)***

*Significantly different from No Suggestion and Pain Denying ($p<.05$).
**Significantly different from Pain Denying ($p<.05$).
***Significantly different from No Suggestion ($p<.05$).

The multivariate effect of Number of Recall Sessions remained nonsignificant, even when excluding those patients who did not correctly report having or not having a biopsy, $F(7, 71)=.57$, $p<.777$, effect size=.053, power=.23. There was a significant multivariate interaction between Suggestion and Number of Recall Sessions, $F(14, 144)=1.86$, $p<.036$, effect size=.153, power=.91. However, the univariate interaction terms were not significant for any of the 7 dependent variables. This makes it impossible to interpret any effect of the interaction.

When the 3 covariates (Biopsy, Trait Anxiety, and Present Pain Intensity at delayed recall) were included in the MANOVA the effects were essentially unchanged. The multivariate main effect of Suggestion remained significant at the $p<.005$ level, $F(14, 138)=2.41$, $p<.005$. Univariate effects were again significant for variables D2, $F(2, 74)=3.65$, $p<.031$; D4, $F(2, 74)=4.05$, $p<.021$; and D7, $F(2, 74)=5.25$, $p<.007$. The multivariate

Number of Recall Sessions effect remained nonsignificant, $F(7, 68)=.85$, $p<.553$, effect size=.080, power=.34, and the multivariate interaction term was essentially unchanged, $F(14, 138)=1.89$, $p<.032$. None of the univariate interaction effects reached significance.

Recall that when data from the entire sample were included in the MANOVA, the addition of the covariates substantially altered the multivariate suggestion effect and several of the univariate suggestion effects. It is possible that the suggestion effect was so strong for this subset of data that controlling for any additional variances with the addition of the covariates resulted in negligible changes in the analysis. It may also be the case that the covariates did not share any common variances with the dependent variables in this analysis.

Immediate recall data were also examined separately for this sample of patients. Of the 83 "correct" women, 48 completed immediate recall ratings. Intercorrelations among the 7 immediate recall ratings are presented in Table 18. The pattern of intercorrelations was similar to that of the immediate recall data for the entire sample. The only difference was that I1 (sensory pain upon speculum insertion) no longer correlated with I7 (state anxiety during the exam). Thus, immediate recall ratings of sensory pain severity (I1 and I3) were again closely associated with ratings of affective pain severity (I2 and I4). Pain frequency (I5) correlated significantly with both ratings of affective pain (I2 and I4) and with one of the sensory pain ratings (I3). Pressure frequency (I6) correlated significantly with only one other rating, and that was Pain frequency (I5). State anxiety (I7) correlated significantly with three of the four pain severity ratings (I2, I3, and I4) but not with either of the two frequency ratings (I5 and I6).

Table 18: Intercorrelations among 7 Immediate Recall Ratings for only those Participants who Correctly Reported having or not having a Biopsy. (n=48)

	I1	I2	I3	I4	I5	I6	I7
I1	--	.46*	.43*	.52*	.19	.12	.25
I2		--	.55*	.76*	.36*	.13	.57*
I3			--	.63*	.31**	.19	.39*
I4				--	.41*	.14	.39*
I5					--	.56*	.22
I6						--	.04
I7							--

*Significant at $p<.01$.
**Significant at $p<.05$.

When correlations were examined between the covariates and the 7 immediate recall ratings, the Biopsy and Procedure variables did not correlate significantly with any of the immediate recall ratings. Trait anxiety correlated significantly with 3 of the 4 pain severity ratings: sensory pain severity upon speculum insertion (I1), $r=.43$, $p<.003$; sensory pain severity upon contact with the medical tool (I3), $r=.35$, $p<.015$, and affective pain upon contact with the medical tool (I4), $r=.31$, $p<.035$. Preexisting Pain Intensity measured before the immediate recall task correlated significantly with pain frequency, (D5), $r=.31$, $p<.030$, and pressure frequency, (D6), $r=.57$, $p<.001$ but not with any other ratings. These correlational data are presented in Table 19.

Table 19: Correlations of Covariates with 7 Immediate Recall Ratings for only those Participants who Correctly Reported having or not having a Biopsy. (n=48)

	(Procedure)	Biopsy	PPII	Trait Anxiety
I1	-.05	.01	-.06	.43*
I2	-.04	.03	-.01	.22
I3	-.04	-.04	.17	.35*
I4	-.12	.12	.06	.31**
I5	-.06	.04	.31**	.14
I6	-.11	.09	.57*	.13
I7	.01	-.09	.07	.25

*Significant at $p<.01$
**Significant at $p<.05$

Immediate recall data for the 48 "correct" participants were examined in a series of one way MANOVAs with Suggestion as a between subjects factor. The multivariate main effect of Suggestion approached significance, $F(14, 80)=1.67$, $p<.078$, in this analysis. However, none of the univariate suggestion effects were significant. When the 3 covariates were added to the analysis, the main effect of Suggestion was strengthened, $F(14, 74)=1.80$, $p<.055$, although none of the univariate suggestion effects reached significance.

Of the 123 women in the study sample, 40 were incorrect or unsure about whether they experienced a biopsy. Delayed recall data were examined for this subset of women to determine the effect of the study manipulation. MANOVA indicated no effect of the

Suggestion variable, F(14, 50)=.85, p<.617, and no effect of the Number of Recall Trials. F(7,24)=.27, p<.958. The interaction term was also nonsignificant, F(14, 50)=1.48, p<.154. Means are reported in Table 20. Immediate recall data were not examined for this subset of women given that delayed recall ratings were the primary dependent variables of interest and given the small number of women in this subgroup who completed both sets of ratings.

Table 20. Mean Delayed Recall Ratings as a Function of Suggestion for only those Participants who Incorrectly Reported having or not having a Biopsy. (n=40)

	Pain Suggesting (n=14) M (SD)	No Suggestion (n=25) M (SD)	Pain Denying (n=32) M (SD)
D1	44.75(23.19)	52.78 (34.00)	30.12 (30.94)
D2	44.29 (36.68)	39.07 (39.72)	18.12 (19.40)
D3	65.36 (27.06)	66.18 (32.40)	50.75 (39.21)
D4	60.71 (32.51)	60.93 (29.90)	40.67 (41.80)
D5	2.50 (1.35)	2.25 (1.78)	1.33 (0.98)
D6	2.46 (1.61)	2.50 (1.29)	1.88 (1.60)
D7	48.57 (28.24)	56.28 (37.42)	50.08 (41.01)

Frequency Data. Recall data were next examined in terms of the number of participants in the Immediate and Delay condition whose ratings increased or decreased over time. All 62 participants in the Immediate and Delay condition were included in the initial analysis. Frequency data are presented in Table 21.

Table 21: Number of Participants whose Ratings Changed from Time 1 to Time 2, All Immediate and Delay Participants.
(n=62)

	Pain Suggesting (n=20)	**Pain Denying (n=21)**	**No Suggestion (n=21)**
Question 1			
Increase by 13	6	3	6
Decrease by 13	2	5	4
Question 2			
Increase by 13	3	2	5
Decrease by 13	2	4	2
Question 3			
Increase by 13	7	3	8
Decrease by 13	2	5	2
Question 4			
Increase by 13	7	4	8
Decrease by 13	5	5	2
Question 5			
Increase by 1.3	2	2	4
Decrease by 1.3	2	3	3
Question 6			
Increase by 1.3	4	3	4
Decrease by 1.3	0	2	1
Question 7			
Increase by 13	6	8	8
Decrease by 13	2	4	4

Criteria for the magnitude of change were set at 13 points on a 0 to 100 scale (for questions 1, 2, 3, 4, and 7) or 1.3 points on a frequency scale (for questions 5 and 6). These

magnitudes were selected based on findings from the pain assessment literature that a change in magnitude on a visual analogue scale of 1.3 centimeters corresponded to a clinically meaningful change in pain reports

The question asked by this set of analyses was whether the number of participants in each suggestion group who increased or decreased their ratings would differ from that expected by chance. A series of 3 (Suggestion) x 2 (Change) Chi square analyses was conducted to examine whether differences in the observed frequencies were likely to have occurred by chance. None of the seven contingency tables indicated a significant difference. The number of participants whose ratings increased or decreased over time did not significantly differ as a function of the manner in which the questions were asked. The suggestion manipulation did not systematically alter ratings over time when the magnitude of change was considered.

Frequency data were also generated for only those patients who correctly reported having a biopsy or not. Of these 83 patients, 48 completed ratings at both immediate and delayed recall. Data are presented in Table 22. A series of 3 (Suggestion) x 2 (Change) Chi square analyses was again conducted. For one of the seven contingency tables, a significant effect was noted. This was for question 1 concerning sensory pain upon speculum insertion, $X^2(2)=6.50$, $p<.038$. However, this finding was not interpretable given that none of the standardized residuals were greater than the generally accepted criteria of 2.0 and also given that the analysis was questionable due to having expected frequencies less than 5. Thus, it did not appear that changes in ratings

over time were being significantly determined by the suggestion manipulation even when participants were excluded who were incorrect or unsure about having a biopsy.

Table 22: Number of Participants whose Ratings Changed from Time 1 to Time 2. Only those Immediate and Delay Participants who Correctly Reported having or not having a Biopsy. (n=48)

	Pain Suggesting (n=20)	Pain Denying (n=21)	No Suggestion (n=21)
*Question 1**			
Increase by 13	6	3	2
Decrease by 13	0	4	4
Question 2			
Increase by 13	2	2	3
Decrease by 13	2	4	1
Question 3			
Increase by 13	4	2	5
Decrease by 13	2	5	2
Question 4			
Increase by 13	4	3	4
Decrease by 13	5	5	2
Question 5			
Increase by 1.3	1	2	2
Decrease by 1.3	2	3	3
Question 6			
Increase by 1.3	3	2	4
Decrease by 1.3	0	2	1
Question 7			
Increase by 13	4	7	6
Decrease by 13	2	2	4

*$p<.05$ in X^2 analysis.

Survey Data. As a courtesy to the medical staff who work at the clinic where the study was conducted, a survey was developed to assess patients' ratings of various items in assisting with attending clinic appointments. Survey items were selected by the author based

on previous studies regarding compliance with follow-up for colposcopy and based on feedback from clinic personnel regarding changes that could reasonably be made in the clinic. The survey was completed verbally by 73 participants. Women were asked to rate each of 10 items on a 5 point Likert scale with "1" being "not helpful at all" and "5" being "extremely helpful." They were asked to rate how helpful each item would be in assisting them with attending appointments. Items were: 1) receiving a reminder letter, 2) receiving a reminder phone call, 3) having free transportation, 4) receiving a free calendar to record appointments, 5) having a friend or family member attend the appointment with you for support, 6) receiving a brochure on relaxation techniques before the exam, 7) having a relaxing picture to focus on during the exam, 8) having someone from the clinic call you to see how you are doing after the appointment, 9) having a phone number to call if you have questions after the appointment, and 10) receiving a brochure that explains the significance of an abnormal Pap smear and what to expect during colposcopy.

As listed in Table 22, items 10 and 1 were rated most favorably. Item 10 (receiving a brochure to explain what is an abnormal Pap spear and what to expect during colposcopy) was rated "very helpful" or "extremely helpful" by 55.6% of the sample. Women appeared to view additional information regarding colposcopy as an important factor in determining compliance with appointment attendance. Item 1 (receiving a reminder call) was rated "very helpful" or "extremely helpful" by 51.6% of the sample. Item 7 (having a relaxing picture on the ceiling in the exam room) was rated least favorably. Only 25.8% of the sample rated this item as "very helpful" or "extremely helpful." The remaining items appear in Table 23.

Table 23: Survey Data Regarding Improving Compliance with Follow-up. (n=73)

Item Number	Survey Item	Percentage of Sample Rating Item as "Very Helpful" or "Extremely Helpful"
10	Brochure explaining abnormal Pap and what to expect during colposcopy	55.6%
1	Reminder letter	51.6%
9	Phone number to call clinic with questions	47.6%
6	Brochure on relaxation training	39.5%
2	Reminder call	38.7%
4	Free pocket calendar	37.9%
8	Follow-up call from clinic	33.8%
3	Free transportation	30.7%
5	Friend or family support	29.0%
7	Relaxing picture on ceiling	25.8%

Patients were also given the opportunity to offer open-ended comments. Women were specifically asked to state reasons why some patients do not attend their appointments at the clinic and to give suggestions regarding ways that the staff could assist women with appointment attendance. Responses were classified into several categories. The reasons most often cited for nonattendance of dysplasia clinic appointments were: fear (31.5%) (i.e., fear of having cancer; fear of the medical procedure itself) and lack of understanding (20.5%). Some patients hypothesized that some women simply "don't care" about their health. They offered that women may not realize the potential seriousness of cervical dysplasia and do not view their follow-up care as a priority. They stated that women may not realize that routine screening can prevent disease progression. Other reasons for nonattendance included: pain (8.2%), financial limitations (6.8%), conflicts with school or work (5.5%), lack of

transportation (5.4%), long waiting period for the appointment (4.1%), embarrassment (4.1%), lack of childcare (4.1%), and rudeness on the part of the physicians (2.7%). Responses are listed in Table 24.

Table 24: Patients' Responses to Open-Ended Questions Regarding Nonattendance of Appointments at Dysplasia Clinic. (n=73)

Reasons for Nonattendance:	
Fear (of learning they have cancer; of having the medical procedure)	23 (31.5%)
Lack of understanding (don't think anything serious is wrong, don't realize need for follow-up, don't realize that screening can prevent disease)	15 (20.5%)
Exam is too painful	6 (8.2%)
Financial limitations	5 (6.8%)
Conflict with school or work	4 (5.5%)
Lack of transportation	4 (5.4%)
Waiting period for an appointment is too long	3 (4.1%)
Exam is embarrassing	3 (4.1%)
Need childcare	3 (4.1%)
Doctors are rude and do not explain procedure	2 (2.7%)
Ways to Improve Attendance Rate:	
Give more written information	15 (20.5%)
Explain more during and after the examination	6 (8.2%)
Reminder calls or reminder letters	6 (8.2%)
Reduce waiting period for scheduling appointments and for receiving biopsy results	5 (6.8%)
Help patients relax	3 (4.1%)
Offer appointments on other days and at other times	2 (2.7%)
Doctors need to have better bedside manner	2 (2.7%)

When asked to offer suggestions for improving attendance rates. women most often cited "more information" (20.5%) as being helpful. Specifically, they suggested sending

written information with the original appointment confirmation letter and explaining the significance of the examination during and after the exam. Other suggestions included: reminder calls or letters (8.2%), reduced waiting time (6.8%), assistance with relaxation (4.1%), expanded appointment options (2.7%), and improved communication on the part of the physicians (2.7%).

DISCUSSION

The primary hypothesis of this study was that suggestive information would determine women's retrospective ratings of pain experienced during colposcopy. Results for the entire sample offer tenuous support that the suggestion manipulation was exerting an effect given that the main effect of suggestion in the multivariate analyses only approached significance. However, when participants were excluded who were either incorrect or unsure as to what procedure was done to them, the effect of suggestion was significant at the $p<.005$ level. In other words, for the subset of women whose knowledge of the medical procedure was accurate, suggestive information regarding the painfulness of the colposcopic examination significantly affected their recalled ratings of pain. Telling patients that the exam was typically regarded as painful resulted in higher recalled pain ratings for some questions than telling women that the exam was not usually viewed as painful or giving no suggestion at all. This is a clear demonstration of the effects of suggestive information on pain reports in a naturalistic setting. Why the effect occurred with one subset of patients and not with another will be elaborated following a discussion of some initial aspects of the suggestion effect.

The suggestion effect did not reach statistical significance at immediate recall but was highly significant 8 days after the medical exam. If this were truly a repeated measures design (i.e., if all participants completed the memory task on two separate occasions), it would be possible to say that the suggestion effect became stronger over time. Since only one half of the study sample completed both immediate and delayed recall ratings, it is not possible to

draw conclusions from this particular finding. Differences in the magnitude of the suggestion effect at times one and two may have been due to sample size considerations.

An important point regarding the suggestion effect is that it was stronger for ratings of the emotional component of pain versus the sensory component. When data from the entire sample were included in the analyses, the univariate effects that remained significant after inclusion of the covariates were for ratings of affective pain upon insertion of the speculum (D2) and affective pain upon contact with the medical tool (D4). The other ratings which were of sensory pain severity and pain frequency did not significantly differ as a function of suggestion. When data were again examined for only those participants who correctly reported having or not having a biopsy, the suggestion effect was also significant for affective pain ratings D2 and D4 but not for sensory pain ratings or frequency ratings. This implies that memory for the emotional component of pain (i.e., the amount of emotional distress or suffering caused by the sensory stimulation) is more susceptible to the effects of suggestive information than is memory for the sensory components of pain.

Similar findings have been previously reported in the pain literature (as discussed in Fernandez & Turk, 1994) regarding affective versus sensory pain. Even when controlling for demand characteristics, affective pain has been found to be more responsive to placebo analgesics than sensory pain. In other words, in the presence of a placebo, participants' emotional distress while enduring pain can be reduced to a significantly greater degree than sensory pain (Fernandez & Turk, 1994). This distinction between sensory and affective pain is important for several reasons. First, the emotional component of pain (i.e., the patient's

suffering) is regarded as the hallmark of the pain experience (Chapman, 1993). While the sensory aspect of pain serves to detect and localize the origin of injury to the body, the affective aspect interprets the pain in terms of subjective feelings and possible escape or avoidance behaviors. The affective component is responsible for driving the behavior of the individual in response to the sensory input. Thus, the affective component of pain is key to the study of patients in pain. Secondly, the finding that affective pain is more susceptible to the effects of suggestion offers practical applications to the field of pain management. The central goal of cognitive-behavioral approaches to pain management is to improve patients' coping with pain rather than attempt to completely eradicate the sensory pain (Weisenberg, 1998). If patients' recollections of their distress and suffering can be attenuated by information presented to them after the pain-causing event, then the interpretation or meaning of the pain experience can be changed, and patients' coping with the pain experience can be improved. Data presented in this study give further support that this is possible.

A problem with interpreting the suggestion effect in this study is that differences in pain ratings as a function of the suggestion manipulation do not necessarily mean that memory for pain was altered. All that can be said about the suggestion effect in this study is that pain *ratings* differed as a function of the way that questions were asked. What participants said about their pain may not necessarily reflect their actual memories of their pain. The manipulation used in this study possibly confounded suggestion with social demand. Participants were informed that most of the other women who were interviewed had described the medical exam as either painful or not painful. This information perhaps

increased the social demand pressure of the interview situation and may have created impressions such as: "I shouldn't complain if no one else did" or "I should complain too if everyone else did." Given this potential confound, it is not possible to say whether change in memory reports were due to actual memory change or to social demand factors.

Let us assume for the sake of discussion that social demand factors were primarily responsible for the suggestion effect in this study. In other words, the reason the suggestion manipulation worked was that women simply went along with what they thought the examiner wanted them to say about their pain. Recall that the multivariate suggestion effect failed to reach statistical significance when data for the entire sample were included, but the effect was highly significant when data were excluded for women who were incorrect or unsure about having a biopsy. If social demand factors were accounting for the suggestion effect, then it would follow that women who were *correct* about what was done to them would be more susceptible to social demand factors than women who were incorrect or unsure. This does not seem plausible. If the "correct" women were simply going along with the demands of the experimental situation, why then would they not have done the same in the context of the medical examination? It seems likely that the "correct" women were those who were active in their care and more likely to ask questions if they were unsure about aspects of their medical exam. In other words, the "correct" women seem *less* likely to have simply gone along with what was told to them and more likely to have sought clarification in the event that they did not understand what was done. For this reason, social demand factors cannot fully account for the findings.

Alternatively, if actual memory change were primarily responsible for the suggestion effect, then women who were correct about having a biopsy would have been more likely than other women to incorporate the suggestive information into their memories. They would have had to attend to the information presented, understand the language of the suggestive questioning, and associate greater pain (in the pain suggesting condition) or lesser pain (in the pain denying condition) with their own recollections of the exam. It seems plausible that women who were correct about having a biopsy were more attentive during their medical examinations than other women by virtue of the fact that they accurately reported what was done to them. It follows that these "correct" women would be more attentive to the suggestive information presented during the experiment and that their memory reports would be more affected by the information. It is not possible, however, to say with certainty whether actual memory change occurred in this set of data.

Despite this limitation, the suggestion effect remains important. The reason for changes in pain ratings is irrelevant when one considers the implications of the suggestion effect. The fact that women's pain *reports* were altered by the information presented at the time of pain assessment implies that the interview can dictate patients' responses. In other words, what patients are told about their examinations can in turn affect what they report about their pain. Given that in a clinical situation the patients' self-reported pain descriptions are used as a basis for treatment decisions, it is what the patient says that is important. Whether a patient describes her pain on the basis of actual recollections of nociceptive stimulation or whether her descriptions are guided by the social demands of the doctor-

patient interview situation. her responses will be viewed as an accurate representation of her physical condition. Clearly, medical decisions regarding the severity of illness or pathology can be based on multiple sets of data including physical examination or diagnostic studies. However, in cases of ongoing pain in the absence of objective physical pathology, the patient's verbal and physical behaviors guide treatment decisions. The physician does not have the benefit of being able to discern patients' actual memory reports from reports due to social demand.

From the perspective of understanding memory for pain, however, the distinction between actual memory change versus change due to social demand is important. If memories of pain were actually altered by the suggestive information, then each time the patient subsequently recalls the pain experience, the recollection should include the effects of the suggested information. In other words, patients who received suggestions that the colposcopic examination was very painful should subsequently recall the examination as more painful than they would have if they received suggestions to the contrary. Likewise, patients who were told that the exam was not painful should subsequently view the experience as less painful than they would have otherwise. The implication would be that pain memories could actually be reduced and in a sense "cured" by the information presented in pain management programs. On the other hand, if patients were simply going along with what they thought the experimenter wanted them to say, then their pain reports should vary with the demands of a new interview situation. Patients might have, for instance, told the examiner that the speculum insertion was very painful but would tell a friend that it didn't hurt much at all. The

implication of this possibility for clinical pain management would be that pain reports might be affected in the clinic but lasting change in pain recollections would not occur.

New experimental paradigms are making it possible to differentiate memory change from social demand (Lindsay, 1990). However, it is not possible to separate these issues in the present study. In retrospect, it would have been feasible to add a manipulation check to the methodology by asking participants after they completed the second ratings to state the exact numbers they reported the week before. Delayed recall ratings could then be compared to both sets of ratings to assess the accuracy of participants' memories. If a participant's ratings at delayed recall differed from those at immediate recall despite being able to correctly report the numbers given at immediate recall, then the social demand possibility would be supported. Participants would have presumably gone along with what the experimenter wanted them to say despite their own recollections to the contrary. On the other hand, if participants were found to be unable to correctly recall the numbers they reported 8 days before, then the memory change hypothesis would gain support. The suggestive information would appear to have become incorporated into the participants' memories.

As mentioned, the suggestion manipulation was most dramatic for patients who correctly reported having or not having a biopsy. The multivariate main effect of suggestion only approached significance for the entire sample ($p<.077$) but was clearly significant ($p<.005$) when data were excluded for patients who either did not know or incorrectly reported whether or not they had a biopsy. The reason for this difference is unclear. First of all, it is not clear why 40 out of 123 women were either unsure or

incorrect about what medical procedure was done to them. Demographic variables including age, education, and race did not account for any differences. One possibility was that some women were so anxious during the examination that they could not attend to the information presented to them and were therefore not aware of whether a biopsy was done. However, state or trait anxiety did not account for any differences among correct, incorrect, or unsure patients. Another possibility is that women who were incorrect or unsure about having a biopsy were simply giving random responses. However, this was not supported since the consistency of responses from time 1 to time 2 did not differ between correct versus incorrect or unsure participants. When data were examined in terms of assignment to experimental condition, the composition of correct, incorrect, and unsure women was found to differ across Number of Recall Sessions. Significantly more women responded "I don't know" (11) in the Delay Only group than expected by chance. In the Delay Only condition participants were not interviewed immediately after the medical exam. All interview questions, including the question "did you have a biopsy?" were presented 8 days after the exam. Perhaps 8 days is sufficient time for some women to forget what happened during the exam. In other words, maybe some of the women would have responded correctly if they had been asked immediately after the exam versus 8 days later. This appears highly unlikely given that every participant was able to give responses to the other 7 questions and the consistency of these responses over time was no different from that of women who were correct about having a biopsy.

Recall that Spanish speakers were significantly more likely to respond "I don't know" than expected by chance. This could mean that Spanish speakers were less likely to understand the meaning of the term "biopsy" or that Spanish speakers were not informed of what was happening during the procedure (presumably because bilingual nurses were not always available). However, Spanish speakers were no more likely to be incorrect about their procedure than English speakers. Thus, language differences cannot fully account for why nearly one third of the patients left the clinic without knowing what was done to them.

Thus far, none of the available data can fully explain why some women were correct about having a biopsy and some were not. One remaining possibility concerns environmental factors rather than patient factors. In the busy clinic setting where the study was conducted, resident physicians have varying levels of expertise with the techniques of colposcopic examination. Some doctors may have been focusing on learning the procedure at the expense of talking with the patients during the examination. As a result, some women may not have been explicitly informed as to whether or not they had undergone a biopsy. All patients were informed by nursing staff upon arriving to the clinic that a biopsy might be needed. It is therefore probable that if a patient was not told on the exam table that a biopsy was being taken, she would then assume on the basis of any pain sensations that a tissue sample was taken. All patients who undergo biopsies typically receive written instructions after the procedure (as in Appendix H). However, nursing staff may not have given the instructions to every patient either

because they were exceptionally busy or because the patients left the clinic before speaking with nursing staff.

As indicated in Table 14, thirty-five patients did not have biopsies and correctly reported that they did not. Another twenty-three patients did not have biopsies but incorrectly said they did. When asked how much it hurt when the medical tool touched the cervix, these two groups of women gave significantly different answers (36.97 versus 63.06). They also gave significantly different answers when asked how distressing was this aspect of the exam (25.71 versus 53.74). Neither group had the experience of having a metal forceps cut a sample of tissue from their cervix. Yet, patients who thought they had a biopsy (but actually did not) said they experienced significantly more pain and emotional distress when the medical tool touched their cervix than those patients who knew they did not have a biopsy. This suggests that patients' perceptions of their exam, rather than the actual procedure, were determining a significant aspect of the pain ratings.

The procedures that were in fact conducted were either a Pap smear (in which a wooden spatula or cotton swab is used to sample cervical mucous) or a colposcopic examination only (in which a solution of acetic acid is applied to the cervix with a cotton swab and any abnormal areas are visualized with magnification). Either of these procedures could forseeably be perceived as painful, depending on the doctor's level of expertise and on the patient's pain tolerance. So, what may have occurred is that if a patient was not explicitly told during or after the exam that a tissue sample was taken,

then she would be left to assume that she had undergone a biopsy based on any pain sensation she may have felt.

The other issue regarding these data is why patients who correctly reported having or not having a biopsy were *more* susceptible to the suggestion manipulation than those who were incorrect or unsure. The most parsimonious explanation is that patients who were incorrect or unsure gave responses of questionable validity when asked about their pain. If some patients indeed did not know the meaning of the word "biopsy," then perhaps they did not understand other terms in the pain questions such as "speculum" or "cervix." Pain ratings would therefore not reflect what was being asked, and variation due to this invalidity might account for the weakened suggestion effect. However, the method of pain assessment was introduced before the medical examination in order to maximize the likelihood that patients understood how to complete the ratings. In the event that a patient appeared not to understand a question, the question was repeated in simpler terms. Also, data were excluded when it appeared that the patient did not understand the question being asked (i.e., a response of 100 for the pain frequency rating). Finally, the consistency of ratings was not found to differ as a function of whether the patients were correct or not about having a biopsy. For these reasons, it is not likely that failure to understand the 7 pain questions can fully account for the findings.

Another possible explanation is that patients who did not know or were incorrect about what was done were actually more convinced about their pain than were patients

who were correct. Recall that the 23 women who said they had a biopsy (but in fact did not) reported significantly higher ratings of sensory pain and emotional distress than women who correctly reported not having a biopsy. The 5 women who said they did not have a biopsy (but actually did), also reported significantly higher ratings of sensory pain and emotional distress than those who correctly reported not having a biopsy. Maybe the fact that the "incorrect" women perceived more pain and were more distressed by their exams made them more emphatic about their pain and therefore less likely to sway in the direction of the suggestion manipulation.

The scenario just described involves making a decision under conditions of uncertainty. If a patient was not explicitly told that she did or did not have a biopsy, then she must base her response to the question "did you have a biopsy?" on her own experiences. As part of informed consent for medical care, each patient was told that a tissue sample may be needed in order to further evaluate her condition. This possibility of needing a biopsy may have set up an expectancy effect for these women. In other words, knowing that a biopsy may have been needed would lead patients to expect pain even in the absence of having a biopsy. If patients experienced pain during the exam, then they would assume a biopsy was conducted. If they did not experience the exam as particularly painful, then they would assume a biopsy was not needed. However, this explanation does not fully account for the data. Five women denied having a biopsy when in fact they did. Their ratings of affective pain were significantly higher than the 48 women who correctly reported having a biopsy. Thus, if a woman was not explicitly

told whether or not she had undergone a biopsy, her response to the question "did you have a biopsy" could not have been guided solely by her perceptions of pain during the examination. If this were the case, then women who perceived high levels of pain would have responded "yes" to the biopsy question.

Unfortunately, it is not possible to say with certainty why the suggestion effect worked for one subset of the study sample but not for the other. Several explanations were offered, but none can fully account for the data. Information on physician variables might have helped to account for the findings. Clearly, the physician's level of technical expertise and the manner in which he or she interacted with the patient would affect pain perception. It would have been helpful to have the examiner witness or videorecord each examination to code for variables such as the number of attempts made with each procedure and the specific verbal statements made to the patient regarding the examination. It would then have been possible to know whether discrepancies between patients' self-report and the medical record were due to patient factors or to physician factors. This was not feasible given that multiple examinations were being conducted simultaneously and given that issues of patient confidentiality would have made it more difficult to recruit volunteers.

Regardless of why some patients were unaware of what procedure was conducted, these data indicate that medical professionals cannot assume that patients know and understand their own medical history. Patients' reports of past medical procedures may not accurately reflect what was done. It is therefore advisable for

physicians to obtain past medical records whenever possible to corroborate and clarify patients' self-report. It is also obvious from these data that physicians need to talk to their patients during and after a medical procedure to make every effort to insure that the patient understands what was done. When language barriers are an issue, then interpreters should be available.

The other main hypothesis of this study was that repeated questioning would affect patients' pain ratings moreso than a single episode of questioning. This hypothesis was not at all supported. Ratings given by patients who were questioned twice (immediately after the medical exam and again 8 days later) did not significantly differ from ratings completed by patients who were questioned only once (8 days following the exam). This suggests that the passage of time has a more telling effect on memory than repeated questioning. Other studies, however, have reported increased susceptibility to suggestive information over multiple recall trials (Ceci, Huffman, Smith, & Loftus, 1994; Hyman, Husband, & Billings, 1995). One consideration is whether the design of this study was powerful enough to detect a difference if one were actually there. Post-hoc power estimations for the Number of Recall Sessions variable ranged from .06 to .20. With this extremely low level of power, it is unlikely that significant differences would have been detected even if Number of Recall Sessions were truly having an effect. Particularly for variables 5 and 6 which were pain frequency estimates ranging from 0 to 15, the magnitude of the differences between group means was very small. Having a small effect size and low power and may partly explain the failure of the Number of Recall Sessions manipulation.

Also, more than two recall trials may have been needed to demonstrate any effect of repeated questioning in this study.

Several points need to be addressed regarding the correlational findings in this study. First, the relationship between state anxiety and pain appears to be consistently positive. Higher state anxiety was significantly correlated with higher pain ratings at both immediate and delayed recall. General trait anxiety was not only correlated with pain ratings but was also found to account for a significant portion of the variance in ratings in the multivariate analyses when data from the entire sample were included. These data corroborate previous findings on the positive relationship between anxiety and pain (Kent, 1985; Kremer, Atkinson, & Ignelzi, 1981). This finding, however, poses a problem for clinicians in the business of treating patients in pain. When pain is assessed in a clinical situation, patients' self-reported ratings are viewed as veridical representations of illness or pathology, and treatment decisions follow from these ratings. It seems likely that treatment efforts would be more successful if anxiety were to be considered in the evaluation of pain. Relaxation strategies, for instance, could be incorporated into a pain management approach if anxiety were found to be a significant factor.

When the variables "Biopsy" and "Procedure" were examined in relation to the 7 dependent variables for the entire sample, there was essentially no significant relationship. Even when accounting for patients who didn't know what procedure was done to them, only 1 of the 7 ratings correlated significantly with the medical procedure that was conducted. While 3 of the 7 ratings did correlate significantly with the Biopsy variable after excluding

patients who were incorrect or unsure about having a biopsy, neither of the frequency ratings (pain or pressure) correlated significantly. It is particularly surprising that the number of times the patient recalled feeling pain or pressure did not correlate significantly with the Biopsy or Procedure variable, given that some procedures involved more nociceptive stimulation than others. It would seem that pain frequency would naturally coincide with the procedure given that more occasions of contact between medical instruments and cervical or vaginal tissue should result in more occasions of nociceptive stimulation and subjective pain.

One explanation for this finding is that subjective pain simply does not correspond directly with nociceptive stimulation. This is one of the primary tenets of the gate control theory of pain (as discussed in Melzack & Katz, 1994). The gate control theory points to complexity of the pain experience and highlights cognitive and emotional factors that appear to mediate the subjective experience of pain. Another explanation is that the study did not control for the number of attempts that the doctor made to complete each procedure. It is possible that a resident physician would have made multiple attempts at sampling cervical tissue before successfully obtaining a sample from the affected area. There may also have been occasions where the supervising physician would have completed the procedure if the resident were having difficulty. The only way to account for this variability would have been to observe or videorecord each procedure. As previously stated, this was not feasible given issues of confidentiality and given that several examinations were scheduled simultaneously.

The other covariate, pain intensity at the time of the recall task, was found not to correlate significantly with any of the sensory or affective pain severity ratings (ratings 1 through 4) measured at immediate or delayed recall when data for all participants were included. When data were examined for only the 83 patients who correctly reported having or not having a biopsy, present pain intensity was only significantly correlated with one delayed recall rating (D3) and this was at a significance level of $p<.044$. Recall that 94 of the 123 women rated their pain at delayed recall as "0" on a 0 to 100 severity scale. One explanation for the low correlations was that so few patients endorsed having any pain. However, when correlations were examined for only those patients (n=29) who reported having pain at delayed recall, the relationship between current pain intensity and retrospective pain ratings remained nonsignificant. This contradicts previous findings that patients' levels of sensory and affective pain at the time of the memory task would systematically bias patients' recollections of past pain (Bryant, 1993; Eich et al., 1985). However, the present study differed from other studies in that it concerned memory for acute (versus chronic) pain. Women were asked to recall aspects of acute pain associated with a specific medical examination unlike patients in the Bryant (1993) and Eich et al. (1985) studies who were recalling aspects of ongoing pain conditions. It appears reasonable that memory for single episodes of pain would have greater distinctiveness in memory than would memory for repeatedly occurring pain and would therefore be less susceptible to the influence of current pain. Linton and Melin (1982) note that acute pain is associated with a discernable stimulus and is time-limited

whereas chronic pain is not as easily demarcated in time. Thus, the distinction between past pain and present pain appears more difficult in situations of chronic versus acute pain, and any biasing effects of current pain severity on memory for past pain appear to be less of an issue when studying memory for acute pain.

The final portion of data to be discussed is the survey data collected as a courtesy to the clinic staff. As stated in the literature review, a major problem in the management of cervical dysplasia is that patients do not attend follow-up appointments. Rates of noncompliance with appointment attendance have been reported to range from 29% to 49% (McKee, 1997). Unfortunately, this is not surprising given the nature of the problem. Findings from the general medical compliance literature indicate that patients are least likely to comply with medical regimens when the intervention is preventative (versus curative) and when the condition does not cause overt physical symptoms (German, 1988). Cervical dysplasia requires repeated follow-up appointments and is usually not associated with pain in the initial stages. Clerical staff at the clinic where this study was conducted reported that approximately 50% of the appointments that are scheduled for each Dysplasia Clinic are not attended. This estimate included both initial visits and follow-up visits.

Mixed findings have been presented in the literature regarding the influence of information on patient compliance. More information about chronic conditions has been reported to improve adherence to medical regimens (Stanton, 1987) but has also been associated with increased negative emotion in the case of cervical dysplasia (Miller &

Mangan, 1983). Survey data from this study, however, indicate that women want more information about what to expect during colposcopic examination. Of the 73 women who participated in the survey, approximately 56% reported that more information about abnormal Pap smears and what to expect during colposcopy would be very helpful or extremely helpful with improving compliance. During the data collection phase of the study, women repeatedly told the examiner that they would have liked more information about colposcopy at the time they were referred. They often said that the worst part of the experience was waiting for the day of the appointment to arrive because they essentially knew nothing about why they were referred or what to expect during the exam.

When asked to state reasons why some women do not attend appointments, participants most commonly reported fear (i.e., fear of learning they have cancer, fear of the medical examination itself) (31.5%) and lack of understanding (i.e., not realizing that the examination can prevent future disease, not realizing that anything could be seriously wrong) (20.5%). In the absence of accurate health information about dysplasia, women are left to their own, possibly erroneous deductions about their condition. Previous studies have indicated that common fears upon referral for colposcopy include fear of having cancer and fear of losing sexual and/or reproductive functioning (Beresford & Gervaize, 1986; Lauver & Rubin, 1990). Neither of these outcomes is necessarily true, and regular colposcopic examination is the only way to insure that cervical disease is not progressing. However, these irrational fears not only cause increased distress but also keep women from attending their appointments.

A problem with the healthcare system where the study was conducted is that the outlying clinics from which the patients are referred do not have the resources to counsel each patient who has an abnormal Pap smear. Another problem is that patients may have to wait several weeks before they can be seen at Dysplasia Clinic, giving ample time for anticipatory anxiety to increase. Thus, one suggestion for improving compliance at this clinic is to include patient education materials in the initial appointment letter that patients receive before they ever come to the clinic. This is already available (see Appendix H). Another suggestion is to develop a patient education brochure specifically for coping with a referral for colposcopy. This would address common irrational beliefs about dysplasia, offer rational responses to these beliefs, and give simple instructions on relaxation techniques.

The primary findings from this study can be summarized as follows: Women's retrospective ratings of pain endured during colposcopic examination can be significantly affected by suggestive information presented at the time of recall. Specifically, ratings of affective pain are more susceptible to the effects of suggestion than are ratings of sensory pain. The suggestive information exerts a more powerful effect after longer delay periods, and repeated questioning does not necessarily enhance the effect of suggestion. Additional findings include: Ratings of sensory and affective pain are significantly associated with state and trait anxiety, while pain intensity at the time of recall does not appear to correspond closely with retrospective ratings of acute pain. The number of times patients recalled feeling pain was essentially unrelated to the medical procedures that were conducted. Women undergoing a gynecological examination do not necessarily know what exact medical

procedures were conducted, and women want more information about what to expect during colposcopy.

Taken together, these findings point to the complexity of the pain experience and highlight the need for careful assessment of patients in pain. Specifically, clinicians should use caution when wording introductory statements and questions used to assess pain given that patients' responses can be affected by the way that questions are asked. Particular attention should be given to the patients' affective state, and in the event of significant anxiety, then treatment should follow accordingly. It is evident that patients' understandings of their own medical examinations can affect their recollections of pain experienced during a medical examination. It is therefore advisable that clinicians maximize the likelihood that their patients leave the clinic with an adequate understanding of what was done.

Future studies of memory for pain endured during medical procedures would be wise to include direct observation techniques to control for situational and environmental factors that could affect memory reports. Also, experimental paradigms such as the logic of opposition approach could be applied to the study of memory for pain to help elucidate the issue of memory change versus social demand. It is hoped that research efforts will continue to focus on variables that influence the accuracy of memory for pain.

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APPENDIX A: MEMORY QUESTIONS USED IN PILOT STUDY, PAIN SUGGESTING, IMMEDIATE RECALL

Pain Suggesting:

"You just saw the doctor for a very important examination. The colposcopy examination helps your doctor to decide your risk of developing cervical cancer and to make recommendations about your treatment. Most women say that the examination was very painful. I am going to ask you some questions about how painful the exam was for you."

1. On a scale from 1 to 100 how much did it hurt when the doctor shoved the hard plastic instrument into your vagina? A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

2. On a scale from 1 to 100 how much did it burn when the doctor rubbed the acetic acid on your cervix? A 1 would be "it didn't burn at all", 50 would be "it burned a medium amount", and 100 would be "it burned as much as the worst burn you can imagine." You can say any number you want from 1 to 100.

3. On a scale from 1 to 100 how much did it hurt when the doctor jabbed your cervix with the sharp metal tool? A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

4. How many times did you feel pain in your vagina or cervix during the exam today?

5. How many times did you feel pressure on your vagina or cervix during the exam today?

6. On a scale from 1 to 100 how nervous or scared were you during your visit with the doctor today? A 1 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 1 to 100.

SPANISH TRANSLATION OF APPENDIX A

Sugerencias de dolor:
"Usted acaba de ver al médico para un examen muy importante. La examinación de colposcopy le ayuda al doctor decidir su riesgo a contraer cáncer del cervix y hacer recomendaciones para su tratamiento. La mayoría de mujeres dicen que el examen es muy doloroso. Le voy a preguntar unas preguntas a ver como fue el dolor de su examen."

1. En una escala de uno a cien ¿qué tanto le dolío cuando el médico empujó el instrumento duro de plástico en su vagina? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

2. En una escala de uno a cien ¿ cuánto le ardió cuando el médico le rozó el ácido acetico en su cervix? Un uno quiere decir "no sentí nada", cincuenta quiere decir "sentí mediano" y cien quiere decir "le ardió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

3. En una escala de uno a cien ¿qué tanto le dolió cuando el médico le cortó el cervix con el instrumento filoso de metal? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

4. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

5. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

6. En una escala de uno a cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un uno quiere decir "no fue nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "la más nerviosa o asustada que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

APPENDIX B: MEMORY QUESTIONS USED IN PILOT STUDY, PAIN DENYING, IMMEDIATE RECALL

Pain Denying:

"You just saw the doctor for a gynecological examination. The colposcopy examination helps your doctor to decide your risk of developing future problems and to make recommendations about your treatment. Most women say that the examination was not painful. I am going to ask you some questions about whether the exam was painful for you."

1. On a scale from 1 to 100 how much did it hurt when the doctor inserted the clear sterile instrument into your vagina?" A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

2. On a scale from 1 to 100 how much did you feel it when the doctor put the vinegar solution on your cervix? A 1 would be "you didn't feel it at all", 50 would be "you felt it a medium amount", and 100 would be "you felt it as much as the strongeset sensation you can imagine." You can say any number you want from 1 to 100.

3. On a scale from 1 to 100 how strong was the discomfort when the doctor touched your cervix with the medical tool? A 1 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the strongest discomfort you can imagine." You can say any number you want from 1 to 100.

4. How many times did you feel pain on your vagina or cervix during the exam today?

5. How many times did you feel pressure on your vagina or cervix during the exam today?

6. On a scale from 1 to 100 how nervous or scared were you during your visit with the doctor today? A 1 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 1 to 100.

SPANISH TRANSLATION OF APPENDIX B

Sugerencias de no dolor:
"Usted acaba de ver al médico para un examen gynecologo. La examinación de colposcopy le ayuda al médico decidir su riesgo de contraer problemos en el futuro y hacer recomendaciones para su tratamiento. La mayoría de las mujeres dicen que el examen no fue doloroso. Le voy a preguntar unas preguntas a ver si su examen fue doloroso."

1. En una escala de uno a cien ¿qué tanto le dolía cuando el médico insertó el instrumento esterilizado y transparente en su vagina? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano", y cien quiere decir "dolió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

2. En una escala de uno a cien ¿qué tanto sintió cuando el médico puso la solución de vinagre en su cervix? Un uno quiere decir "no sentí nada", cincuenta quire decir "sentí mediano" y cien quiere decir "sentí como lo peor que Ud. se puede imaginar." Puede decir culquier número de uno a cien.

3. En una escala de uno a cien ¿qué tan fuerte fue la incomodidad cuanto el médico le tocó su cervix con el instrumento médico? Un uno quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "incomodidad como lo peor que Ud. se puede imaginar." Puede decir culquier número de uno a cien.

4. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

5. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

6. En una escala de uno a cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un cero quiere decir "no fue nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "nerviosa o asustada que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

APPENDIX C: MEMORY QUESTIONS USED IN PILOT STUDY, PAIN SUGGESTING, DELAYED RECALL

Pain Suggesting:

"I'm calling to talk with you about the doctor visit you had last Tuesday at JPS. The colposcopy exam that you had is a very important examination because it helps your doctor to decide your risk of developing cervical cancer. He or she can then make recommendations about your treatment. I've talked with approximately 100 women who have had the same examination that you had, and most of them say that the examination was very painful and they were very nervous, especially since they were worried about having cancer. I'm going to ask you some questions about how painful the exam was for you."

1. On a scale from 1 to 100 how much did it hurt when the doctor shoved the hard plastic instrument into your vagina? A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

2. On a scale from 1 to 100 how much did it burn when the doctor rubbed the acetic acid on your cervix? A 1 would be "it didn't burn at all", 50 would be "it burned a medium amount", and 100 would be "it burned as much as the worst burn you can imagine." You can say any number you want from 1 to 100.

3. On a scale from 1 to 100 how much did it hurt when the doctor jabbed your cervix with the sharp metal tool? A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

4. How many times did you feel pain in your vagina or cervix during the exam today?

5. How many times did you feel pressure on your vagina or cervix during the exam today?

6. On a scale from 1 to 100 how nervous or scared were you during your visit with the doctor today? A 1 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 1 to 100.

SPANISH TRANSLATION OF APPENDIX C

Sugerencias de dolor:
"Estoy llamado a Usted para discutir el examen que tuvo el Martes pasado en JPS. La examinación de colposcopy que tuvo es muy importante porque le ayuda al médico decidir su riesgo a contraer cáncer del cervix y hacer recomendaciones para su tratamiento. Yo he hablado con como cien mujeres quienes han tenido una examinación como Ud. y la mayoría dice que el examen es muy doloroso y que fueron muy asustadas porque ellas creen en la posibilidad de contraer cáncer. Le voy a preguntar unas preguntas sobre como fue el dolor de su examen."

1. En una escala de uno a cien ¿qué tanto le dolía cuando el médico empujó el instrumento duro de plástico en su vagina? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

2. En una escala de uno a cien ¿cuánto le ardió cuando el médico le rozó el ácido acético en su cervix? Un uno quiere decir "no le ardió nada", cincuenta quiere decir "le ardió mediano" y cien quiere decir "le ardió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

3. En una escala de uno a cien ¿qué tanto le dolió cuando el médico le cortó el cervix con el instrumento filoso de metal? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

4. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

5. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

6. En una escala de uno a cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un uno quiere decir "no fue nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "la mas nerviosa o asustada que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

APPENDIX D: MEMORY QUESTIONS USED IN PILOT STUDY, PAIN DENYING, DELAYED RECALL

Pain Denying:

"I'm calling to talk with you about the doctor visit you had last Tuesday at JPS. The gynecological exam helps your doctor to decide your chance of having problems in the future. He or she can then make recommendations about your treatment. I've talked with approximately 100 women who had the same examination that you had, and most of them say that the examination was a little uncomfortable but not really painful and they were not particularly nervous about it, particularly because the nurses and doctors explained what was going to happen and answered all their questions. I'm going to ask you some questions about your experiences during the exam."

1. On a scale from 1 to 100 how much did it hurt when the doctor inserted the clear sterile instrument into your vagina?" A 1 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 1 to 100.

2. On a scale from 1 to 100 how much did you feel it when the doctor put the vinegar solution on your cervix? A 1 would be you "didn't feel it at all", 50 would be you "felt it a medium amount", and 100 would be you "felt it as much as the strongest sensation you can imagine." You can say any number you want from 1 to 100.

3. On a scale from 1 to 100 how strong was the discomfort when the doctor touched your cervix with the medical tool? A 1 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the strongest discomfort you can imagine." You can say any number you want from 1 to 100.

4. How many times did you feel pain on your vagina or cervix during the exam today?

5. How many times did you feel pressure on your vagina or cervix during the exam today?

6. On a scale from 1 to 100 how nervous or scared were you during your visit with the doctor today? A 1 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 1 to 100.

SPANISH TRANSLATION OF APPENDIX D

Sugerencias de no dolor:
"Estoy llamado a Usted para discutir el examen que tuvo el Martes pasado en JPS. El examen gynecólogo le ayuda al médico decidir su riesgo a contraer problemas en el futuro y hacer recomendaciones para su tratamiento. Yo he hablado con como cien mujeres quienes han tenido una examinación como Ud. y la mayoría dice que el examen es un poquito desconfortante pero no es doloroso y que no fueron especialmente asustadas porque los médicos y las enfermeras explicaron lo que iban a hacer y le dieron respuestas a sus preguntas. Le voy a hacer unas preguntas sobre sus experiencias durante el examen."

1. En una escala de uno a cien ¿qué tanto le dolió cuando el médico insertó el instrumento esterilizado y transparente en su vagina? Un uno quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano", y cien quiere decir "dolió como el peor que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

2. En una escala de uno a cien ¿qué tanto sintió cuando el médico puso la solucion de vinagre en su cervix? Un cero quiere decir "no sentí nada", cincuenta decir "sentí mediano" y cien quiere decir "sentí mas fuerte que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

3. En una escala de uno a cien ¿qué tan fuerte fue la incomodidad cuando el médico le tocó su cuello del útero con el instrumento médico? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "incomodidad mas fuerte que Ud. se puede imaginar." Puede decir cualquier número de uno a cien.

4. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

5. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

6. En una escala de uno a cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un cero quiere decir "no fue nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "la más nerviosa o asustada que Ud. puede imaginar." Puede decir cualquier número de uno a cien.

APPENDIX E: CONSENT FORM USED IN PILOT STUDY, PART 1, IMMEDIATE RECALL ONLY

As a patient attending the Dysplasia Clinic at John Peter Smith Health Center for Women you have the opportunity to participate in a research study. Women who are pregnant and women under the age of 18 are not eligible to participate at this time. The study is being conducted by Jodie Guth who is a Ph.D. student from Louisiana State University in Baton Rouge, Louisiana. The reason for the study is to learn more about women's feelings about the colposcopy exam (the gynecological exam you are having today).

If you volunteer to participate in the study you will talk with Jodie for about 5 minutes after your doctor visit today. She will talk with you about how you are feeling. After you talk with Jodie, you will have completed the study. There is no risk to you if you participate or do not participate in this study. If you do not wish to participate, there is no penalty, and your medical care will not be affected. All of your responses will be completely confidential, and your name will not be associated with your answers.

If you have any questions about the study, you can ask Jodie in person today. If you have any questions about your rights as a patient or participant in the study you may contact the Department of Risk Management at 927-1404. Any questions about your medical care should be directed to your nurse or doctor.

_____ _____

Patient's Signature Date

_____

Experimenter

SPANISH TRANSLATION OF APPENDIX E

Como paciente que asiste a la clínica de Dysplasia en el John Peter Smith Centro Para Mujeres Usted tiene la oportunidad de participar en un estudio de investigación. Las mujeres que están en cinta y aquellas menor de 18 años no son eligibles para participar. La investigación esta dirigida por Jodie Guth, estudiante de doctorado en psicología de la universidad de Louisiana en Baton Rouge. El propósito del estudio es mejor entender los sentimientos de la mujer después de un examen de colposcopia (el examen gynecólogo que tiene hoy).

Si Usted se da por voluntaria en la investigación hablará con Jodie por cinco minutos después de la cita con el médico. Ella hablará con Usted sobre cómo se siente. Despues de hablar con Jodie, habrá completado el estudio. No hay riesgo si Ud. participa o no participa en este estudio. Si Ud. no tiene ganas de participar, no hay concecuencias, y su tratamiento médico no será afectada. Todas sus respuestas serán confidenciales, y su nombre no será asociada con sus respuestas.

Si tiene preguntas sobre el estudio, puede hablar con Jodie personalmente hoy o hablar con la oficina de JPS-Risk Management (Administracion de Riesgo) a 927-1404. Preguntas sobre su tratamiento médico serán dirijidas a su médico o a su enfermera.

_____ _____

Firma del paciente Fecha

_____

Investigadora

APPENDIX F: CONSENT FORM USED IN PILOT STUDY, PART 2, IMMEDIATE AND DELAYED RECALL

As a patient attending the Dysplasia Clinic at John Peter Smith Health Center for Women you have the opportunity to participate in a research study. Women who are pregnant and women under the age of 18 are not eligible to participate at this time. The study is being conducted by Jodie Guth who is completing a Ph.D. in psychology from Louisiana State University in Baton Rouge, Louisiana. The reason for the study is to learn more about women's feelings about the colposcopy exam (the gynecological exam you are having today).

If you volunteer to participate in the study you will talk with Jodie for about 5 minutes after your doctor visit today, and she will call you by phone next Tuesday to ask how you are feeling. After you talk with Jodie by phone next Tuesday, you will have completed the study. There is no risk to you if you participate or do not participate in this study. If you do not wish to participate, there is no penalty, and your medical care will not be affected. All of your responses will be completely confidential, and your name will not be associated with your answers.

If you have any questions about the study, you can ask Jodie in person today. If you have any questions about your rights as a patient or participant in the study you may contact the Department of Risk Management at 927-1404. Any questions about your medical care should be directed to your nurse or doctor.

_____ _____

Patient's Signature Date

_____

Experimenter

SPANISH TRANSLATION OF APPENDIX F

Como paciente que asiste a la clínica de Dysplasia en el John Peter Smith Centro Para Mujeres Usted tiene la oportunidad de participar en un estudio de investigación. Las mujeres que están en cinta y aquellas menor de 18 años no son eligibles para participar. La investigación esta dirigida por Jodie Guth, estudiante de doctorado en psicología de la universidad de Louisiana en Baton Rouge. El propósito del estudio es mejor entender los sentimientos de la mujer después de un examen de colposcopia (el examen gynecólogo que tiene hoy).

Si Usted se da por voluntaria en la investigación hablará con Jodie por cinco minutos después de la cita con el médico y ella hablará con Ud. el Martes que viene para preguntarle cómo se siente. Despues de hablar con Jodie ese Martes, habrá completado el estudio. No hay riesgo si Ud. participa o no participa en este estudio. Si Ud. no tiene ganas de participar, no hay concecuencias, y su tratamiento médico no será afectada. Todas sus respuestas serán confidenciales, y su nombre no será asociada con sus respuestas.

Si tiene preguntas sobre el estudio, puede hablar con Jodie personalmente hoy o hablar con la oficina de JPS-Risk Management (Administracion de Riesgo) a 927-1404. Preguntas sobre su tratamiento médico serán dirijidas a su médico o a su enfermera.

_____ _____

Firma del paciente Fecha

_____

Investigadora

APPENDIX G: PRELIMINARY QUESTIONNAIRE USED IN PILOT STUDY

(Administered before doctor visit, after informed consent)

Are you in any physical pain right now? yes no
If yes, what part of your body hurts right now? _____

If you had to describe how much pain you are in right now on a scale from 1 to 100, what would you say?
A 1 would mean "no pain at all,"
a 50 would mean "a medium amount of pain,"
and 100 would mean "the worst pain you can imagine."
What number would you say right now? _____

SPANISH TRANSLATION OF APPENDIX G

(Antes de la visita del médico, después de consentimiento informado)

Tiene dolor fisica ahorita? sí no
Si contestó sí, ¿qué parte de su cuerpo le duele ahorita? _____

Si tuviera que describir cuánto dolor tiene ahorita de una escala de cero a cien, ¿que diría?
Un uno quiere decir "nada de dolor,"
cincuenta significa "dolor mediano"
y cien significa "el dolor peor que se Ud. puede imaginar."
¿Que número diría ahorita? _____

APPENDIX H: INFORMATION GIVEN TO PATIENTS ATTENDING DYSPLASIA CLINIC AT JOHN PETER SMITH HOSPITAL

JPS HEALTH NETWORK

DYSPLASIA CLINIC GENERAL INFORMATION

WHAT IS A PAP SMEAR?

A pap smear is a screening test for cancer of the cervix. The cells are taken from the cervix (the opening of the uterus) by using a special brush, a wooden spatula, or a cotton swab. The cells are smeared on a glass slide; the slide is then sprayed with a special fixative and sent to the laboratory for evaluation.

WHAT DO THE RESULTS OF A PAP SMEAR MEAN?

A Cytologist examines the slide under the microscope looking for abnormal cells. If none are found, the Pap Smear is considered normal or negative. An abnormal Pap Smear does not necessarily mean that a "precancerous" condition or cancer is present. In many cases, an abnormal Pap Smear is due to inflammation or irritation of the cervical tissue caused by a bacterial, fungal, or viral infection.

WHAT FOLLOW-UP IS RECOMMENDED?

If the abnormal Pap Smear is caused from a bacterial or fungal infection, a treatment of the infection may be recommended followed by a repeat Pap Smear in 3 to 4 months.

WHAT IS THE HPV VIRUS?

The Human Papilloma Virus (HPV) is a sexually transmitted virus. There are over 60 types of this one virus. Some of the types cause genital warts known as condyloma; other types cause changes in the cells of the cervix which can lead to abnormal cells called Dysplasia.

WHAT IS DYSPLASIA?

Cells on the cervix are constantly changing which is a normal process. Dysplasia begins when abnormal changes occur in cells on the surface of the cervix. Your pap smear may be read as Mild, Moderate, or Severe Dysplasia. The cells on your cervix can be treated so that they can become healthy again, but if left untreated these abnormal cells may change into Cancer.

WHAT IS COLPOSCOPY?

A Colposcope is a magnifying instrument placed outside the vagina which helps the Practitioner get a close-up view of the surface of the cervix. This procedure only takes about 10 minutes and is not painful. The patient is in the same position as during a Pap Smear.

WHAT IS A BIOPSY?

During the examination of the cervix, if any abnormal areas are seen, the practitioner my take a small sample of tissue to help determine if further treatment is necessary. Most women describe this procedure like a sharp menstrual cramp that only lasts a few seconds.

WHEN WILL I KNOW THE BIOPSY RESULTS?

The results of the biopsy are usually ready in 2 to 4 weeks. Your doctor will review your medical information with your biopsy results and make a treatment plan specific for you. A nurse from the Dysplasia Clinic will mail or call you with these results. If you should change your phone number or address please notify the clinic.

If you have any questions, please call the clinic at 870-1775, 870-1496, or 338-4925 and ask to speak to a Dysplasia Clinic Nurse.

JPS HEALTH NETWORK

BIOPSY FOLLOW-UP INSTRUCTIONS

1. Please call the Dysplasia Clinic if any of the following occur:
   - Fever of 100.4 (or greater) for more than 24 hours
   - Foul smelling vaginal discharge
   - Severe abdominal pain not relieved by medication
   - Difficulty urinating
   - Heavy bleeding (bleeding heavier than a normal period)

   If you have a problem after working hours, you can talk to a nurse by calling 870-1224.

2. To reduce the bleeding after the biopsy, a medicated paste may be applied to the cervix. This paste often causes a dark brown discharge which looks like "coffee grounds". You may experience a moderate amount of reddish, watery discharge during the first 2 weeks. A sanitary pad should be used.

3. After your biopsy, do not put anything into your vagina for one week. This means:
   - No sexual intercourse
   - No douching
   - No tampons

   All of these may cause injury to the healing tissue, which can result in bleeding, infection, and delay to the healing tissue. You may bathe or shower as usual, including the day of your biopsy.

4. You may experience mild cramping for a few days after the biopsy. This discomfort may be relieved by over counter medications such as Ibuprofen (Advil), Acetaminophen (Tylenol), or Naproxen Sodium (Aleve).

5. Your biopsy results should be available in 4 to 6 weeks. A nurse will mail the results to you along with what the doctor recommends for your follow-up care. If you have not been contacted in 6 weeks or if you have changed your address or phone number, please call the clinic at 338-4925 or 870-1775.

6. Please call if you have any questions.

APPENDIX I: DATA COLLECTION FORM USED IN PILOT STUDY, PART 1, IMMEDIATE RECALL ONLY

Suggest / Deny English / Spanish Participant #_____

Preliminary pain rating _____ Pain areas: _____

1. Instrument Rating: _____
2. Solution Rating: _____
3. Touch Rating: _____
4. Number of pain occasions: _____
5. Number of pressure occasions: _____
6. Anxiety Rating: _____

Telephone at home? yes no

Biopsy? yes no

APPENDIX J: DATA COLLECTION FORM USED IN PILOT STUDY, PART 2, IMMEDIATE AND DELAYED RECALL

Suggest / Deny English / Spanish Participant #_____

Preliminary pain rating _____ Pain areas: _____

		Immediate	Delayed
1.	Instrument Rating:	_____	_____
2.	Solution Rating:	_____	_____
3.	Touch Rating:	_____	_____
4.	Number of pain occasions:	_____	_____
5.	Number of pressure occasions:	_____	_____
6.	Anxiety Rating:	_____	_____

Immediate:
Telephone at home? yes no
Biopsy? yes no

Delayed:
In pain now? yes no If yes, how bad? _____

APPENDIX K: MEMORY QUESTIONS USED IN FULL STUDY, PAIN SUGGESTING, IMMEDIATE RECALL

Pain Suggesting:

"You just saw the doctor for a very important gynecological examination. The colposcopy examination helps your doctor to decide your risk of developing cancer of the cervix. He or she can then make recommendations about what treatment you need. I've talked with about 100 women who experienced the colposcopy exam like you did. Most of the women say that the examination was very painful, even more painful than they expected. They also say that they were nervous, especially since they were worried about possibly having cancer. What I'd like you to do now is to think about just how painful the exam was for you today, because only you are the expert on how much pain you feel. I'm also going to ask you about how nervous you were at the time."

1. On a scale from 0 to 100 how much did it hurt when the doctor shoved the cold metal speculum into your vagina? A 0 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how distressing was it when the doctor shoved the cold metal speculum into your vagina? A 0 would be "not distressing at all", 50 would be "distressing to a medium degree", and 100 would be "the most distressing you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much did it hurt when the doctor jabbed your cervix with the sharp metal tool (biopsy tool) or dull wooden spatula (Pap smear tool)? A 0 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how distressing was it when the doctor jabbed your cervix with the sharp metal tool (biopsy tool) or dull wooden spatula (Pap smear tool)? A 0 would be "not distressing at all", 50 would be "distressing to a medium degree", and 100 would be "the most distressing you can imagine." You can say any number you want from 0 to 100.

5. How many times did you feel pain in your vagina or cervix during the exam today?
6. How many times did you feel pressure on your vagina or cervix during the exam today?

7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor today? A 0 would be "not nervous or scared at all", 50 would be "nervous or scared a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX K

"Usted acaba de ver al médico para un examen ginecológico muy importante. El examen de "colposcopy" le auyda a su médico para decidir su riesgo de cáncer cervical. El entonces puede hacer recomendaciones sobre el tratamiento que necesita. He hablado con aproximadamente cien mujeres que se han sometido al examen de colposcopy como Ud. Muchas de las mujeres dicen que el examen era muy doloroso, más doloroso de lo que esperaban. Tambien dicen que estaban nerviosas, especialmente porque estaban preocupadas sobre la posibilidad de tener cáncer. Lo que me gustaría que ahorita hiciera es pensar sobre cuán doloroso fue el examen para Ud., porque solamente Ud. puede decir el dolor que siente. Tambien le voy a preguntar qué tan nerviosa estaba en ese momento."

1. En una escala de cero a cien ¿qué tanto le dolió cuando el médico empujó el "speculum" frío de metal en su vagina? Un cero quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió lo peor que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿qué tan consternante fue cuando el médico empujó el "speculum" frío de metal en su vagina? Un cero quiere decir "no me consternó nada", cincuenta quiere decir "consternante mediano" y cien quiere decir "lo más consternante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿qué tanto le dolió cuando el médico le cortó el cervix con el instrumento filoso de metal (instrumento de biopsia) o "spatula" embotado de madera (instrumento para papanicolau)? Un cero quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió lo peor que Ud. se puede imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan consternante fue cuando el médico le cortó el cervix con el instrumento filoso de metal (instrumento de biopsia) o instrumento embotado de madera (instrumento para papanicolau)? Un cero quiere decir "no me consternó nada", cincuenta quiere decir "consternante mediano" y cien quiere decir "lo más consternante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?
6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "lo más nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX L: MEMORY QUESTIONS USED IN FULL STUDY
PAIN DENYING, IMMEDIATE RECALL

Pain Denying:

"You just saw the doctor for a follow-up examination. The examination helps your doctor to decide your chances of having problems in the future. He or she can then talk with you about managing your health in the best way possible. I've talked with about 100 women who come to this clinic just like you do. Most of the women women say that the examination was not really painful, at least not as much as they expected. They've also told me that talking with the nurses was very helpful in making them feel beter about the exam, so they didn't have to feel as nervous as they expected either. What I'd like you to do now is just take a minute to relax and think about the exam since only you can decide how you feel. I'm going to ask you a few simple questions about how you were feeling today at the time of your exam."

1. 1. On a scale from 0 to 100 how much discomfort did you feel when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "no discomfort at all", 50 would be "a medium amount of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how upsetting was it when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much discomfort did you feel when the doctor touched your cervix with the medical tool? A 0 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how upsetting was it when the doctor touched your cervix with the medical tool? A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

5. How many times did you feel pain on your vagina or cervix during the exam today?

6. How many times did you feel pressure on your vagina or cervix during the exam today?

7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor today? A 0 would be "not nervous or scared at all", 50 would be "nervous or scared a medium amount", and 100 would be "so nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX L

"Usted acaba de ver al médico para su siguiente examen. El examen ayuda a su médico a decidir su probabilidad de tener problemas en el futuro. El entonces puede hablar con Ud. Sobre la mejor manera de administar su salud. He hablado con cien mujeres que vienen a esta clínica como Ud. Muchas de las mujeres dicen que el examen no era doloroso, a menos no era tanto como esperaban. También me han dicho que al hablar con las enfermeras era una gran ayuda para hacer que se sentieran mejor sobre el examen y no tuvieran que sentirse tan nerviosas como lo esperaban. Lo que me gustaría que haga ahorita es tomar un momento para relajar y pensar sobre el examen porque solamente Ud. puede decidir como se siente. Le voy a hacer algunas preguntas sobre como se siente hoy al momento de su examen.

1. En una escala de cero a cien ¿ cuánta incomodidad se sintió cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿cuánta incomodidad se sintió cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que se pudiera imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "lo más nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX M: MEMORY QUESTIONS USED IN FULL STUDY, NO SUGGESTION, IMMEDIATE RECALL

No Suggestion:

"As a patient attending the JPS Health Center for Women you are in a position to receive medical care designed specifically for women. By talking with me today you are helping me to complete a research study that I am conducting for my degree in school. I've talked with about 100 women who come to this clinic just like you do. These women have told me many different opinions about the examination that they had. I've asked them to help me understand how they felt during their visit to the clinic. What I'd like you to do now is just take a minute to think about the exam that you had today. I'm going to ask you a few simple questions about your experiences today at the doctor's office."

1. On a scale from 0 to 100 how much discomfort did you feel when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "no discomfort at all", 50 would be "a medium amount of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how upsetting was it when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much discomfort did you feel when the doctor touched your cervix with the medical tool? A 0 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how upsetting was it when the doctor touched your cervix with the medical tool? A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

5. How many times did you feel pain on your vagina or cervix during the exam today?

6. How many times did you feel pressure on your vagina or cervix during the exam today?

7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor today? A 0 would be "not nervous or scared at all", 50 would be "nervous or scared a medium amount", and 100 would be "so nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX M

"Como paciente de JPS Health Center for Women Ud. está en una posición de recibir atención médica diseñado especificamente para mujeres. En hablar conmigo hoy, Usted me está ayudando a completar el estudio que estoy conduciendo para mi doctorado. He hablado con aproximadamente cien mujeres que vienen a esta clínica como Ud. Estas mujeres me han dado muchas opiniones diferentes sobre el examen que tuvieron. Les pedí que me ayudaran a entender como se sintieron durante su visita a la clínica. Lo que me gustaría que haga ahorita es tomar un momento para pensar sobre el examen que Usted tuvo hoy. Le voy hacer algunas preguntas sobre sus experiencias que tuvo hoy en la oficina del médico.

1. En una escala de cero a cien ¿cuanta incomodidad se sintió cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿cuanta incomodidad se sintió cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que se pudiera imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen hoy?

6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen hoy?

7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico hoy? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "lo más nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX N: MEMORY QUESTIONS USED IN FULL STUDY, PAIN SUGGESTING, DELAYED RECALL

Pain Suggesting:

"I'm calling to ask you about the doctor visit you had last Tuesday at JPS. You know that the colposcopy examination helps your doctor to decide your risk of developing cancer of the cervix. He or she can then make recommendations about what treatment you need. I've talked with about 100 women who experienced the colposcopy exam like you did. Most of the women say that the examination was very painful, even more painful than they expected. They also say that they were nervous, especially since they were worried about possibly having cancer. What I'd like you to do now is to think about just how painful the exam was for you, because only you are the expert on how much pain you felt. I'm also going to ask you about how nervous you were at the time of the exam last Tuesday."

1. On a scale from 0 to 100 how much did it hurt when the doctor shoved the cold metal speculum into your vagina? A 0 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how distressing was it when the doctor shoved the cold metal speculum into your vagina? A 0 would be "not distressing at all", 50 would be "distressing to a medium degree", and 100 would be "the most distressing you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much did it hurt when the doctor jabbed your cervix with the sharp metal tool (biopsy tool) or dull wooden spatula (Pap smear tool)? A 0 would be "it didn't hurt at all", 50 would be "it hurt a medium amount", and 100 would be "it hurt as much as the worst pain you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how distressing was it when the doctor jabbed your cervix with the sharp metal tool (biopsy tool) or dull wooden spatula (Pap smear tool)? A 0 would be "not distressing at all", 50 would be "distressing to a medium degree", and 100 would be "the most distressing you can imagine." You can say any number you want from 0 to 100.

5. How many times did you feel pain in your vagina or cervix during the exam last Tuesday?
6. How many times did you feel pressure on your vagina or cervix during the exam last Tuesday?
7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor last Tuesday? A 0 would be "not nervous or scared at all", 50 would be "nervous or scared a medium amount", and 100 would be "the most nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX N

"Le estoy llamando para preguntarle sobre su visita con el médico el martes pasado en JPS. Ud. sabe que el examen de "colposcopy" le ayuda a su médico decidir su riesgo de cancer cervical. El entonces puede hacer recomendaciones sobre cuál tratamiento necesita. He hablado con aproximadamente cien mujeres que han sido sometidas al examen de "colposcopy" como Ud. Muchas de las mujeres dicen que el examen era muy doloroso, tal vez mas doloroso de lo que esperaban. Tambien dicen que estaban muy nerviosas, especialmente porque estaban preocupadas sobre la posibilidad de tener cancer. Lo que me gustaría que haga ahorita es pensar sobre el examen y cómo era doloroso para Ud., porque solamente Ud. puede decir el dolor que siente. Tambien le voy a preguntar si estaba nerviosa en el momento de su examen el martes pasado."

1. En una escala de cero a cien ¿qué tanto le dolió cuando el médico empujó el "speculum" frio de metal en su vagina? Un cero quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿qué tan consternante fue cuando el médico empujó el "speculum" frio de metal en su vagina? Un cero quiere decir "no me consternó nada", cincuenta quiere decir "consternante mediano" y cien quiere decir "lo más consternante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿qué tanto le dolió cuando el médico le cortó el cervix con el instrumento filoso de metal (instrumento de biopsia) o "spatula" embotado de madera (el instrumento para papanicolau)? Un cero quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan consternante fue cuando el médico le cortó el cervix con el instrumento filoso de metal (instrumento de biopsia) o "spatula" embotado de madera (el instrumento para papanicolau)? Un cero quiere decir "no dolió nada", cincuenta quiere decir "dolió mediano" y cien quiere decir "dolió como lo peor que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.
5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen el martes pasado?
6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen el martes pasado?
7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico el martes pasado? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX O: MEMORY QUESTIONS USED IN FULL STUDY, PAIN DENYING, DELAYED RECALL

Pain Denying:

"I'm calling to talk with you about the doctor visit you had last Tuesday at JPS. As you know, the exam helps your doctor to decide your chances of having problems in the future. He or she can then talk with you about managing your health in the best way possible. I've talked with about 100 women who come to this clinic just like you do. Most of the women women say that the examination was not really painful, at least not as much as they expected. They've also told me that talking with the nurses was very helpful in making them feel beter about the exam, so they didn't have to feel as nervous as they expected either. What I'd like you to do now is just take a minute to relax and think about the exam since only you can decide how you feel. I'm going to ask you a few simple questions about how you were feeling at the time of your exam last Tuesday."

1. On a scale from 0 to 100 how much discomfort did you feel when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "no discomfort at all", 50 would be "a medium amount of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how upsetting was it when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much discomfort did you feel when the doctor touched your cervix with the medical tool? A 0 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how upsetting was it when the doctor touched your cervix with the medical tool? A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.
5. How many times did you feel pain on your vagina or cervix during the exam last Tuesday?
6. How many times did you feel pressure on your vagina or cervix during the exam last Tuesday?

7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor last Tuesday? A 0 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "so nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX O

"Le estoy llamando para hablar con Usted sobre la visita que tuvo con el médico el martes pasaso en JPS. El examen le ayuda al médico para determinar las probabilidades de tener problemas en el futuro. El entonces puede hablar con Usted sobre la mejor manera de administrar su salud. He hablado con aproximadamente cien mujeres que vienen a esta clínica como Ud. Muchas de las mujeres dicen que el examen no era muy doloroso, a menos no era tanto como esperaban. Tambien, me han dicho que hablar con las enfermeras era una gran ayuda, porque se sintieron mejor sobre el examen y no se sintieron tan nerviosas como esperaban. Lo que me gustaría que Usted hiciera ahorita es tomar un momento para relajar y pensar sobre el examen porque solamente Usted puede decidir como se siente. Le voy hacer unas preguntas sobre como se sentía en el momento de su examen el martes pasado."

1. En una escala de cero a cien ¿cuanta incomodidad se sentió cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿cuanta incomodidad se sentió cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen el martes pasado?
6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen el martes pasado?
7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico el martes pasado? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX P: MEMORY QUESTIONS USED IN FULL STUDY, NO SUGGESTION, DELAYED RECALL

No Suggestion:

"I'm calling to talk with you about your visit last Tuesday to the JPS Health Center for Women. As you know, the Healh Center provides medical care specifically for women. By talking with me today you are helping me to complete a research study that I am conducting for my degree in school. I've talked with about 100 women who come to this clinic just like you do. These women have told me many different opinions about the examination that they had. I've asked them to help me understand how they felt during their visit to the clinic. What I'd like you to do now is just take a minute to think about the exam that you had. I'm going to ask you a few simple questions about your experiences at the doctor's office last Tuesday."

1. On a scale from 0 to 100 how much discomfort did you feel when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "no discomfort at all", 50 would be "a medium amount of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

2. On a scale from 0 to 100 how upsetting was it when the doctor inserted the cool sterile instrument into your vagina?" A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

3. On a scale from 0 to 100 how much discomfort did you feel when the doctor touched your cervix with the medical tool? A 0 would be "no discomfort at all", 50 would be "a medium level of discomfort", and 100 would be "the most discomfort you can imagine." You can say any number you want from 0 to 100.

4. On a scale from 0 to 100 how upsetting was it when the doctor touched your cervix with the medical tool? A 0 would be "not upsetting at all", 50 would be "upsetting to a medium degree", and 100 would be "the most upsetting you can imagine." You can say any number you want from 0 to 100.

5. How many times did you feel pain on your vagina or cervix during the exam last Tuesday?
6. How many times did you feel pressure on your vagina or cervix during the exam last Tuesday?

7. On a scale from 0 to 100 how nervous or scared were you during your visit with the doctor last Tuesday? A 0 would be "not nervous or scared at all", 50 would be "nervous or scaled a medium amount", and 100 would be "so nervous or scared you can imagine." You can say any number you want from 0 to 100.

SPANISH TRANSLATION OF APPENDIX P

"Le estoy llamando para hablar con Ud. sobre su visita el martes pasado en el JPS Health Center for Women. La clínica de salud les ofrece ayuda médica a las mujeres. En hablar conmigo ahora, Ud. me está ayudando completar el estudio que estoy haciendo para mi doctorado. He hablado con aproximadamente cien mujeres que vienen a esta clínica como Ud. Estas mujeres me han dado diferentes opiniones sobre el examen que tuvieron. Les he pedido que me ayudaran a entender cómo se sintieron durante su visita a la clínica. Lo que me gustaría que hiciera ahorita es tomar un momento para pensar sobre el examen que tuvo. Le voy hacer algunas preguntas sobre sus experiencias en la oficina del médico el martes pasado.

1. En una escala de cero a cien ¿cuanta incomodidad se sentió cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

2. En una escala de cero a cien ¿ qué tan preocupante fue cuando el médico insertó el instrumento fresco y esterilizado en su vagina? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

3. En una escala de cero a cien ¿cuanta incomodidad se sentió cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada de incomodidad", cincuenta quiere decir "incomodidad mediano" y cien quiere decir "lo más incómodo que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

4. En una escala de cero a cien ¿qué tan preocupante fue cuando el médico le tocó su cervix con el instrumento médico? Un cero quiere decir "nada preocupante", cincuenta quiere decir "preocupante mediano" y cien quiere decir "lo más preocupante que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

5. ¿Cuántas veces sintió Usted el dolor en su vagina o cervix durante el examen el martes pasado?

6. ¿Cuántas veces sintió Usted la presión en su vagina o cervix durante el examen el martes pasado?

7. En una escala de cero al cien ¿qué tan nerviosa o asustada estaba Usted durante la visita con su médico el martes pasado? Un cero quiere decir "no fuí nerviosa o asustada", cincuenta quiere decir "nerviosa o asustada mediana", y cien quiere decir "lo más nerviosa o asustada que Ud. se pudiera imaginar." Puede decir cualquier número de cero a cien.

APPENDIX Q: STATE-TRAIT ANXIETY INVENTORY, FORM X

SELF-EVALUATION QUESTIONNAIRE

STAI FORM X-2

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

IDARE

SXR

Inventario de Autoevaluación

Instrucciones: Algunas expresiones que la gente usa para describirse aparecen abajo. Lea cada frase y llene el círculo del número que indique cómo se siente *generalmente*. No hay contestaciones buenas o malas. No emplee mucho tiempo en cada frase, pero trate de dar la respuesta que mejor describa cómo se siente *generalmente*.

	CASI NUNCA	ALGUNAS VECES	FRECUENTEMENTE	CASI SIEMPRE
21. Me siento bien	①	②	③	④
22. Me canso rápidamente	①	②	③	④
23. Siento ganas de llorar	①	②	③	④
24. Quisiera ser tan feliz como otros parecen serlo	①	②	③	④
25. Pierdo oportunidades por no poder decidirme rápidamente	①	②	③	④
26. Me siento descansado	①	②	③	④
27. Soy una persona "tranquila, serena y sosegada"	①	②	③	④
28. Siento que las dificultades se me amontonan al punto de no poder superarlas	①	②	③	④
29. Me preocupo demasiado por cosas sin importancia	①	②	③	④
30. Soy feliz	①	②	③	④
31. Tomo las cosas muy a pecho	①	②	③	④
32. Me falta confianza en mí mismo	①	②	③	④
33. Me siento seguro	①	②	③	④
34. Trato de sacarle el cuerpo a las crisis y dificultades	①	②	③	④
35. Me siento melancólico	①	②	③	④
36. Me siento satisfecho	①	②	③	④
37. Algunas ideas poco importantes pasan por mi mente y me molestan	①	②	③	④
38. Me afectan tanto los desengaños que no me los puedo quitar de la cabeza	①	②	③	④
39. Soy una persona estable	①	②	③	④
40. Cuando pienso en los asuntos que tengo entre manos me pongo tenso y alterado	①	②	③	④

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APPENDIX R: PERMISSION TO PHOTOCOPY THE STATE-TRAIT ANXIETY INVENTORY

State-Trait Anxiety Inventory for Adults

Self-Evaluation Questionnaire

STAI Form X

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Developed by Charles D. Spielberger
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APPENDIX S: PRESENT PAIN INTENSITY RATING USED IN FULL STUDY

(Administered before the doctor visit and again by phone 8 days later before Delayed recall interview.)

Are you in any physical pain right now? yes no

If yes, what part of your body hurts right now? _____

If you had to describe how much pain you are in right now on a scale from 0 to 100, what would you say?

A 0 would mean "no pain at all,"
a 50 would mean "a medium amount of pain,"
and 100 would mean "the worst pain you can imagine."
What number would you say right now? _____

SPANISH TRANSLATION OF APPENDIX S

¿Tiene dolor física ahorita? sí no

Si contestó sí, ¿que parte de su cuerpo le duele ahorita?_____

Si tuviera que describir cuanto dolor tiene ahorita en una escala de cero a cien, ¿que diría?

Un cero quiere decir "nada de dolor,"
cinquenta quiere decir "dolor mediano,"
y cien quiere decir "lo peor que Ud. puede imaginar."
¿Que número diría ahorita? _____

APPENDIX T: VERIFICATION OF APPROVAL TO CONDUCT STUDY AT JOHN PETER SMITH HOSPITAL

JPS HEALTH NETWORK

September 9, 1998

Jodie Guth
1133 Estes Street
Benbrook, Texas 76126

RE: Effects of Suggestive Questioning on Women's Self-Report of Pain Information Following Colposcopy

Dear Ms. Guth:

The Clinical Research Committee at John Peter Smith Health Network using the process for expedient review has approved of the above study. I will present your protocol at our next IRB meeting for discussion purposes only, and to the Executive Committee to inform our Medical Staff.

Sincerely,

Debbie Wilkinson-Faulk, R.N. Ph.D.

Debbie Wilkinson-Faulk, R.N., Ph.D.
Chairman, Clinical Research Committee

DW/mab

JPS HEALTH NETWORK

February 12, 1997

Re: EFFECTS OF SUGGESTIVE QUESTIONING ON WOMEN'S SELF-REPORT OF PAIN INFORMATION FOLLOWING COLOPOSCOPY

Dear Ms. Guth:

The Clinical Research Committee of the Tarrant County Hospital District met on February 11, 1997 and has reviewed and approved the above proposed clinical research project. The consent form was also approved pending corrections. Please send me a copy of revised consent form prior to beginning the study.

Sincerely,

Debbie Wilkinson-Faulk, PhD, RN

Debbie Wilkinson-Faulk, Ph.D., RN
Chairman, Credentials Committee

/mb

APPENDIX U: CONSENT FORM USED IN FULL STUDY

1. Study Title: Effects of suggestive questioning on women's self-report of pain information following colposcopy

2. Performance Site: John Peter Smith Health Center for Women (Suite 205), Fort Worth, Texas

3. Investigators: You may call the following investigators to discuss questions about this study, Monday through Friday, 8:00 a.m. - 4:30 p.m.

Jodie Guth 817-249-0279
Professor James Geer 504-388-4095

4. Purpose of the Study: The purpose of this study is to determine how different types of questions will affect what women say about their experiences during colposcopy (the gynecological examination you are having today).

5. Participant Inclusion:

A. You must be 18 years of age or older to be in the study. If you are pregnant, you are not eligible to participate.

B. If your doctor decides that you do not need an examination today, then you will not be able to participate at this time.

6. Number of participants: 120

7. Study Procedures: The study will be conducted in 2 parts.

Part 1: Today for part 1 you will meet with me, the examiner, before your doctor visit for about 10 minutes to fill out a questionnaire about how you usually feel. I will also ask you how you feel right now and get some basic information about you. Then after your doctor visit I will ask you a few questions about how you feel about your examination. That will take about 5 minutes. Later this week I will look at your medical chart to find out what procedure your doctor did today.

Part 2: In Part 2 I will call you by telephone next Wednesday at a time that is convenient for you. Again I will ask you a few questions about how you feel. I will explain the study in more detail to you at that time. The phone call will take about 10 minutes.

8. Benefits: Today you will receive a calendar that can be used as a planner for remembering your doctor's appointments. After you complete Part 2 next Tuesday I will mail you a coupon good for a free item at the McDonald's restaurant located inside John Peter Smith hospital.

You also have the benefit of speaking with me, the examiner, several times and you can discuss any concerns you have about your examination with me. If you have a problem I can tell your doctor or nurse so they can help you if needed. This study is also important because it will help scientists to understand how women think about pain and how different types of questions affect what women say about pain.

9. Risks/Discomforts: There is a risk that some women may be uncomfortable talking about personal information such as a gynecological examination.

10. Right to Refuse: If you volunteer to participate in this study, you can stop at any time for any reason. You do not have to answer a question if you do not want to, and you can quit the study at any time. You will still receive the calendar and the McDonald's coupon as well as the opportunity to talk with me about any concerns you may have.

11. Privacy: Every effort will be made to protect your privacy. I will assign a number to each person's data so that you cannot be readily identified. Your name, address, and telephone number on this form will be kept in a separate place from the other information that I get from you. The results of the study may be published, but no names or identifying information will be included in the publication. Your identity will remain confidential unless disclosure is legally compelled.

12. Financial Information: The study is free. You do not have to pay any money to participate. You will not receive any money if you participate in the study.

17. Withdrawal: If you decide for any reason that you want to quit the study, you must let me know so I can still give you the calendar and McDonald's coupon and so I can answer any questions you may have. You can tell me in person today before you leave or call me at 817-249-0279.

18. Signatures: I have been able to talk to the examiner about the study and all my questions have been answered. If I have specific questions about the study I can call the investigators listed on page 1 of this form. If I have questions about my rights as a volunteer in this study I can call the John Peter Smith Office of Risk Management at 817-927-1404 or Charles E. Graham, Chairman, Institutional Review Board, Louisiana State University, at 225-388-1492. If I have questions about my medical conditions I can call my doctor or nurse at this clinic at 817-338-4925.

I agree to participate in this study and I know that the examiner must give me a signed copy of this form.

_____ _____
Participant Signature Date

The participant has indicated to me that she is not able to read. I certify that I have read this consent form to the participant and explained that by completing the signature line above (on page 2), the participant has agreed to participate.

_____ _____
Signature of Reader Date

Participant's Name (in print):_____

Your telephone interview will be conducted next Wednesday,
_____ at _____ o'clock.

Telephone Number for the interview: _____

What is the mailing address where you would like your McDonald's coupon to be mailed?

_____
Street or PO Box

_____ _____ _____
City State Zip Code

SPANISH TRANSLATION OF APPENDIX U

Forma de Consentimiento

1. Título del Estudio: Los efectos de las preguntas sugeridas sobre el reportaje de dolor de la mujer duspués de "colposcopy."

2. Sitio del Estudio: John Peter Smith Health Center for Women (Suite 205), Fort Worth, Texas.

3. Investigadores: Puede llamar a los siguientes investigadores para hablar sobre las preguntas en este estudio durante los dias de lunes a viernes de 8:00 a.m. - 4:30 p.m.

Jodie Guth	817-249-0279
Professor James Geer	225-388-4095

4. El Propósito del Estudio: El proposito de este estudio es determinar cómo diferente tipos de preguntas pueden afectar lo que la mujer dice sobre sus experiencias durante la "colposcopy" (un examen ginecológica que va tener hoy).

5. Inclusión de Sujeto:

A. Debe tener 18 años o más para participar en el estudio. Si está embarazada, no puede participar.

B. Si su doctor decide que no necisita un examen hoy, entonces no podrá participar ahora.

6. Número de Sujetos: 120.

7. Procedimiento del Estudio: El estudio va a ser conducida en dos partes.

Primera Parte: Para la primera parte de hoy, se va a juntar conmigo, la examinadora, antes de su visita con su doctor por 10 minutos para llenar un cuestionario sobre cómo se siente normalmente. También le preguntaré cómo se siente en este momento y obtendré información básica de usted. Después de su visita con su doctor, le preguntaré cómo se siente sobre su examen. Esto tomará 5 minutos. Más tarde esta semana, localizaré su "chart" médico para ver cuáles procedimiento su doctor le hizo hoy.

Segunda Parte: En la segunda parte yo le llamaré por teléfono el próximo miércoles a una hora que le sea conviniente. Otra ves, le preguntaré cómo se siente. Yo le explicaré el estudio en mas detalle con esta llamada. La llamada tomará 10 minutos.

8. Beneficios: Hoy, usted va a recibir un calendario que se puede usar como un diario para que se recuerde de las citas con su médico. Después que usted termine la segunda parte el proximo martes, yo le envieré por correo un cupón para algo gratis en el restaurante McDonald's localizado dentro de John Peter Smith Hospital.

Forma de consentimiento, pagina 2.

Usted también tiene el beneficio de hablar conmigo, la examinadora, varias veces y usted puede discutir cualquier asunto que usted tenga de su examen conmigo. Si usted tiene un problema, yo le puedo decir a su doctor o enfermera para que le puedan ayudar si lo necesta. El estudio también es importante porque les ayudará a los científicos entender cómo piensan las mujeres de su dolor y cómo afectan los diferentes tipos de preguntas lo que las mujeres dicen sobre el dolor.

9. Riesgos/Incomodidades: Es posible que algunos mujeres puedan sentirse incómodas al hablar de información personal cómo un examen ginecológico.

10. Derecho de Negarse: Si usted participa voluntariamente en el estudio, puede parar en cualquier momento y por cualquier razón. Usted no tiene que contestar la pregunta si no quiere, y puede terminar el estudio en cualquier momento. Usted todavia recibirá un calendario y el cupón de McDonald's y también la oportunidad de hablar conmigo sobre qualquier precupación que tenga.

11. Privacidad: Todo esfuerzo se hará para protejer sus documentos privados. Yo le asignaré un número a la información de cada persona para que usted no pueda ser identifacada. Su nombre, dirección y teléfono en esta forma estará en un lugar separado de la otra información suya. Los resultados de este estudio puede ser publicados, pero los nombres o otra información que la identifique no aparecera en la publicación. Su identidad quedará confidencial a menos que una revelación sea legalmente obligada.

12. Información Financiera: El estudio es gratis. Usted no tiene que pagar dinero para participar. No recibirá dinero tampoco para su participación en el estudio.

17. Retirada: Si usted dicide por cualquier razon de retirarse del estudio, tiene que informarme para darle su calendario y el cupón de McDonald's y para contestar alguna pregunta que tenga. Me quede decir en persona hoy antes de irse o llamarme al número 817-249-0279.

18. Firmas: He podido hablar con el examinador sobre el estudio y todas mi preguntas han sido contestadas. Si tengo albuna pregunta específica sobre el estudio, le puedo llamar a los investigadores señalados en la primera página de esta forma. Si tengo preguntas sobre mis derechos como voluntaria en este estudio, puedo llamar John Peter Smith Hospital Office of Risk Magagement al 817-927-1404 o Charles E. Graham, Chairman, Institional Review Board, Louisiana State University, al 225-388-1492. Si tengo preguntas sobre mi condición medica, puedo llamar a mi doctor o enfermera en esta clínica al 817-338-4925.

Forma de Consentimiento, pagina 3

Yo estoy en acuerdo para participar en este estudion y sé que el examinador debe darme una copia firmada de este formulario.

_____ _____
Firma de Sujeto Fecha

El sujeto me a indicado que no puede leer. Yo certifico que le leí esta forma de consentimiento al sujeto y le expliqué que al firmar la línea de arriba (pagina 2), el sujeto ha consentido a participar.

_____ _____
Firma de Lector Fecha

Nombre de Sujeto (letra imprenta):
_____

Entrevista por teléfono se llevará a cabo el próximo miercoles, _____
a las _____ a.m./p.m.
Número de teléfono para le entrevista: _____

Dirección donde quiere que su cupón de McDonald's le llegue:

_____
Dirección o P.O. Box

_____ _____ _____
Ciudad Estado Zona Postal

APPENDIX V: PERSONAL INFORMATION FORM USED IN FULL STUDY

Participant # _____

Your Age: _____

Are you pregnant? yes no

Race (circle one): Black
White
Hispanic
Asian
Other _____

How far did you go in school?

___ No School
___ Elementary School only
___ Some High School
___ Graduated from High School or earned a GED
___ Some college
___ Graduated from college
___ Some post-graduate work
___ Completed a Master's or Doctoral degree

SPANISH TRANSLATION OF APPENDIX V

Su Edad: _____

Está Ud. Embarazada? Sí no

Raza (marque una)
Negro
Blanco
Hispano
Asiático
Otra _____

Más alto nivel escolar:
___ Ningun educación
___ Solamente primaria
___ Un poco de colegio
___ Grado de colegio (Bachillerato) o GED
___ Un poco de Universidad
___ Grado de Universidad
___ Un poco de trabajo de pos-graduado
___Grado de Maestría o Doctorado

APPENDIX W: DATA COLLECTION FORM USED IN FULL STUDY

Folder # _____ Participant #_____

Age = _____ Ed = _____ STAI trait raw = ____ t =_____

English / Spanish PS / PD / NS Delayed Only / Imediate + Delayed

Sensory PPI (at initial) Severity:_____ Site: _____

Sensory PPI (at Delayed) Severity:_____ Site:_____

	Immediate	Delayed
Question order	1 2 3 4 5	1 2 3 4 5
1.Instrument Sensory Rating:	_____	_____
2.Instrument Affective Rating:	_____	_____
3.Touch Sensory Rating:	_____	_____
4.Touch Affective Rating:	_____	_____
5.Pain Frequency est:	_____	_____
6.Pressure Frequency est:	_____	_____
7.Anxiety rating:	_____	_____

At initial: Biopsy? yes no
At delayed: Biopsy? Yes no

Survey: 1____ 2____ 3____ 4____ 5____ 6____ 7____ 8____ 9____ 10____

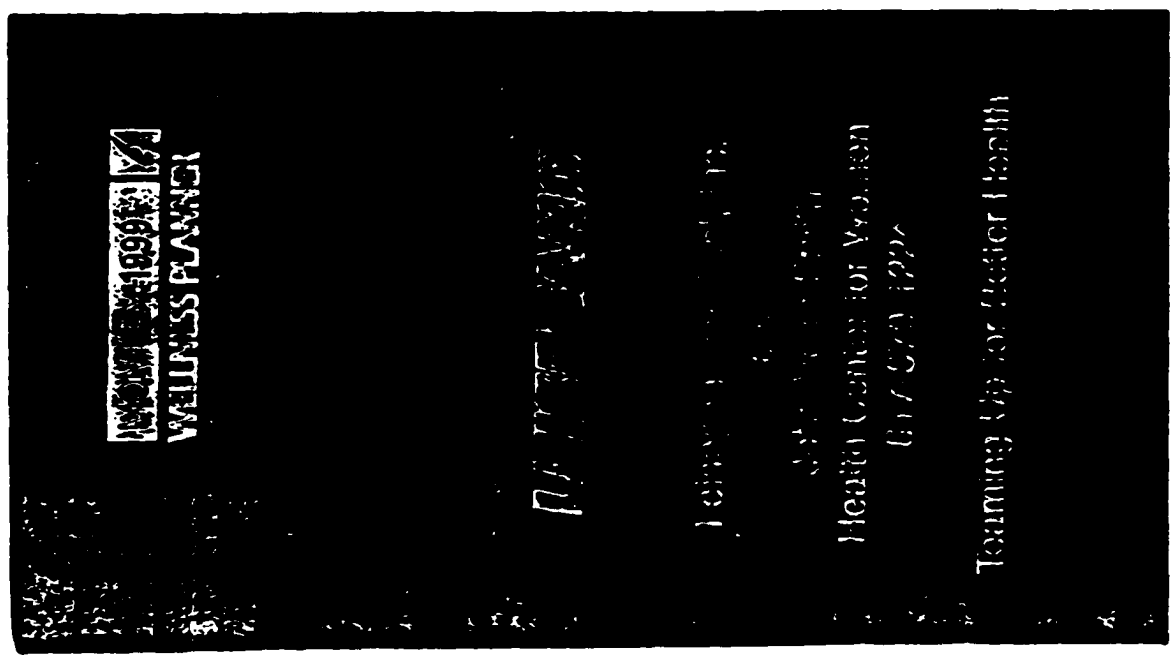
Reasons for nonattendance:
Ways to help:

Notes:

APPENDIX X: GIFTS DONATED FOR PARTICIPANT COMPENSATION

Thank you for participating in the research project at the JPS Health Center for Women. In appreciation, the McDonald's at JPS would like to offer you 1 FREE 21oz. Drink or Large Coffee with the purchase of 1 Super Size Fry.

Present this coupon at the McDonald's restaurant located on the 1st Floor of the main hospital.
Expires 12/31/99



APPENDIX Y: SURVEY TO ASSESS WAYS OF IMPROVING COMPLIANCE WITH FOLLOW-UP

Script: "Now that we have completed the memory part of the study, I would like to ask your opinion about some aspects of the clinic at the JPS Health Center for Women. This information will be put together in a report and given to the doctors, nurses, and staff of the clinic to try to improve your medical care."

How helpful would the following items be in making it easier for you to come to your follow-up appointments at Dysplasia Cinic?

Choose a number from 1 to 5 to indicate your answer.

"1" means "not helpful at all"
"2" means "helpful only a little bit"
"3" means "helpful a medium amount"
"4" means "very helpful"
"5" means "extremely helpful"

___ 1. Getting a letter in the mail to remind you of the appointment
___ 2. Getting a phone call from the clinic to remind you of the appointment
___ 3. Having free transportation to the appointment
___ 4. Getting a free calendar to record all your medical appointments
___ 5. Having a friend or family member come with you for support to your appointment
___ 6. Getting a brochure that explains how to relax before, during, and after your appointment
___ 7. Having a relaxing picture to look at on the ceiling of the examination room during the appointment
___ 8. Having someone from the clinic to call you to see how you are feeling after your appointment
___ 9. Having a phone number to call if you have questions after the appointment
___ 10. Having a brochure that explains what it means to have an abnormal Pap smear nd what to expect during colposcopy

What do you think are some reasons why patients do not attend their follow-up appointments?

What are some other ways that the staff of Dysplasia clinic could help women to keep their follow-up appointments?

SPANISH TRANSLATION OF APPENDIX Y

"Ahora que hemos completado la parte de memoria de este estudio, me gustaría preguntarle su opinion sobre unos aspectos de la clínica en el JPS Health Center for Women. Esta información va a ser incluída en un reportaje y va a ser sometida a los médicos, enfermeras, y demás personal de la clínica para asií de mejorar su atención médica."

¿Qué tanto ayudarán las siguientes maneras en hacer que le sea mas conveniente volver para sus siguientes citas al Dysplasia Clinic?

Escoja un número de 1 a 5 para indicar su respuesta.

"1" indica "no ayuda para nada"
"2" indica "ayuda solamente un poco"
"3" indica "ayuda"
"4" indica "ayuda mucho"
"5" indica "ayuda muchisimo"

1. ___Recibir una carta en el correo para recordarse de su cita.
2. ___Recibir una llamado telefõnica de la clínica para recordarle de su cita.
3. ___Tener transportación gratis a la cita.
4. ___Recibir un calendario gratis para escribir todas las citas.
5. ___Tener a un amigo o a un familiar venir con Ud. para darle apoyo.
6. ___Recibir un folleto que explica cómo calmarse antes, durante, y despues de la cita.
7. ___Tener un retrato o cuadro placentero para mirar en la pared del cuarto de examen durante la cita.
8. ___Tener a alguien de la clínica llamarme para ver cómo se siento después de la cita.
9. ___Tener un número telefónico para llamar si tiene algunas preguntas después de la cita.
10. ___Tener un folleta que explica lo que significa tener un papaunicolau abnormal y lo que puede esperar durante un "colposcopy."

Según Ud. ¿cuáles son las razones por las que muchas pacientes no asisten a sus siguientes citas?

De parte del personal del Dysplasia Clinic, ¿cuáles otras maneras hay que pueden ayudar a las mujeres acordarse de sus siguientes citas?

APPENDIX Z: DEBRIEFING LETTER

Dear Ms. _____:

Let me take this opportunity to thank you for helping with this research project. As a volunteer you have allowed me to collect information about the effects of suggestive information on people's memories. The purpose of the study was to examine how different types of suggestive information would affect your answers to questions about any pain you may have experienced during your colposcopy examination.

In the study there were three groups: the Pain Suggesting Group, the Pain Denying Group, and the No Suggestion group. You were not told ahead of time which group you would be in. For example, if you were in the "Pain Suggesting" condition, I told you that most of the women I talked with said that colposcopy is very painful, and I used words such as "jabbed" and "shoved" when I asked you about the medical examination. If you were in the "Pain Denying" condition, I told you that all of the women I talked with said that colposcopy is not painful, and I used words that were meant to sound less indicative of pain. If you were in the "No Suggestion" condition I did not try to influence your answers in any way. My hypothesis is that people can be influenced to respond in different ways based on the information that is presented to them at the time of questioning. Also, some of you were asked about your examination on one occasion (by telephone) and others of you were asked the same questions on two occasions (in person and by telephone). This was done to see if suggestive information would be more powerful if it is presented on more than one occasion.

You may be aware that scientists are trying to understand how people remember the events in their lives, especially the events that are very emotional. This study is important because it can help to develop ways of reducing the influence of suggestive information such as in a courtroom setting. The information you provided will also be used to educate your doctors about how you feel about colposcopy and how you think it would be easier for women to participate in their follow-up care. All of the information you gave to me is private, and your name will not be revealed. However, I will compile statistics for the entire group of women and write a paper to be submitted for publication explaining the results of the study. If you would like a copy of the results, please feel free to contact me, and I will make that available to you when complete.

Again, thank you for your help. Enclosed is a coupon that you can use at the McDonald's restaurant located inside John Peter Smith hospital. You have completed the study, and I will not contact you again. However, if you have further questions about the study you may contact me at 817-249-0279 Monday through Friday 8:00 a.m. - 4:30 p.m.

Sincerely,

_____

Jodie Guth, M.A.
Doctoral Candidate in Clinical Psychology

SPANISH TRANSLATION OF APPENDIX Z

Estimada Señora _____:

Quiero tomar esta oportunidad para darle gracias por ayudarme con este proyecto de investigación. Como voluntario, Ud. me ha permitido reunir información sobre los efectos de información sugerida de la memoria de personas. El propósito del estudio era examinar cómo los diferentes tipos de información sugerida afecta sus respuestas a las preguntas sobre algún dolor que Ud. ha sentido durante su examen de "colposcopy".

En el estudio, había tres grupos. El grupo de dolor sugerida, el grupo de dolor negada, y el grupo de ninguna sugeriencia. Ud. no estaba avisada en cuál grupo había de estar. Por ejemplo, si estaba en la condicion de dolor sugerida, yo le dije que la mayoria de las mujeres con que hablé dijeron que el colposcopy era muy doloroso y usé palabras como "pinchazo" y "empujón" cuando les prequnté sobre el examen médico. Si estaba en la condición de dolor negada yo le dije que todas las mujeres con que hablé dijeron que el colposcopy no era doloroso y usé palabras que no indicaban dolor. Si estaba en la condición de ninguna sugerencia, traté de no ejercer influencia sobre sus preguntas de ninguna manera. Mi hipótesis es que personas pueden ser influenciadas en responder en diferentes maneras según la información presentada en el momento de la innterrogación. También a algunos de Uds. les preguntaron sobre su examen en una occasión (por telefono) y a otros les preguntaron las mismas preguntas en dos ocasionnes (en persona y por teléfono). Esto se hizo para ver si la información sugerida era más potente si era presentada en más de una occasión.

Ud. tal vez está enterada que los científicos están tratando de entender cómo recuerdan las personas los acontecimientos que son muy emocionales. El estudio es importante porque puede ayudar a desarrollar maneras de reducir la influencia de información sugerida como en la sala de justicia. La información que Ud. dió tambien va a ser usada para educar a los médicos sobre cómo se siente sobre el "colposcopy" y cómo piensa Ud. que sería mas fácil para las mujeres participar con su futura atención. Toda la información que usted me dió es privada, y su nombre no se deja saber. Sin embargo, prepararé las estadísticas para todo el grupo de mujeres y escribiré un trabajo que va a ser sometido para una publicación explicando los resultados del estudio. Si desea una copia de los resultados, por favor pógase en contacto conmigo y se los haré disponible cuando estén completos.

Muchas gracias por su ayuda. Incluido, está un cupón que Ud. puede usar en el restaurante de McDonald's localizado adentro de JPS. Ud. ha completado el estudio y ya no me pongo en contacto con Ud. Sin embargo, si tiene mas preguntas sobre el estudio se puede poner en contacto conmigo al número 817-249-0279 de lunes a viernes de 8:00 am a 4:30 pm.

Le saluda cordialmente,

_____

Jodie Guth,
Candidato Doctoral de Psicologia Clínica

VITA

Jodie Rabalais Guth is a doctoral candidate in the clinical psychology program at Louisiana State University. She was born and raised in Lafayette, Louisiana, and graduated from Acadiana High School in 1989. She earned a bachelor of science degree in psychology from Louisiana State University in 1993. Her undergraduate honors thesis concerned gender differences in the cognitive organization of sexual information. In her master's work she examined the effects of suggestive instructions on recall of an ambiguous story. She completed a predoctoral clinical internship in 1998 at the University of North Texas Health Science Center in Fort Worth, Texas. She currently resides in Fort Worth with her husband, Walt, and daughters, Hannah and Hailey.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Jodie Rabalais Guth

Major Field: Psychology

Title of Dissertation: Effects of Suggestive Questioning on Women's Self-Report of Pain Information Following Colposcopy

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

9/27/99