

DOES NODDING CAUSE CONTAGIOUS AGREEMENT?
THE INFLUENCE OF JUROR NODDING ON PERCEPTIONS
OF EXPERT WITNESS TESTIMONY

by

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ABSTRACT

The act of head nodding is thought to convey a signal of agreement and approval of a message (Helweg-Larson, Cunningham, Carrico, & Pergram, 2004; Stivers, 2008). Head nodding has also been shown to affect attitude change within an individual when the nodding was continuous at the rate of one nod per second (Wells & Petty, 1980; Brinol & Petty, 2003). Nodding may be particularly important in the courtroom environment where jury members can only communicate nonverbally. There are a number of anecdotal accounts of attorneys (Aron, Fast, & Klein, 1996) and expert witnesses looking to the head nodding of jurors as a signal of agreement with their position in a case; and it is often perceived as being an indicator that the juror who nodded will vote in a manner consistent with this position. Although the importance of nodding and the influence that nodding can have on attitude change has been established in the literature, what had not been investigated was the influence of juror nodding on the jurors around them.

The present study examined the influence of varied amounts of head nodding by mock jurors on agreement with expert witness testimony and perceptions of expert credibility. The number of individuals instructed to nod was varied (i.e. 15 or 50 percent of individuals), and the jurors were instructed to only nod while the expert was speaking ($N = 303$). Results showed there were significant effects of nodding on ratings of expert credibility, and marked effects on ratings of agreement with the testimony of the expert, when the nodding was consistently performed. There was no effect of the number of individuals instructed to nod within a condition on the non-nodding participants, but there was an effect on those who had been instructed to nod

that was consistent with correcting for perceived bias (Petty & Wegner, 1993). Need for cognition and locus of control variables were also measured. Implications of the study, including a discussion of the effect of changes to previous nodding paradigms, are included.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Cronbach's alpha is a statistical measure of internal consistency
F	Fisher's F ratio is a measure of the difference between two or more groups
M	Mean
n	Number of participants in a subset of the sample
N	The total number of participants in the sample
η_p^2	Partial eta-squared is a statistical measure of the proportion of variance explained
p	Value representing the probability of incorrectly rejecting the null hypothesis
r	Pearson product-moment correlation
SD	Standard deviation
t	The value of a t -test statistic
=	Equal to
>	Greater than
<	Less than

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INTRODUCTION

Whether it is having eye contact with a person to whom you are speaking, gesturing with your hands to emphasize a point you are making, or nodding your head in approval of what someone is saying, nonverbal behaviors are an important source of communication with others. Nonverbal communication is thought to not only be spontaneous expressions of our internal states, but also an important aspect of our self-presentation to the world around us (Starr & McCormick, 2001). DePaulo (1992) noted that it is rare that nonverbal displays are completely unregulated by the individual, rather, people more often have some control over their nonverbal behaviors and communications and use these actions to send messages to those around them. Our nonverbal behaviors can, therefore, help us to craft and manage the impressions others have of us and our identities in general (Burgoon, Buller, & Woodall, 1996), and can communicate our intentions and feelings to others.

In discussing the importance of nonverbal behaviors to our self-presentations, Starr and McCormick (2001) stated that there are six particular reasons to focus on understanding and interpreting nonverbal communications. First, they asserted that nonverbal behaviors are “irrepressible” (p. 394). Even if someone attempts to avoid or suppress his or her nonverbal communications, this repression itself communicates to the observer. Starr and McCormick (2001) indicated that others may perceive the person as “withdrawn and uptight” (p. 395) if they attempt to suppress nonverbal behaviors.

Secondly, they acknowledged that nonverbal behaviors and emotion are linked in such a way that many experiences of these basic emotions trigger specific facial movements. Due to this “hard-wiring” effect, many times nonverbal communications are considered a stronger and more valid expression of information than what is articulated verbally (Starr & McCormick, 2001). The third reason is that nonverbal behaviors are more accessible to the observer than to the enactor of the communication. We are not able to see ourselves the way that others can, and, therefore, may unintentionally communicate information through our nonverbal actions (Starr & McCormick, 2001). Fourth, nonverbal communications are “off-the-record” (Starr & McCormick, 2001, p. 397). This suggests that the nonverbal behavior is difficult to describe or to convey to someone else; it is considered socially inappropriate to ask someone (with whom you are not intimately acquainted) to explain what his or her nonverbal behavior meant (Starr & McCormick, 2001). Fifth, nonverbal behaviors in self-presentations have unique meanings that are particularly relevant to the impressions others form about our identities based on the context in which our nonverbal behaviors occur. Lastly, nonverbal behaviors occur quickly and often our reactions to the nonverbal behaviors of others occur spontaneously. These quick reactions lead us to be committed to our first impressions of people and to consider them an accurate basis on which to evaluate the individual (Starr & McCormick, 2001).

With the importance of studying and understanding nonverbal behaviors in mind, the present study sought to understand the role that nonverbal communication plays in the courtroom environment. In particular, this study focused on exploring the role of head nodding by jurors while watching the testimony of expert witnesses. Of interest in this study was the way in which head nodding by jurors influenced an individual’s perceptions of testimony by an expert witness

in terms of agreement with testimony and expert credibility, and whether or not the head nodding of jurors influenced the perceptions of those around them as well.

Nonverbal Communication Through Head Nodding

The nodding of one's head is a particularly effective form of nonverbal communication. The gesture of head nodding in a vertical, up-and-down, motion is thought to be an almost universal sign of acceptance, approval, and agreement (Helweg-Larsen, Cunningham, Carrico, & Pergram, 2004). Head nodding is considered a "back-channel" response that is made during interactions with others. Helweg-Larsen et al. (2004) described a "back-channel" response as being a short vocal response that conveys the attentiveness of a listener without interrupting the speaker, such as a short "uh-huh" or "yeah." They asserted that head nodding is also a "back-channel" response, but is of a nonverbal, gesture type that conveys the same attentiveness as the verbal "back-channel" communications.

In contrast to Helweg-Larsen et al. (2004), Stivers (2008) differentiated verbal and non-verbal "back channel" communications. In her examination of forty story-telling sessions, Stivers (2008) determined that the nonverbal response of nodding during the telling of a story ". . . claims access to the events reported in the telling and/or to the teller's stance towards these events . . ." (p. 52) and anticipation of a likely connection with the position of the speaker. The verbal "back channel" responses do not claim the same type of access, but serve as "continuers" of that individual's turn in the conversation (Schegloff, 1982). Stivers (2008) further argued that it is necessary for the listener to access the story in order for them to fully connect with the position of the teller, which is why nodding is deemed such an important nonverbal communication by a listener.

Head nodding also conveys such a strong message of attentiveness and approval that nascent therapists are taught to nod towards their clients as a sign of affirmation and understanding (O'Brien & Holborn, 1979). Some authors have even hypothesized that head nods are actually a "miniature bow" that shows submission and affirmation to the speaker (Helweg-Larsen et al., 2004, p. 358). However, Helweg-Larsen et al. (2004) also maintained that head nodding serves the function of indicating agreement with and understanding of the speaker, and an invitation for the speaker to continue talking. Hall (2006) asserted that bowing indicates none of these later functions, and she does not agree with the position that nodding is a "miniature bow."

Racial Differences in Head Nodding.

Although head nodding is considered an almost universal cue of agreement and affirmation, there are racial differences in how head nodding is expressed. Feldman (1985) described differences between how white and black individuals in North America nod while listening to others. White individuals demonstrate a pattern of head nodding while also giving verbal responses of "um-hum" to show they are attending to the speech of others. Black individuals, on the other hand, tend to use either the head nodding or the verbal reassurances, but seldom do so simultaneously as the white individuals do.

The nature of the head nodding by white and black individuals also differs. According to Erickson (1979), white individuals tend to use "accented" nods, which are pronounced movements of the head. This movement is opposed to black individuals who tend to exhibit "unaccented" nods where the head movement is slight; black individuals are more likely to show the continuous "unaccented" nods throughout a conversation, which is not seen in white individuals. Feldman (1985) asserted that these differences in nonverbal behavior styles can lead

to misunderstandings and difficulties communicating effectively. Given the importance of head nodding to the current study, it is essential to acknowledge the differences in expression of nodding based on race.

Head Nodding and Gender.

According to a review by Deaux (1985), researchers have found significant differences in nonverbal communication skills in women versus men. Deaux (1985) noted that women are consistently superior in both encoding and decoding nonverbal communications by others. Helweg-Larsen et al. (2004) described gender differences in communication as being, at least in part, due to the dominant versus subordinate positions of the genders in society. DePaulo (1992) agreed with this position, but also hypothesized that women are more socialized to pay attention to the feelings and needs of others, which coincides with the nurturing aspect of women.

In order to study the differences between genders in the nonverbal behavior of head nodding, Helweg-Larsen et al. (2004) observed male and female college students in the classroom environment. The study observed interactions between male and female peers, as well as interactions between the students and the professors. The women nodded their head significantly more often than men when they were speaking with peers, but both genders nodded equally frequent to the professor regardless of the gender of the student or the professor. According to Helweg-Larsen et al. (2004), the females nodded more often to “grease the wheels” of the communication with their peers; but the males did not nod as often as a sign of asserting their dominance in the situation (“i.e. I don’t need to nod when you speak.” p. 360). The authors also hypothesized that the status of the professor may have made the students, regardless of gender, feel that they had to nod their head; however, the students felt they had a choice to nod or not when speaking with their peers, which allowed gender differences in nodding to be

observed. The increased sensitivity of females to nonverbal behaviors combined with the findings that females tended to nod more frequently than males, may have important implications for the present research and for the courtroom environment in general. Starr and McCormick (2001) hypothesized that the greater the number of women in the jury panel, the more importance nonverbal communication would play in the courtroom as compared to verbal communications.

Nodding in the Courtroom

Observation of nonverbal behaviors in the courtroom is considered an essential part of jury selection and determining if a juror is being persuaded by an argument (Lieberman & Sales, 2007). According to Lieberman and Sales (2007), nonverbal behaviors by jurors are used by attorneys and jury consultants to ascertain information about the juror's emotions and attitudes. Observers look to both the paralinguistic cues given by members of a jury during voir dire, and the kinesthetic cues given throughout a trial to identify any deceptive responses, judge which side the juror may lean towards, and determine how persuasive the juror finds a particular argument (Lieberman & Sales, 2007; Starr & McCormick, 2001). For kinesthetic cues they look to body positioning of the individual (i.e. slouching, leaning, where the individual's knees are positioned, etc.), any facial expression (squinting, frowning, smiling), any gestures (shrugs, steepling of hands), and the type of clothing and accessories the individual is wearing (Lieberman & Sales, 2007; Starr & McCormick, 2001; Aron, Fast, & Klein, 1996). It is believed that the nonverbal behaviors of jurors may be a more accurate representation of their true feelings and attitudes than verbal responses elicited (Lieberman & Sales, 2007). One particularly important kinesthetic cue given by jurors is the nodding of his or her head (Aron et al., 1996).

While there are no empirical studies of attorneys' interpretation of head nodding by members of a jury, there are anecdotal accounts of how this gesture is viewed by attorneys and how this in turn influences his or her case presentation. Aron, Fast, and Klein (1996) noted that when people are communicating, they display a complex set of cues to one another while giving and receiving messages. Aron et al. (1996) asserted that nonverbal behaviors by jurors, and in particular nodding by jurors, is an important source of communication to the attorney about how he or she is coming across to the members of the jury. If an attorney looks to the jury, and notices no responding (i.e. head nodding), it is interpreted as being a sign that the jury is not convinced by what the attorney is saying, and that the jury is not being swayed to their side (Aron et al., 1996). The absence of a nodding response can lead to uncertainty for the attorney and prompt questions about why the jury is not responding to the information. The refusal to nod by jurors can be interpreted as clearly meaning, "I don't agree," "I don't trust you," or "I think you're wrong" (Aron et al., p. 6-15)¹. One could assume that such feelings of uncertainty and doubt would influence the effectiveness of the attorney in presenting his or her argument since they would be simultaneously trying to deliver a message and figure out how they can get the jury on their side.

According to Aron et al. (1996), the simple gesture of a head nod by a juror conveys, "Yes, I am listening to you," or "I agree with you," thus reassuring the attorney that the juror understands them and is in accord with the message communicated (p. 6-15). Head nodding signals the attorney that they are on the right track for convincing the jury with their argument and that they are getting through to the members of the jury. Aron et al. (1996) quoted an attorney who has dealt with the issue of head nodding as a response from jurors who said:

¹ Pagination in the Aron, Fast, and Klein (1996) book was identified by chapter and page of the chapter. This quote was located in chapter 6, on the 15th page of the chapter.

I watch my jury, and if there is no head nodding, I know I'm on the wrong track. When this happens I switch until I get that little signal of agreement and interest from at least one juror. It's tremendously important to me because it acts as a barometer of my approach. It keeps me alert to any of my own errors. As long as the heads nod, I know I'm doing well (p. 6-15).

It is apparent that attorneys value head nodding by jurors and consider this aspect of nonverbal communication an important indicator of how the jury is responding to his or her presentation of the case.

Brodsky, Griffin, Stevens, and Blackwood (2006, March) agreed there is anecdotal evidence that attorneys look to the nonverbal behaviors of the jury members (i.e. nodding) to assess the agreement and approval of the juror with the message being presented; however, they also included expert witnesses as an interested party in viewing the nonverbal behaviors of jurors as well. The court system utilizes the testimony of expert witnesses to provide information that is outside the scope of common knowledge or eyewitness observation (Melton, Petrila, Poythress, & Slobogin, 1997). The use of expert testimony in trials has increased in the last several decades and become an important part of the court system (Schuller, Terry, & McKimmie, 2001). With this influx of expert testimony, the messages conveyed by the expert should be informative and aid the jury in making their decision in the case; juror head nodding may be an important way of determining if the expert has been effective in presenting information.

In Brodsky et al.'s (2006, March) discussion of anecdotal evidence of the importance of head nodding to attorneys and experts, they take Aron et al.'s (1996) assertion that head nodding indicates agreement and approval a step further. They believed that there may be many different

reasons for a juror to nod his or her head, rather than simply agreeing with the attorney or expert. They proposed that a juror may be nodding as a sign of agreement with the message, as a sign they are attending to the message being conveyed, as a sign they are “cognitively and personally present,” or just out of habit without signaling either agreement or approval. Further research is needed to not only ascertain if the act of a juror nodding his or her head serves to change their attitude about testimony presented, but also to understand if nodding does in fact signal agreement and approval of the message as many attorneys presume; or if the nodding is unrelated to the message being conveyed.

Nodding and Attitude Change: The Self-Validation Hypothesis

Nonverbal behaviors such as nodding one’s head can not only signal agreement or approval, but can also serve as a mechanism for attitude change within an individual (Brinol & Petty, 2003). Wells and Petty (1980) demonstrated in their seminal research on overt head movements that head nodding can affect attitude change. The study involved having individuals supposedly test how headphones would perform during various activities by moving their head in either a vertical manner, a horizontal manner, or with no instructions regarding head movement, while listening to various messages on the headphones. The study found that when participants nodded their head in a vertical direction (up and down), they agreed with the message more than individuals who were instructed to shake their head in a side to side manner (Wells & Petty, 1980). Other researchers have found similar effects in which nodding in response to a neutral object resulted in an increased preference for that object (Tom, Pettersen, Lau, Burton, & Cook, 1991). Wells and Petty (1980) explained the effect of head movement on attitude change by hypothesizing that nodding facilitated positive thoughts about the message

content and inhibited negative thoughts, thereby biasing the participant's thoughts about the message conveyed.

In an attempt to expand upon the findings of Wells and Petty (1980) and similar studies, Brinol and Petty (2003) proposed the self-validation hypothesis as a mechanism of attitude change. Brinol and Petty (2003) took the paradigm used by Wells and Petty (1980) a step further and looked at the effect of message strength and level of elaboration on the message content, in combination with head nodding to affect attitude change. According to Brinol and Petty's (2003) application of the self-validation hypothesis, "when one's attitude-relevant thoughts are perceived as valid, these thoughts should have a strong impact on attitudes, but when one's attitude-relevant thoughts are perceived as invalid, they should not" (p. 1124). They hypothesized that vertical movements of one's head would serve as an internal cue of the validity of one's own thoughts and in turn would increase confidence in those thoughts. They conducted a series of experiments to analyze the self-validation hypothesis in relation to persuasion. In three of these studies they utilized the same procedure as Wells and Petty (1980) with regards to headphone quality during various activities, but they also varied the strength of the message conveyed and the elaboration of the participant on the message. The results of their research supported the self-validation hypothesis and demonstrated that when the message conveyed to the participant was strong, nodding of their head in a vertical direction produced an increase in persuasion towards the message (Brinol & Petty, 2003). This effect was also found to be most pronounced when the elaboration of the participants was high. These results showed that the nodding of one's head can serve as a cue to the validity of one's internal thoughts about a message and can in turn increase the persuasiveness of that message.

The Influence of Nodding on Juror Perceptions

Brodsky et al. (2006, March) used the self-validation hypothesis as a conceptual background to explore the effect of nodding and non-nodding experts and participants on ratings of agreement with the expert's testimony and expert credibility (2 X 2 factorial design). In this study, during the nodding conditions, both the expert and the participants were instructed to nod at a rate of approximately one nod per second. These instructions were consistent with previous research on the influence of nodding on attitude change (Wells & Petty, 1980; Brinol & Petty, 2003). Results of the study showed an overall effect of head nodding on ratings of credibility and agreement with the testimony of the expert witness when these two dependent variables were analyzed together. In particular, when the participants were instructed to nod and the expert testimony did not display nodding, the ratings of credibility and agreement were highest. However, when the dependent variables were analyzed separately, only the ratings of credibility were significantly related to the participant nodding their head and not the ratings of agreement with the testimony.

The study also found that when the expert nodded his head, he was found to be less credible than when he did not nod his head, and there was less agreement with the testimony in the nodding expert condition. The authors hypothesized that this effect may have been at least in part due to the incongruity between some of the content of the statements made by the expert and the act of nodding in an affirmative manner during the testimony. At times during the testimony the nodding by the expert was congruent with the statements made and served to emphasize a point, and at other times the nodding seemed peculiar and contradictory to the statements made by the expert (i.e. saying "no" while nodding "yes").

The Influence of Peripheral Cues in the Courtroom

The nodding of one's head at a rate of one nod per second to affect attitude change has been affirmed in the literature (Wells & Petty, 1980; Brinol & Petty, 2003; Brodsky et al., 2006, March). The method used in all of these studies of having the participant nod his or her head while a message is being presented would be considered a peripheral kinesthetic cue that is influencing persuasion and attitude change. The Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1981; Petty & Cacioppo, 1986), is based on the assertion that people want to be correct in the attitudes and opinions they hold, but that they do not have the resources or motivation needed to process all of the information with due vigilance; therefore there are two different routes of information processing, one effortful and one less effortful (Cacioppo, Petty, Kao, & Rodriguez, 1986).

The less effortful processing path is termed the peripheral route to attitude change. Peripheral processing involves the influence of "simple associations and cues" as a mechanism to achieve attitude change (Rucker & Petty, 2006, p. 40). Peripheral cues can be the attractiveness of the source of information, the credentials of the source, or how many arguments are presented; these factors influence opinions and attitudes formed without regard to the quality of the messages or arguments (Cacioppo, Petty, Feinstein, & Jarvis, 1996). In contrast to the "peripheral route," the "central route" of persuasion involves careful thought and consideration of the message presented (Rucker & Petty, 2006). In the central route, the quality of the message arguments is the most important factor in opinion and attitude formation, rather than the peripheral characteristics of the source of the information (Cacioppo et al., 1996).

A concept closely related to the central and peripheral routes of communication is need for cognition. Need for cognition refers to an individual's tendency to enjoy engaging in

effortful thinking and processing of information (Cacioppo et al., 1996). Describing a person's need for cognition does not refer to ability to think or level of intelligence, but rather a fairly stable characteristic of their motivation to engage in thinking (Cacioppo et al., 1996).

Individuals high in need for cognition naturally seek out and carefully ponder information about their world, and tend to elaborate more upon relevant information in forming their attitudes and opinions (Cacioppo et al., 1996). Those high in need for cognition expend more energy and resources gathering and analyzing information, problem solving, and reasoning through information, than those with a low need for cognition (Cacioppo et al., 1996). Therefore, individuals high in need for cognition tend to process information in a more central route (Cacioppo et al., 1996). Individuals low in need for cognition have a propensity to rely on the opinions of others or cognitive short-cuts (heuristics) to understand their world, they tend to be "cognitive misers" and do not expend the same amount of energy in effortful processing of information. Therefore, they tend to be more influenced by the peripheral route of communication where the characteristics of who is giving the message are more important than the content of the message itself (Cacioppo et al., 1996).

Research in the area of need for cognition and attitude change has consistently shown that there are differences in the way individuals high and low in need for cognition process information. Cacioppo, Petty, Kao, and Rodriguez (1986) investigated whether individuals high in need for cognition elaborated more upon messages that were directly relevant to the issue when forming opinions. The authors looked at the more central route of persuasion by exposing participants to either eight strong or weak arguments for raising tuition at the university they attended. The results demonstrated that individuals high in need for cognition were more likely to elaborate upon the messages presented and considered the issue-relevant material more than

those individuals with a low need for cognition (Cacioppo et al., 1986). A second study by the same authors, which looked at political attitudes prior to the 1984 presidential election, also demonstrated that those high in need for cognition, who considered the issue-relevant arguments, were more likely to vote in a manner that was consistent with their attitude than individuals who were low in need for cognition. The results of these studies demonstrated that individuals high in need for cognition are influenced by argument quality (i.e. the central route) and are more likely to behave in a manner consistent with their attitudes (Cacioppo et al., 1986).

The study by Chaiken (1980) showed that individuals high in need for cognition considered argument quality in forming their opinions, but those low in need for cognition did not. Participants in the study read arguments from either an unlikable or likable source, and the number of arguments presented was varied between six and two. Results demonstrated that individuals high in involvement attended to the arguments and were not persuaded by the likeability of the communicator. In contrast, individuals with low involvement were more influenced by the peripheral cue of how likable the communicator was than they were by the arguments themselves (Chaiken, 1980). A study by Tormala and Clarkson (2008) similarly showed that individuals high in need for cognition engaged in a high level of processing of messages and considered argument quality when forming attitudes regarding proposed comprehensive exams. The peripheral cue of the trustworthiness of the message source in the study did not influence those high in need for cognition, but did affect those low in need for cognition. Axsom, Yates, and Chaiken (1987) also investigated the influence of need for cognition on opinion and attitude formation. However, rather than investigating argument quality, they looked at the peripheral cue of audience response (i.e. clapping) on post-message opinions. The authors found that when individuals had low motivation and low need for

cognition, they were more influenced by the audience response than those who had high motivation and either high or low need for cognition. These results indicated that nonverbal peripheral cues can have significant influences on participant ratings of a message, particularly when the individual is low in need for cognition.

The body of research reviewed by Cacioppo et al. (1996) showed the same trends as the studies described above. Namely, individuals high in need for cognition tended to process information centrally and consider argument quality, and individuals with low need for cognition tended to rely on more peripheral cues such as number of arguments, who is presenting the argument, or the responses of others around them when forming attitudes and opinions. In the present study, the peripheral cue of head nodding was manipulated, but argument quality through the testimony of the expert witness remained constant. Given that individuals low in need for cognition tend to use more peripheral routes of processing to form opinions than those high in need for cognition, it was expected that individuals low in need for cognition would be more persuaded by the peripheral cue of head nodding than would those who have a high need for cognition.

Social Influence in the Courtroom: Conformity

The overt head movement studies previously described demonstrated that nonverbal peripheral cues, and in particular the cue of nodding one's head, served to increase agreement with the message presented. However, what has not been investigated in the literature is the influence of head nodding on others' perceptions of the message presented, and most relevant to the current study, the influence of head nodding of jurors on their fellow juror's perceptions. Conforming one's own behavior to be consistent to those around them was of particular interest in the present study. In seminal research on social conformity, Asch (1956) found that an

individual's judgment can be influenced by being exposed to the judgments of others. Asch (1956) established that the greater the number of people who behave in a similar manner, the more likely others are to conform to that same behavior. Conformity, however, is not a unitary process, but can be viewed as being two separate processes, either normative or informational (Spector, 1983).

Normative conformity refers to a desire to be like other people and a preference to refrain from opposing others (Campbell & Fahey, 1989). Normative conformity is based on the concept of maximizing social rewards or avoiding punishment from disagreeing with others (Campbell & Fahey, 1989). Informational conformity refers to looking to others for "information or advice" (Spector, 1983, p.199), and is based on a desire to be accurate and gain evidence about the reality of the situation (Campbell & Fahey, 1989). Whether the influence exerted is of a normative or informational nature is determined by factors such as the type of task, the amount of social pressure, and attention to the stimulus. Kaplan and Miller (1987) showed that when individuals were faced with an intellectual task that had a correct solution (i.e. math question), they tended to use more informational arguments than when they were asked to perform a judgmental task, which did not have a specific correct answer. There is also greater informational influence when the goal is task specific (i.e. come to the correct decision), versus when the goal is group cohesion and harmony (Rugs & Kaplan, 1993). In the present study where the goal was to make the most correct and informed decision as a member of a jury, it was expected that informational social conformity pressure would be present through seeing other jury members nod their head while listening to the testimony of the expert witness.

The amount of social pressure, or faction size (number of people giving a judgment, such as the confederates in the Asch study), also determines whether normative or informational

social influences will be in effect. In Asch's (1956) research, he found that there was little social conformity when there was one source of information judging the length of a line in comparison to a reference line, but there was a significant increase in conformity when there were three sources of information. This exponential increase in conformity with one source versus three sources is consistent with the Social Influence Model (SIM) proposed by Tanford and Penrod (1984). SIM predicts that the second, third, and so on, source of information will have more impact on conformity than the first source (Campbell & Faurey, 1989). Social Impact Theory (SIT; Latane, 1981) is another model of social conformity. In contrast to the SIM model, the SIT model predicts that each additional source of information will have less of an impact than the first source of information; but each additional source serves to increase conformity (Campbell & Faurey, 1989). While both models predict that an increase in sources of information will increase conformity, the increase in sources will differentially affect normative and informational influence processes (Campbell & Faurey, 1989).

Campbell and Faurey (1989) hypothesized that when informational influence processes are in effect, the faction size should be small and the conformity curve should be consistent with the SIT model. They also hypothesized that when normative influence is operating, that faction size should be larger and the conformity curve should resemble the SIM prediction. According to Campbell and Faurey (1989), having a larger faction increases the normative pressure, or the pressure to be like the other members of the group, but does not provide any more informational advantage than having one source of information. To test their hypotheses, the authors conducted an experiment where participants were to judge the number of dots on a computer screen as being similar or dissimilar to a target stimulus. Participants were exposed to the supposed responses of three other group member's judgment of the number of dots on the screen.

Consistent with their predictions, Campbell and Fairey (1989) found that the effect of faction size was smaller in the informational influence condition than in the normative condition, and was consistent with the SIT growth curve. In relation to the current study, the results of Campbell and Fairey (1989) suggested that even when only a few individuals nodded his or her head, there would still be conformity pressures exerted, and in particular informational conformity pressures.

Moscovici (1980) asserted that attention to the stimulus also plays a role in conformity with majority (normative) and minority (informational) influences. He stated that when confronted with a majority opinion, the individual would pay more attention to the majority consensus than to the stimulus itself, and in the minority condition they would attend more to the stimuli for making judgments. Campbell and Fairey (1989) found partial support for the role of attention in conformity. In the small faction condition, subjects attended more to the stimuli and there was decreased conformity when the answers given by others were clearly wrong. In their study on the role of attention to stimuli in conformity, Tesser, Campbell, and Mickler (1983) found that the more attention the individual paid to the stimuli, the less they conformed. The authors explained that this finding may have been due to the measure of attention used (a correlation between the participant rating of the stimulus and the stimulus itself, rather than a separate attention measure) which caused difficulty in interpreting the results. The authors continued to assert that attention to the stimulus influences conformity in judgment of the stimulus.

Based on the above discussion of informational and normative conformity, it was possible that both processes would influence conformity in the current study. It was believed that when there were only a few jurors who were nodding, that informational influences would

be governing conformity, and when there were a higher number of jurors nodding, normative influences may be in effect. Both processes have been found to increase conformity; therefore, it was expected that whether informational or normative influence were in effect, having other jurors nod while the expert witness was testifying would increase agreement with the testimony provided by the expert.

Social Influence in the Courtroom: Social Facilitation

Social facilitation is a concept related to social conformity that may also have exerted influence in the current study. Social facilitation is a term that was devised by Allport (1924) as a way to describe the increase seen in a response when one hears or sees others making the same type of response (Uziel, 2007). Research has shown that the simple presence of others can influence how we behave. Zajonc (1965) noted that social facilitation is moderated by the complexity of the task that an individual has to perform. If a task is simple, the presence of others facilitates performance on the task, but if it is a complex task, the presence of others hinders performance. Social facilitation effects have been found in a number of situations and various task types. Triplett (1898) found that participants performed faster when they were racing with others against the clock, versus racing alone. Djikic, Chan, and Peterson (2007) found that when participants high in egotism believed they were being monitored by others through a video-camera aimed in their direction, they experienced difficulty processing information. Hetherington, Anderson, and Norton (2006) demonstrated that when participants ate in the presence of others who were also eating, the participants ate 18 percent more than if they were eating alone. According to Zajonc (1965), the presence of others causes arousal and increases our drive to perform an action. These studies showed that how we react to a given situation or task can be influenced by having others watch us, or perform some action around us.

Similar social facilitation effects have also been found in emotional expression displays. Buck, Losow, Murphy, and Costanzo (1992), noted that expressive displays served as social facilitators of communication and were prone to social influences. Even as infants, the amount of smiling we do is directly related to having our mother's visual attention (Jones & Raag, 1989). When in the presence of other people, our expressions are governed by the situation and the display rules of our culture, and are therefore different than what would be displayed if we were not in the presence of others (Buck et al., 1992). Brightman, Segal, Werther, and Steiner (1977) demonstrated that when others were present, facial displays of reaction to salty versus sweet foods differed, but when the participant was alone, the facial expression did not differ. Buck et al. (1992) similarly showed that when participants viewed emotional slides with others who were similar to themselves, there were some benefits in communication accuracy when describing the emotional experience provoked by the slides. In the present study, the presence of others nodding was predicted to serve as a socially facilitative communication, especially since head nodding is a relatively simple task. As previously described, nodding of one's head is a sign of agreement and approval with a message conveyed, and in this case, seeing people nod their head may prompt others to behave in a similar manner.

Social Influence in the Courtroom: Social Proof

The nodding of other jurors while an expert is testifying may serve as a conformity pressure and social facilitation influence. Nodding may also serve as a particularly effective peripheral kinesthetic cue given that "people frequently use the beliefs, attitudes, and actions of others, particularly similar others, as a standard of comparison against which to evaluate the correctness of their own beliefs, attitudes and actions" (Cialdini, 1995, p. 263). Especially in unfamiliar situations, individuals decide what behavior is appropriate for themselves by

searching for how similar others are behaving in the same context (Cialdini, 1995). This principle of deciding what is correct based on the actions or thoughts of others is termed social proof (Cialdini, 2001).

Social proof is a concept in social psychology that helps to explain why we are so influenced by the actions of others, and can provide a context for how social conformity and social facilitation would influence behavior in the courtroom environment. Cialdini (2001) uses the example of canned laughter on television shows to demonstrate the principle of social proof. He stated that when a number of other people are doing something, we view it as being the right or correct way to act. In the case of canned laughter, if a number of other people are laughing at a joke or scene in a show, it is our natural tendency to assume that their assessment of the joke is correct and that laughter and a humorous response is the right way to act. This assumption acts as a shortcut for determining how we are to act in a situation. The social proof effect is so strong, that even though we consciously know that the laughter is fake, we still react with more humor than if there were no laugh track (Cialdini, 2001).

The influence of social proof is especially effective under conditions of uncertainty (where we are unsure of ourselves or the situation is ambiguous), and when those who are doing the action are similar to our self (Cialdini, 2001). Tesser et al. (1983) studied the relation between self-doubt, social pressure, attention to stimuli, and conformity in an experiment using sound discrimination. In this study, self-doubt was created by confronting the participant with high social pressure from a unanimous majority of a differing opinion on whether the sound was similar or different from the original. The result most relevant to the current study and the principle of social proof was the finding that the more self-doubt people have, the less they will

attend to a particular stimuli, and the more they will focus on others reactions and conform their reactions to the majority opinion (Tesser, Campbell, & Mickler, 1983).

Similarly, Wooten and Reed (1998) studied how the opinions of others would influence the evaluation of the quality of a product. Participants were exposed to a histogram of ratings of other individual's perceptions of the quality of a paper towel product, and then were exposed to either an ambiguous experience with the paper towel (i.e. rubbing, wadding, or ripping the towel) or an unambiguous experience where they used the towel to wipe up a spill. The results of this study showed that when the experience with a product was ambiguous, participants were more susceptible to the influence of others in their evaluations and decisions about the product (Wooten & Reed, 1998). The ratings of participants who had an ambiguous experience with the paper towel were more consistent with the histogram of ratings by others than were the participants who had an unambiguous experience with the towel. These studies demonstrated that when we are confronted with self-doubt or an ambiguous situation, we look to others for how to respond, and respond in kind.

The other condition that makes social proof especially effective is when there is similarity between us and the people we observe responding to a particular stimulus. Hornstein, Fisch, and Holmes (1968) conducted a study where they left a wallet on the streets of Chicago with some cash, a check, and information pertaining to the owner of the wallet. Also included was a note from either a foreigner who recently moved to America, or someone who was native to America; the notes clearly stated the finder's intent to return the wallet to the rightful owner. Therefore, the experimenters made it obvious that the wallet had been lost twice, once by the owner, and once by the person who was going to return it to the original owner. They found that when a foreigner wrote the note (i.e. someone dissimilar from themselves) participants only

returned the wallet 33 percent of the time, but when the note was written by someone similar, a native to America, the wallet was returned 70 percent of the time (Hornstein et al., 1968). When participants viewed the person who was going to return the wallet to the original owner as being similar to them, they acted in a manner consistent with that individual, but when the person was different from themselves, they were less likely to act in a similar manner.

Based on the above-mentioned circumstances in which social proof is particularly effective, the courtroom environment may produce a situation where jurors look to others for how to act. The courtroom is an unfamiliar place to most individuals, cases are often ambiguous, and the other jurors will be in a situation similar to their situation; therefore, jurors may look to their fellow jurors for information on how to behave in the courtroom and how to react to the testimony they are hearing. So, not only may the head nodding of the juror influence their own attitudes and perceptions of the expert's testimony, but it may also serve as a peripheral cue to other jurors and in turn influence his or her perception of the testimony as well.

Head Nodding and Locus of Control

A gap within the literature on head nodding and attitude change involves the study of the locus of control of the individual. According to Lefcourt (1991) "locus of control refers to assumed internal states that explain why certain people actively, resiliently, and willingly try to deal with difficult circumstances, while others succumb to a range of negative emotions" (p. 413). Locus of control is commonly viewed as a characteristic of personality and individuals are defined as either having a more internal or external locus of control (Lefcourt, 1991). Individuals with an external locus of control tend to be more susceptible to social pressures and social conformity (as described above) than individuals with an internal locus of control (Spector, 1983).

Locus of control has been studied in the context of vulnerability to social conformity. In a study investigating the susceptibility of individuals with either internal or external loci of control to normative or informational conformity, Spector (1983) found some support that those individuals with an external locus of control were susceptible to normative conformity, but not as susceptible to informational conformity. Osborne, Rappaport, and Meyer (1986) studied the relation between locus of control, pre and post deliberation sentencing severity, and the composition of the jury group (i.e. heterogeneous or homogeneous in terms of locus of control). This research found that those with an internal locus of control gave significantly more harsh sentences than those with an external locus of control on a pre-deliberation measure (Osborne, Rappaport, & Meyer, 1986). There was a trend in the data showing that in a heterogeneous group, after deliberation, the sentences were harsher than pre-deliberation sentences, but these differences were not significant. Thus, there is some support that those with an external locus of control would be persuaded by those with an internal locus of control during jury deliberations.

The malleability of attitudes and sentences by those with an external locus of control was of particular interest in the current study. Research has shown that individuals with an external locus of control tend to be more easily influenced by other individuals' reactions to situations than those with a more internal locus of control. Given the susceptibility to social pressure of those with an external locus of control, it was predicted that these individuals would be more likely to not only conform to the perceived message of agreement or approval conveyed by other jurors who are nodding, but they may also be prompted to spontaneously nod their head in agreement as well.

The Use of Mock Jurors

The decision-making process of jurors has become a widely studied area of research. Of interest are the factors that determine a verdict by a jury, and which individual factors played a role in each juror's decision-making process. Although studying the decision-making of jurors is a topic of interest to many investigators, there is a debate as to the differing methods used to study this area, and which methods provide the most accurate and generalizable results.

The History of Using Mock Jurors. In their review of the last 45 years of jury research, Devine et al. (2001) described the history of empirical studies of jury decision-making. The launching of the Chicago Jury Project in 1953, which focused on using the social science methods to study how the legal system works, prompted increased studies of jury decision-making (Devine et al., 2001). The Chicago Jury Project studies attempted to gather data by interviewing jurors after the trial, surveying judges and lawyers, and even by audio taping several deliberations by sitting juries. The audio taping of juries during the research project prompted widespread banning of access to the jury room due to fears that it would interfere with the deliberating process (Devine et al., 2001). These techniques, and other studies using real jurors since that time, had the advantage of the realism afforded by doing field research; however, they also required a high level of cooperation from the courts, and had the disadvantages of cognitive biases and not being able to control for confounding variables (Devine et al., 2001). The use of mock juries in simulated trials, however, allows for a high level of control over select variables and, when appropriate to the study, allows direct access to the deliberation process, which is not afforded when utilizing actual jurors in a research experiment (Devine et al., 2001). Additionally, in the 1980's, Sears (1986) conducted a review of three social psychology journals that were highly regarded, and found that a significant percent of the

articles in the journals (85%) used college students as participants and/or laboratory research methods in conducting jury research. Thus, it appears that by the mid 1980's the use of mock jurors in research, and studying jury decision-making in a laboratory rather than naturalistic setting had become a widespread and generally accepted practice; one that continues today.

Mock Jurors vs. "Real" Jurors. In actual court cases, jurors are charged with attending to, processing, and eventually making potentially life-changing decisions based on the evidence presented. Research has shown that jurors tended to take their job seriously, attended to information carefully, and attempted to disregard biasing information (Kassin, Reddy, and Tulloch, 1990). Many critics of the use of mock juries have questioned whether the members of mock juries in case simulations put forth the same type of processing effort and have enough motivation to commit to an unbiased assessment of evidence as do real members of juries.

Critics of the use of mock juries asserted that it is not appropriate to generalize the findings of trial simulations using mock jurors to actual jurors in real world trials. In particular, the use of college freshman and sophomores has been criticized as being unrepresentative of the population they are supposed to characterize (Sears, 1986). Critics believed that college students seldom are participants on actual juries (Bray & Kerr, 1982), and that they also differ from the rest of adult society in a number of important ways that influence how they perform as jurors. In addition to differences in age and education, critics argued they are different in their social and political attitudes, and their self-concepts (Sears, 1986). According to the critics, these differences between college samples and adults make research with the college population not generalizable to the actual jury population. Further, they argued that due to the over-reliance on college samples for research, investigators know little about how psychological processes work outside of the university campus (Smart, 1966). What many of the critics of using college

students as a sample, particularly in the case of mock juries, fail to take into account, are the many roadblocks and difficulties encountered in using an actual jury sample (see discussion above), and the fact that few empirical studies comprehensively show a significant difference between the responses of college students and actual jurors.

Using a College Sample as Jurors. A number of empirical studies have supported that there are many similarities in the types of verdicts given by college students and actual jurors. Finkel and Handel (1989) found that there were no differences between undergraduates and a community sample in verdicts where the insanity defense was an issue, and the jurors were to decide the issue based on their own interpretation of the facts of the case. Hinkle, Smeltzer, Allen, and King (1983) similarly conducted a study comparing the decision-making of college students with actual jurors. Subjects were given brief transcripts of a murder trial, including testimony by an expert witness regarding the defendant's sanity, and asked to render verdicts. Results showed that both samples were equally influenced by the testimony of the expert witness in deciding whether the defendant was sane or insane at the time of the offense, and rendered verdicts in a manner consistent with the expert's testimony (Hinkle et al., 1983). The results of this study suggested that both the college students and actual jurors were influenced by the testimony of the expert witness, and used the testimony in similar ways to make decisions in the case. This finding was of particular interest in the current study where the mock jurors used the testimony of the expert witness to help decide a verdict in the case.

Despite the criticisms of using mock jurors in research, some investigators contend that using mock jurors (i.e. from a college sample) is appropriate, especially in nascent research areas (Diamond, 1997). A study by Bornstein (1999) lent credence to this position. Bornstein (1999) was interested in ecological validity as it applies to the area of jury decision-making

research. He conducted a meta-analysis on the existing literature with the goal of determining how many studies had shown differences in verdicts in student versus non-student samples. Results found that in 21 of the 26 studies reviewed, the verdicts of student and non-student populations did not differ significantly. Based on his research, Bornstein (1999) concluded that the use of student samples in jury research was valid and generalizable, and that the criticisms of using this population in research have little empirical support.

The research discussed above supports the use of mock jurors in trial simulations, and provides evidence that the findings of these studies may be generalizable to actual jury samples; despite the criticisms of this type of research. Thus, given the findings that verdicts and use of expert testimony by college students was comparable to that of actual jurors, and that many legally relevant questions can be investigated using a college sample, it appeared appropriate that the proposed study utilize a college sample as research participants. To improve the ecological validity and the generalizability of the results, the present study had participants view videotaped testimony of an expert and they were given motivational instructions to encourage them to act as if they were actual jurors, and take his or her role as a juror seriously.

Statement of the Problem

Nonverbal behaviors during interactions with other people are an important aspect of communication. In particular, the common gesture of nodding one's head indicates that the listener is hearing and understanding what the speaker is trying to convey. Additionally, in western cultures nodding is often thought to indicate agreement with, and approval of, what the speaker is saying (Helweg-Larsen et al., 2004). These positive emotions towards the speaker may be particularly important in the context of a courtroom. In the courtroom setting expert witnesses are seeking to inform the jury (Melton, Petrila, Poythress, & Slobogin, 1997) and aid

them in their decision-making. Therefore, it stands to reason that if members of the jury are nodding during the testimony of the expert witness it may be perceived by the expert, by the attorneys in the case, and by other jury members that the individual is understanding the expert, agreeing with the expert's position, and would be more likely to vote in a manner consistent with that expert's opinion.

Previous research has shown that head nodding in an affirmative manner while hearing a message leads to higher ratings of approval for the content of that message (Wells & Petty, 1980; Brinol & Petty, 2003). Brodsky et al. (2006, March) demonstrated that having mock jurors nod during a simulation of expert testimony increased agreement with the position of the expert and ratings of the expert's credibility; however they found that ratings were lower when the expert was nodding as well. The present study sought to expand upon the work by Brodsky et al. (2006, March), but to also increase the ecological validity of the study. Due to the negative ratings of the nodding expert found in Brodsky et al. (2006, March), the nodding of the expert during testimony was not explored in the current study. Additionally, in the courtroom environment, it is not likely that members of the jury would continuously nod their head at a rate of approximately one nod per minute. Rather, the juror's nodding would likely take place while the expert is speaking as a sign of listening and agreement, but not while the expert is being asked a question by the attorney. Although the issue of nodding affecting attitude change in the individual who is nodding has been explored, what had not been investigated in the literature is the influence of the head nodding of jurors on their fellow jurors. This alternative nodding procedure and the social influence of having jurors nod were explored by the current study.

The purpose of the present study was to investigate if changes to paradigms previously researched would result in similar effects of head nodding and agreement with the expert's

testimony and ratings of credibility for individuals who were instructed to nod. Secondly, the study sought to assess if the head nodding of fellow jurors influenced the perceptions of the other mock jury members regarding the credibility of the expert. Third, the study investigated if the head nodding of other jurors affected the perception of the expert witness' testimony and agreement with the expert's opinion. The fourth goal was to ascertain if the proportion of the jurors nodding in a condition influenced the above perceptions. And, finally, if participant variables such as locus of control and need for cognition related to juror's perceptions of the expert's testimony and the influence of nodding on those perceptions.

Accurate interpretation of nodding by jurors is a vital research question not only for knowledge sake, but this area also has practical implications. Knowledge regarding head nodding by jurors would be of help to expert witnesses and attorneys in the actual courtroom environment. If a juror nodding indicates agreement and approval of a message, attorneys and expert witnesses would have a reliable and valid way to get feedback about how well they are presenting information to the jury. Additionally, if individual jurors nodding influenced the perception of other jurors with respect to the evidence presented, then it would be of benefit for an attorney to select jurors who evidence more head nodding during voir dire. If the attorney can get the jurors who nod on their side of the case, the nodding by the juror could positively influence the outcome of the case for that side. Therefore, the present study may add to the body of literature on jury selection and provide empirical support for interpreting the nonverbal behavior of nodding by jurors.

Primary Hypotheses:

1. Given Cialdini's (1995) assertion that individuals look to those around them to determine how to behave in unfamiliar situations, it was predicted that having members of the mock jury nod their head would increase the likelihood that other members of the jury would nod as well. Specifically, it was thought that as the number of mock jurors that nodded their head increased, so would the number of other jurors nodding in agreement (those who were not instructed to nod).
2. Research has shown that having individuals nod their head in an affirmative manner while hearing a message increased their approval for the message (Wells & Petty, 1980). Therefore, despite the findings in Brodsky et al. (2006, March), it was expected that both the mock jurors that were instructed to nod their heads and those who nodded spontaneously during the testimony would have higher rates of agreement with the expert's position in the testimony.
3. Brodsky et al. (2006, March) demonstrated that individuals who nodded during the expert witness testimony had higher credibility ratings of the expert. It was expected in the current study that individuals who nodded during the expert's testimony, whether instructed to nod or those who nod on their own, would have higher ratings of expert credibility.
4. Due to the influence of peripheral cues on individual's perceptions of messages, it was expected that regardless of whether participants nodded their head or not, as the number of mock jurors who did nod their head increased, overall, the approval ratings and ratings of the expert's credibility would also increase.

5. It was predicted that individuals instructed to nod would be less influenced by the percentage of those nodding (i.e. 15 versus 50 percent) than those not instructed to nod because they will be aware of the manipulation. It was also expected, based on the effect of overt head movement on attitude change, combined with the social influence of having other people nod around you, that there would be a synergistic effect of having both head nodding and high rates of social influence present, which would affect both agreement with the testimony of the expert and expert credibility ratings.

Exploratory Hypotheses:

6. Given the research showing that individuals low in need for cognition tended to process information peripherally, it was expected that individuals low in need for cognition would be significantly affected by the peripheral cue of other people nodding their head. Therefore, it was predicted that individuals with low need for cognition would evidence higher ratings of agreement with the expert and expert credibility than those high in need for cognition, particularly in the 50% nodding condition where there were more peripheral cues.
7. Based on individuals with an external locus of control having more susceptibility to attitude change through the influence of others (Osborne, Rappaport, & Meyer, 1986; Spector, 1983), it was expected that those individuals with a more external locus of control would demonstrate more spontaneous nodding than individuals with an internal locus of control.
8. Osborne, Rappaport, and Meyer (1986) demonstrated that individuals with an external locus of control tended to give less harsh sentences in pre-deliberation sentencing. Therefore, it was expected in the present study, that less harsh sentences would be given

by those with a more external locus of control as compared to those with a more internal locus of control.

9. Based on the findings that head nodding increased agreement with testimony by the expert and expert credibility, it was hypothesized that the longer the duration that the individuals nodded his or her head, the higher the ratings of agreement with the expert and expert credibility.
10. Consistent with the research showing that females tended to nod their head more often than males (Helweg-Larsen, et al., 2004), it was expected that females would demonstrate significantly more spontaneous head nodding than males.

METHOD

Experimental Design

The proposed study was a 2 (15% vs. 50% of participants nodding) X 3 (nodding type) unbalanced factorial design. Nodding type was delineated into three groups: those who were instructed to nod, those who were not instructed to nod and did not nod, and those who were not instructed to nod and who nodded spontaneously. The participants' ratings on the Credibility Scale and ratings of agreement with the argument presented by the expert witness were the dependent variables of interest. Several participant variables, including locus of control and need for cognition, were also measured in the study. This design investigated the overt head movement component of the study and the social influence aspect, in addition to the interaction between the two.

Participants

Participants consisted of undergraduate college students from a large state university in the south. According to the G Power (1996) analysis, 160 participants were needed for the present study; however, due to the number of exploratory analyses, approximately 300 participants were included in the study. The number of subjects needed was based on a power analysis for a significant interaction between percentage of participants instructed to nod, and nodding type (as delineated above), assuming a medium effect size, alpha of .05, and power of .8. Individuals were recruited from Introductory Psychology courses as partial completion of research requirements for the course. The majority of participants were college freshmen and

sophomores. Due to the demographics of the sample it was expected that the sample would be approximately representative with respect to ethnicity; however, the age of participants would not be representative of the general population, and it was expected that there would be more female than male participants. Participants were informed of confidentiality, risks, and benefits prior to participation in the study. Additionally, participation in the study was voluntary and agreement to participate was obtained from each individual before commencement of the experiment.

Materials and Measures

Case presentation. The stimulus material in this study was a simulated excerpt of cross-examination of an expert witness during a criminal trial. The same stimulus materials as used in the Brodsky et al. (2006, March) study were utilized. The script used in the mock expert witness testimony was taken from the Krauss and Sales (2001) study on effects of clinical and actuarial testimony on predictions of dangerousness (Appendix A). The mock trial began with a verbal synopsis of the case based on the Krauss and Sales (2001) scripts adapted for the present study and Brodsky et al. (2006, March). Following the case description, participants viewed the simulated expert witness testimony. The questioning of the witness pertained to the results of a psychological evaluation and an assessment of the defendant's continued danger to society.

Credibility Scale. The Witness Credibility Scale was developed by the Expert Witness Research Lab at The University of Alabama. Griffin, Brodsky, Blackwood, Abboud, Flanagan, & Bradsell (March, 2005) constructed the scale to assess how credible participants rate a witness. The scale measures the overall perceived credibility of the expert as rated by the participants on a collection of four subscales: the witness' likeability, trustworthiness, knowledge, and confidence. The scale consists of 20 items that assess the perceived credibility of the expert using adjectives

and the opposite of the adjective (e.g. pleasant – unpleasant) on a 10-point scale. Each of the items loads onto one of the four subscales at the .500 level or higher. Analysis of the scale has supported that it is a reliable measure of witness credibility ($\alpha = .945$). The subscales have also demonstrated adequate reliability (Likeability = .863; Trustworthiness = .925; Confidence = .887; and Knowledgeable = .863). The scale was used to assess how credible the participants judged the expert in each of the conditions in the study (see Appendix B).

Need for Cognition Scale. The original Need for Cognition Scale is a 34-item scale that was developed by Cacioppo and Petty (1982) to assess the individual participant's likelihood of engaging in and enjoying the process of thinking. Since 1982, this scale has been widely researched and has shown both reliability and validity (Cacioppo, 1996). The short form version of the Need for Cognition Scale was developed by Cacioppo, Petty, and Feng Kao (1984). This 18-item scale was utilized in the current study. Approximately half of the items are worded as being indicative of a greater need for cognition and half are worded to assess a lower need for cognition. Cacioppo et al. (1984) found that the short form is a highly reliable measure of the need for cognition construct ($\alpha = .90$) and is highly correlated with scores on the longer version of the need for cognition scale ($r = .95$). In a review by Cacioppo et al. (1996), the authors concluded that the 18-item NFC scale has been reliably utilized in a number of research studies on need for cognition and loads on the same factor as the longer 34-item scale. More recent research has also confirmed the reliability and validity of the measure (Leippe, Eisenstadt, Rauch, & Seib, 2004) (see Appendix C).

Internal-External Locus of Control Scale. The Internal-External Locus of Control Scale was developed by Rotter (1966) to assess if an individual holds either an internal or external “expectancy about the causation of reinforcements or outcomes” (Lefcourt, 1991, p. 420). This

scale consists of 23 forced choice items that are either indicative of an external or internal locus of control, and 6 filler items. The instrument is scored by giving each response that indicates an external locus of control one point, and zero points for each internal locus of control response. Therefore, lower scores show a more internal locus of control and higher scores a more external locus of control (Lefcourt, 1991). The scale has been widely used in research and among college samples, and demonstrated adequate reliability ($\alpha = .70$) in Rotter's (1966) development of the scale (Lefcourt, 1991). The scale has also demonstrated validity in measuring individual differences in how much individuals perceive that they have control over their own future (Lefcourt, 1991) (see Appendix D).

Juror Case Conclusions. Participants were asked several questions regarding the outcome of the case and their perceptions of the testimony given. These questions included ratings of agreement with the expert witness' testimony and sentencing outcomes. Questions regarding agreement with the testimony of the expert included ratings of how rationale, reliable, and believable they considered the expert's testimony. They were then asked to rate how in favor they were of the death penalty and choose a sentence of the death penalty, life in prison without parole, or life in prison with the possibility of parole for the defendant in the case simulation (see Appendix E).

Motivation Instructions. Based on Brinol and Petty's (2003) research findings that increased elaboration on a message while nodding one's head positively influenced persuasion, instructions designed to motivate participants to elaborate upon the information were included as part of the current study. The instructions directed the participants to pay attention to the information presented by the expert witness as if they were jurors in a real criminal case. Further

they were told that the information they provided would be used to learn how to improve communication by expert witnesses in the courtroom environment (see Appendix F).

Procedures

In addition to the researcher (E1), there were three research assistants who were consistently involved with the research project. The primary research assistant (E2) was responsible for administering the study in the absence of the researcher. These duties included scheduling study sessions, administering the nodding instructions, and debriefing the participants. The second research assistant (E3) was primarily responsible for handing out the demographic questionnaire to the participants not being given nodding instructions, and operating the video camera. The third research assistant (E4) helped to code the head nodding of participants from the videotapes.

Participants for the current study were recruited from the Psychology 101 subject pool. In order to increase the verisimilitude of the study to the courtroom environment, between 9 and 16 individuals participated as mock jurors during each session of the study. The participant pool included individuals under 19 years of age; therefore, the participants were asked to participate in the study and were advised of the nature of the study and the risks, but were not required to give a formal informed consent. They were also informed that their responses would remain anonymous and that they would be assigned a number to record their responses. The only demographic information requested from the participants were their age, race, and gender.

The participants arrived at the testing location and were directed to sign-in on a list that was kept separate from any data collected throughout the testing session. Participants were informed that their information would remain anonymous and that their records would be identified only by the participant number they were assigned. After signing in, the participants

were assigned a seat number in order of their arrival, given a slip of paper with that seat number on it, and based on that number were instructed to go to one of two nearby classrooms. The seat number assigned to the participant designated whether they were to be instructed to nod their head while viewing the taped expert testimony or would not be given any instructions regarding head nodding (see Appendix G). Once all of the participants arrived and were in their designated classrooms, they were asked to agree to participate in the study. Participants were given an information sheet regarding their participation in the study (Appendix H) and were asked to print their name on one copy of the information sheet. One copy of the information sheet was given to the participant to keep. Those participants who were instructed to nod were read the nodding instruction script (Appendix I) by the researcher or a research assistant (E2) and they were able to stretch briefly to avoid possible neck strain from the nodding movement, and practiced the nodding as instructed. In the mean time, participants in the other classroom were given a short demographic questionnaire (Appendix J), which was not analyzed as part of the study. Once the nodding instructions and the demographics questionnaires were completed, the two groups were brought into the original classroom and the participants were instructed to sit in their originally assigned seats.

The assigned seating arrangement was organized to simulate a jury box (i.e. at an angle approximately perpendicular to the screen where the expert witness testimony was viewed). There were two rows of seats directly in front of each other comprised of five to eight seats per row depending on the number of participants. Each of the seats was numbered so that the participants could find their assigned seat (Appendix G). The seating placement facilitated the ability of the jurors not given any nodding instructions to see the overt head movements of the jurors who were instructed to nod. In the approximately 15 percent nodding condition, two

people in the front row were instructed to nod, and in the 50 percent nodding condition, every other person in the front row was instructed to nod (depending on the number of participants), and the remaining percentage of participants up to the 50 percent were back row people who were instructed to nod. Subjects were also informed that they would be videotaped during the experiment in order to gauge juror reactions to the evidence they heard during the expert witness' testimony (see information sheet Appendix H).

The participants were then informed that they would be presented with a videotaped excerpt of a cross-examination of an expert witness in a criminal trial. They were told that the purpose of the study was to examine jurors' views of, and reactions to, expert witness testimony. The researcher or a research assistant (E2) then instructed the participants to listen to the expert witness's testimony as if they were members of an actual jury in a criminal trial (Appendix F). The video of the expert witness was then played for the participants on a large projection screen (approximately six feet square). Following the completion of the testimony, the researcher or an assistant (E2) again instructed the participants that they were to act as if they were members of an actual jury in a criminal trial and asked them to complete the questionnaire packets administered to them at that time (Appendices B-E).

Information collected from the participants was kept separate from the information sheet containing their name and the sign-in sheet. All materials, including the videotaped recordings, were kept in a locked office and were only viewed by individuals responsible for coding responses (i.e. head nodding) of the participants and the research supervisor. All materials were kept in the locked office until all analyses were completed. The videotapes will be destroyed when the research is completed.

Once all of the participants completed the questionnaires and handed them in, the participants were read the debriefing statement (Appendix K). As part of the debriefing process, participants were asked not to discuss their experiences in this study with anyone else, as this may influence future participants and may jeopardize the results. Following any questions from the participants, they were dismissed from the study, reminding each participant to take the information sheet which contained contact information (Appendix H), should they have further questions or concerns regarding their participation in the study.

Videotape Coding

The researcher and one of the research assistants (E4) viewed each of the videotaped sessions of the study to code for head nodding by participants. The same criteria as utilized in the Helweg-Larsen et al. (2004) study were adopted for the current research. Therefore, head nodding was operationalized as being “at least one distinct and repeated vertical movement” of the participant’s head (Helweg-Larsen et al., 2004, p. 359). This method of coding head nods also took into account racial differences in head nodding as outlined by Feldman (1985) in which African Americans tended to make more slight or “unaccented” nodding movements so that these nods were counted in the coding.

Raters coded both the nodding of those instructed to do so, and noted whether or not the participants who were not instructed to nod, spontaneously nodded their head. The number of times the individual nodded (as defined above), whether they nodded at the appropriate times, the speed of nodding, and the quality of head nodding were recorded for further analysis. Any disagreements between the raters regarding the head nodding by participants were discussed and resolved. Consistency in coding was ensured by comparing the coding of the researcher and a research assistant (E4) on 15 percent of the participants.

Statistical Analyses

The following is a description of the analyses used for investigating each of the primary and exploratory hypotheses. To explore the primary hypotheses in the present study, two between subjects ANOVAs were conducted. One ANOVA explored the dependent variable of agreement with the expert's testimony, and the second explored credibility ratings of the expert.

1. To explore hypothesis 1 and evaluate if spontaneously nodding differed depending on the percentage of participants who were instructed to nod in each condition, an independent sample t-test was to be utilized. The t-test would determine whether there was a statistical difference in the number of individuals who spontaneously nodded in the 15 percent versus 50 percent nodding conditions.
2. Hypothesis 2 was analyzed with a between subjects ANOVA by looking at the main effect of nodding type with the dependent variable being agreement with the expert witness' testimony. Consistent with previous research it was expected that the mock jurors who nodded their head during the testimony would have significantly higher rates of agreement with the expert's position in the testimony.
3. Hypothesis 3 was examined with a between subjects ANOVA by looking at the main effect of nodding type with ratings of expert credibility as the dependent variable of interest. Consistent with previous research, it was expected that those who nodded their head, whether spontaneously or directed, would show higher ratings of expert witness credibility.
4. Hypothesis 4 was analyzed with two between subjects ANOVA by looking at the main effect of condition (15% versus 50%) with the dependent variables of interest being agreement with the expert and ratings of credibility. It was expected that as the number

of participants nodding in the condition increases, so would ratings of agreement with the testimony by the expert and the expert credibility.

5. Hypothesis 5 was investigated with between subjects ANOVAs by analyzing the interaction between nodding and percentage of people nodding in that condition with the dependent variables of interest being agreement with the expert's testimony and credibility ratings of the expert.

Exploratory Hypotheses Analyses

6. To investigate the first exploratory hypothesis, a General Linear Model analysis was conducted to see if there was an interaction between nodding, and the participant's need for cognition, the dependent variable of interest was ratings of agreement with the expert and expert credibility.
7. To investigate the second exploratory hypothesis an independent samples t-test was to be conducted comparing those who nodded spontaneously and those who did not nod to see if there was a significant relation between locus of control and whether or not the participants who were not instructed to nod demonstrated spontaneous nodding of his or her head.
8. Exploratory hypothesis 8 was analyzed with a General Linear Model with locus of control as the independent variable and sentencing decision as the dependent variable.
9. A General Linear Model was used to analyze if duration of nodding was significantly related to agreement with the expert and expert credibility ratings.
10. To assess if females were more likely to spontaneously nod than males, an independent samples t-test was to be conducted comparing the two groups.

Pilot Study

Method

Prior to investigating the hypotheses of the study proposed, it had to be determined whether there was a significant amount of dependence in the responses due to group. Dependence is created when “the residuals of the observations [are not] independent of one another” (Cohen, Cohen, West, & Aiken, 2003, p. 120), and therefore observations collected from within a group would be more similar than from between different groups. This leads to problems with standard error terms and tests of significance (Cohen et al., 2003). Dependence could have been introduced in the current study if there was an effect of the particular individuals who were assigned to nod (i.e. if they were more attractive in one group than another or if they were particularly convincing noddors) on the ratings of the participants who were not instructed to nod. If there was in fact dependence in the design, then the analysis would have to accommodate this dependence.

To ascertain if there was dependence among the groups, the 50 percent nodding condition was run with five different groups of mock jurors (ranging from 9 to 16 participants). According to DeCoster (2002), researchers recommend using the value of $\alpha = .20$, due to the low power of the tests investigating within-group dependence. The procedures and measures used in the study were the same in the pilot study as proposed for the main study. However, only the credibility ratings of the expert witness and agreement with the expert witness’ testimony were investigated to determine if there were differences among the groups.

Proposed Statistical Analyses

To analyze for dependence, an intraclass correlation analysis (Kashy & Kenny, 2000) was conducted. If the intraclass correlation was significant we would consider this to

demonstrate significant dependence at the group level and would accommodate for this in the analysis of the study. If the intraclass correlation was not significant, then we would conclude there is no group level dependence and would ignore the effect of group in the analysis. The procedures used in this study would not change based on independence or dependence in the results, only the types of statistical analyses would change.

Pilot Findings

During the piloting for this study, two observations of the procedures used were made. First, overall, the procedures as outlined in the Methods section were effective and allowed for a smooth transition of the participants between the rooms and to the different parts of the study. Second, while those who were given instructions to nod his or her head performed as instructed, the amplitude of their nodding was less than desired, which led the researchers to instruct the mock jurors to make their nodding more apparent and less subtle. It appeared from piloting that the procedures for this study were appropriate without further modification.

To determine if there was significant dependence within the study design, an intraclass correlation analysis was conducted. An examination of the intraclass correlation for the first five sessions of the 50 percent condition showed that there was not significant dependence in either of the dependent variables in this study ($F[44, 135] = .08, p > .20$). As a result of the non-significance of the intraclass correlational analyses, the effect of group was ignored in the statistical analyses, and the analyses were conducted as planned and outlined in the section above.

RESULTS

Contrary to the expectation, no spontaneous nodding by subjects while listening to the excerpt of expert witness testimony was observed in this study. Due to no spontaneous nodding being present, several of the hypotheses could not be explored as planned, and a number of hypotheses were examined without inclusion of the non-instructed nodding group. Possible reasons why no spontaneous nodding occurred are explored in the discussion section of this paper.

In addition to the lack of spontaneous nodding in the study, there was also observed to be a significant effect of the instructor of the study session; there were differences observed between the sessions run by the primary researcher (E1) as compared to the primary research assistant (E2). This effect was fully outlined in this section and discussed later in the document. As a result of this effect, separate analyses for the participants run by the researcher as well as the entire pool of participants were conducted and were reported.

Demographics of the Participants

A total of 303 participants took part in this study. There were 24 sessions of the study completed; 15 sessions of the 50 percent condition, and 9 sessions of the 15 percent condition. The researcher (E1) completed 9 of the 50 percent condition sessions, and 5 of the 15 percent condition sessions. The primary research assistant (E2) completed 6 sessions of the 50 percent condition and 4 sessions of the 15 percent condition. Fourteen of the participants from the 50 percent condition sessions were excluded from analyses due to these sessions only having seven

participants; thereby, not meeting the criteria of between 9 and 16 individuals per session. Three participants were excluded due to being the 17th individual in the session. Two of the 50 percent condition sessions conducted (22 individual participants) were excluded from analyses as the groups did not include their juror numbers on the packet of measures; therefore, it was unclear which packets corresponded to individual participants and whether or not they were part of the group who was given the nodding instructions. One of the participants was excluded due to suspiciousness of the manipulation in the study, and admitting that their answers may have been influenced by this suspicion. Finally, 25 participants were excluded from analyses due to asserting that they would not be able to set aside their anti-death penalty attitudes in the case, even if there was more aggravating than mitigating evidence presented². The final number of jurors considered in the analyses was 238; 139 of the participants were run by the researcher, and 99 of the participants were run by a research assistant (E2). The mock jurors excluded from the analyses were not different in terms of age, gender, ethnicity, whether or not they were instructed to nod, need for cognition, or locus of control. There were differences between those excluded and those included in the analyses in terms of condition of the experiment (i.e. 50 versus 15 percent), ($F[1, 301] = 15.05, p < .001$), which is likely due to the fact that a number of the participants who were excluded from analyses were from two sections of the 50 percent condition in which the mock jurors did not include their juror numbers on the packets of information.

Of the participants included in the analyses for this study, the majority was female (66.1 percent, 33.9 percent male). The mean age of the participants was 19.12 years ($SD = 1.89$, range 18 to 34). The racial composition of the sample was self-identified as follows: 83.5 percent

² Analyses were run both including and excluding the jurors who indicated they could not set aside their anti-death penalty attitudes in deciding a verdict. There were no differences in terms of analyses that were significant versus not significant when the jurors were included; therefore the jurors were excluded from the analyses.

Caucasian, 13.1 percent African American, .8 percent Asian American, and 2.5 percent other. Of the participants used in the analyses, 34.9 percent were instructed to nod, and 65.1 percent were not instructed (and therefore did not nod). Approximately half of the participants used in the analyses for the study were in the 50 percent condition ($n = 120$), with the other half participating in the 15 percent condition ($n = 118$).

Exploration of the Effect of Instructor

While conducting the preliminary analyses in the present study, it became apparent that there were differences between what was found during the piloting of the study, and the results while running the primary analyses with the full contingent of participants. Namely, it appeared that there were significant effects of nodding on the dependent variables of agreement with the testimony and ratings of credibility within the first five sessions of participants analyzed, and there were no significant effects when all participants were included in the analyses. To ascertain a reason for these differences, a Multivariate Analysis of Variance (MANOVA) was conducted. This analysis included the independent variables of whether or not the individual was instructed to nod their head while watching the video, whether they were in the 15 or 50 percent condition, and whether the primary researcher (E1) or a research assistant (E2) ran that session of the study. The dependent variables of interest were the ratings of credibility of the expert, and ratings of agreement with the testimony by the expert. Results of the MANOVA showed that there was a significant main effect of instructor on the collection of dependent variables, ($F[2,228] = 3.76, p = .025$). There were no significant main effects of instructed nodding or condition.

To further analyze the effect of instructor on the dependent variables in the study, a comparison of means was explored. The first level of comparison was whether the instructor

was the researcher or a research assistant (E2), and the second level of comparison was whether the individual was instructed to nod, or given no nodding instructions. The results showed that the mean ratings of agreement with the testimony of the expert witness were significantly higher in the groups run by the researcher ($t(236) = 3.21, p = .002$), ($M = 26.63, SD = 11.33$), than the groups run by the research assistant (E2) ($M = 22.56, SD = 11.44$). Similarly, within the groups run by the researcher, the individuals instructed to nod had higher rates of agreement than individuals not given any instructions regarding head movement; however, these differences were not statistically significant. In contrast, in the groups run by the research assistant (E2), there was an opposite effect, in which the individuals who were instructed to nod had lower rates of agreement, than individuals not given nodding instruction. Although these differences were not significant, there was a trend in the data (see Table 1).

With regard to ratings of credibility of the expert, the same patterns of means were evident. The scores of credibility of the expert by individuals in sessions run by the researcher ($M = 125.13, SD = 30.85$) were significantly higher than those individuals in sessions run by the research assistant (E2) ($M = 113.84, SD = 34.28$), ($t(235) = 2.74, p = .007$). Similarly, in the groups run by the researcher, the mean scores of those instructed to nod were significantly higher than those who did not nod, ($F[1, 139] = 6.16, p = .014$). In the sessions run by the research assistant (E2), the mean credibility ratings of those instructed to nod were lower than those not given the nodding instructions, although this difference was not statistically significant (see Table 1).

The primary research assistant (E2) was interviewed regarding these results. She reported that there were no problems during the sessions of the experiment that she conducted. Her description of administration of the nodding instructions was consistent with how the

researcher had also given the instructions. The research assistant hypothesized that the experimenter effects seen may have in part been due to her young appearance, her petite stature (she is 5' 0"), and the fact that she is often mistaken for being 18 years old, when her actual age is 21. She also indicated that at times she is not "taken seriously" or seen as authoritative due to her young appearance. The effects of experimenter will be further explored in the discussion section.

Table 1
Means for Agreement and Credibility by Instructor (ANOVA)

	Nodding		Non-Nodding	
	Mean	SD	Mean	SD
Agreement				
Primary Researcher (E1)	28.68	10.85	25.51	11.48
Research Assistant (E2)	20.82	7.77	22.96	12.85
Credibility				
Primary Researcher *	133.58	32.77	120.49	28.29
Research Assistant	108.27	27.33	116.58	37.12

Note: E1 $n = 139$, E2 $n = 99$

* $p < .05$

Quantitative Exploration of Nodding in the Study

The nodding of the participants in the instructed group was coded and analyzed to quantify the differences observed between the groups run by the researcher and those run by the assistant (E2). The total number of nods completed by each participant was coded.

Additionally, the nodding participants were scored on whether or not they maintained the appropriate rate of nodding while the expert was speaking. This variable was coded on a Likert

scale (1 = never, 9 = always). The quality of the nodding was also rated on a Likert scale (1 = minimal head movement, 9 = energetic head movement). The number of nods performed at inappropriate times (i.e. when the attorney on the video was speaking) were also counted. Whether or not the individual nodded during the correct time during the video was originally scored; however, there were only a few individuals who nodded when the expert was not speaking, and the issue of nodding at the appropriate time was already coded by looking at the total number of nods (since the nods were only counted into the total if they were at the appropriate time). Therefore, this variable was not included in the analyses. Nodding of the participants in the study was coded by both the researcher and one of the research assistants (E4). A comparison of the coding by the researcher and the research assistant (E4) showed agreement 82 percent of the time; therefore, it appeared that there was a high level of interrater reliability, and the coding was judged to be accurate and reliable.

A MANOVA was conducted to investigate the effect of instructor on the above described nodding variables. The above mentioned nodding variables were considered a fidelity measure of the nodding instructed participants' adherence to the directions given by the researcher and the research assistant (E2). Results of the MANOVA showed a significant effect of instructor on the collection of dependent variables of total number of nods, the timing of nodding, the rate of nodding, and the quality of nodding ($F[3, 79] = 6.07, p < .001$). There was a significant main effect of the total number of nods ($F[1, 81] = 13.33, p < .001$). A comparison of means showed there were significantly more nods in groups run by the researcher, as opposed to the groups run by the assistant (E2). There were also significant main effects of the rate of nodding ($F[1, 81] = 12.32, p = .001$) and the quality of nodding ($F[1, 81] = 17.44, p < .001$). A comparison of means showed that the rate of nodding in groups run by the researcher was judged to be significantly

more consistent with the rate of one nod per second than the groups run by the assistant (E2). The quality of nodding was significantly more energetic in the groups run by the researcher as opposed to the groups run by the assistant (E2) (see Table 2).

Table 2
Quantitative Comparison of Nodding by Instructor (n = 83)

	Researcher (E1)		Research Assistant (E2)	
	Mean	SD	Mean	SD
Total Number of Nods*	72.60	26.75	53.97	14.62
Rate of Nodding*	5.92	2.22	4.33	1.65
Quality of Nodding*	5.70	2.37	3.67	1.81

* $p < .01$

Preliminary Analyses

Tests of the Assumptions of ANOVA

Prior to conducting analyses for the primary hypotheses, the data were checked to see if the assumptions of ANOVA were met; namely, independence, normal distribution, and equality of variances of the residuals of the dependant variables. As noted above in the piloting, there was no significant dependence found in the design. A graph of the residuals for the dependent variable of agreement with the testimony was found to be slightly skewed to the right; therefore, a square root transformation was applied to this variable to correct the violation. After the aforementioned transformation, both dependent variables were found to meet the assumptions of ANOVA.

Internal Consistency of the Agreement with Testimony and Credibility Scales

The scales used as the main dependent variables in the study were also examined to see if they had adequate internal consistency before beginning formal hypothesis testing. As shown in

Table 3, all scales and subscales had acceptable reliabilities as measured by Cronbach's alpha. Therefore, each of these scales was used in the primary hypothesis testing for the study (see Table 3).

Table 3
Reliability Coefficients for Measures Used as Primary Dependent Variables (N = 238)

Variable	Alpha (α)	No. of items
Agreement with Testimony	.938	6
Credibility Scale	.931	20
Confidence	.745	5
Likeability	.814	5
Trustworthy	.930	5
Knowledge	.911	5

Analysis of Differences Between Groups Run by the Researcher and Assistant

Preliminary analyses were also conducted to see if, in addition to instructor, there were any significant differences between the groups run by the primary researcher and the research assistant (E2) that should be accounted for in the analyses. Results showed there were no significant differences between the sessions run by the researcher and sessions run by the research assistant (E2) in terms of gender or ethnicity. There were, however, significant age differences between individuals run by the researcher ($M = 19.49$, $SD = 2.28$) and individuals run by the research assistant (E2) ($M = 18.61$, $SD = .95$), ($t(235) = 3.64$, $p < .001$). The age differences were likely due to the time of year that participants were collected by the research assistant (E2) (fall) versus the researcher (E1) (i.e. spring semester). Due to these significant differences age was explored as a possible covariate in the models; however, the inclusion of age did not improve the models, and therefore was not included as a covariate in the final analyses.

Hypothesized Outcomes

As iterated above, there was no spontaneous nodding observed in the current study. Therefore, hypothesis 1 could not be analyzed, and hypotheses 2, 3, 4, and 5 were modified to only include the nodding group (who were instructed) and the non-nodding groups. The exclusion of a third group (i.e. the spontaneous nodding group) meant that a Bonferroni correction to the analyses was no longer necessary to control the Familywise error rate. Additionally, there were significant differences between participants who were run by the researcher, and those that were run by research assistant (E2). Therefore, all analyses exploring the primary hypotheses were run twice, once including all subjects (except those that were excluded due to the reasons described above), and a second time including only those participants who were run by the researcher. Both sets of analyses are reported here and explored in the discussion section.

Nodding: Influence on Agreement and Credibility

The second hypothesis predicted that in spite of the results of Brodsky et al. (2006, March) that showed when agreement was analyzed separately from credibility there was no significant effect of nodding on agreement; individuals who nodded their head would have higher rates of agreement with the testimony of the expert than would individuals who did not nod. It was thought that, consistent with the self-validation hypothesis, the overt head movement would signal to the individuals' that their positive thoughts about the testimony of the expert were valid; and therefore would increase their agreement with the testimony. Contrary to the hypothesized outcome, and consistent with Brodsky et al. (2006, March), the results of the between subjects ANOVA investigating this hypothesis showed that when all participants were

included in the analysis there was no significant main effect of nodding on agreement with the testimony of the expert witness. However, when only the subjects run by the researcher were included in the analysis, the main effect of nodding showed a trend that was approaching significance ($F[1, 135] = 3.48, p = .064$). Those who were instructed to nod had higher rates of agreement ($M = 28.68, SD = 10.85$) compared to those who were not instructed to nod ($M = 25.45, SD = 11.58$) (see Tables 4 and 5).

Brodsky et al. (2006, March) demonstrated that individuals who nodded during the expert witness testimony had higher ratings of credibility of the expert. It was expected in the current study that individuals who nodded during the expert's testimony would similarly have higher ratings of expert credibility. For this third hypothesis, the results of the between subjects ANOVA showed that there was no significant main effect of nodding type on ratings of credibility of the expert when all subjects were included in the analysis. When only the subjects run by the researcher were included, there was a significant main effect of nodding type on ratings of expert credibility ($F[1, 135] = 7.75, p = .006$). A comparison of means showed that individuals given the nodding instructions by the researcher rated the expert as more credible than did the individuals given the nodding instructions by the research assistant (E2) (see Tables 4 and 5).

Table 4
Analysis of Variance with Nodding and Condition

Source	<i>df</i>	<i>F</i>	η_p^2	<i>p</i>
Agreement				
E1 ^a				
Nodding	1	3.48	.03	.064
Condition	1	.24	< .01	.626
Nodding X Condition	1	.95	< .01	.332
error	135	(1.27)		
All Participants ^b				
Nodding	1	2.09	< .01	.158
Condition	1	.11	< .01	.742
Nodding X Condition	1	5.66	.024	.018*
error	234	(1.34)		
Credibility				
E1 ^a				
Nodding	1	7.75	.05	.006**
Condition	1	1.42	.01	.235
Nodding X Condition	1	.86	< .01	.356
error	135	(907.61)		
All Participants ^b				
Nodding	1	2.06	< .01	.153
Condition	1	.279	< .01	.598
Nodding X Condition	1	2.87	.01	.092
error	233	(1055.98)		

Note: Values in parentheses represent mean square errors.

^a E1 indicates sessions of the study conducted by the primary researcher (*n* = 139).

^b All participants (*n* = 238)

**p* < .05

***p* < .01

Table 5
Means for Agreement and Credibility by Nodding (ANOVA)

	Nodding		Non-Nodding	
	Mean	SD	Mean	SD
Agreement				
E1 ^a	28.68	10.85	25.51	11.48
All Participants ^b	25.55	10.44	24.27	12.04
Credibility				
E1 *	133.58	32.77	120.49	28.29
All Participants	122.83	32.50	118.56	32.33

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 139$).

^b All participants ($n = 238$)

* $p < .05$

To investigate further which of the components of the credibility scale (confidence, likeability, trustworthy, and knowledge) were significantly related to head nodding in the groups run by the researcher, a MANOVA was conducted. The results demonstrated that there was an overall significant effect of nodding on the collection of dependent variables ($F[4, 134] = 3.73, p = .007$). There was also a significant relation between nodding and beliefs that the expert was knowledgeable ($F[4, 134] = 10.89, p < .001$). The relation between nodding and likability showed a trend towards significance ($F[4, 134] = 3.34, p = .067$). Nodding was not significantly related to ratings of confidence or trustworthiness (see Table 6).

Table 6
Credibility Scale Components by Nodding in Sessions Completed by Researcher (E1 (n = 139) (MANOVA)

Credibility Subscale	Nodding		Non-Nodding	
	Mean	SD	Mean	SD
Confidence	37.10	7.36	36.97	7.85
Likeability	29.19	9.47	28.56	10.45
Trustworthiness	28.08	10.18	27.41	10.34
Knowledge *	28.46	10.60	25.62	10.97

* $p < .01$

Agreement with the testimony and credibility ratings were also explored with supplementary analyses to evaluate if any of the nodding variables coded (as described above) were significantly related to these variables. Preliminary results showed no relation between total number of nods during the session and ratings of agreement. A visual examination of rates of agreement plotted by total number of nods with a loess line imposed on the data showed a general trend towards a negative relation when the number of nods was less than 60, and a positive relational trend when the nods were greater than 60 (see Figure 1.). As a result, correlational analyses were run separately for participants with less than 60 nods ($n = 38$) and greater than 60 nods ($n = 47$). The correlation including participants with less than 60 nods, as predicted by the visual examination of the data, showed a negative relation, but this relation was not significant ($r = -.28, p = .092$). The correlation including participants with greater than 60 nods showed a significant positive relation ($r = .30, p = .042$) (see Table 7). Given that the expert testified for 116 seconds during the video excerpt, the rate of 60 nods is approximately one nod every two seconds for the duration of the video.

To further explore the curvilinear relation between number of nods and ratings of credibility, a polynomial regression was conducted. The regression analysis included the centered variable of total number of nods, and the squared polynomial term of total number of nods. Results of the regression analysis showed that there was not a significant polynomial relation between total number of nods and agreement ($F[2, 80] = 2.207, p > .05$), therefore the relation is described in the discussion using the correlational analyses.

Table 7
Correlations between number of Nods and Agreement Ratings (n = 83) (Pearson's r)

Number of Nods	<i>R</i>
Total Nods	.140
Less than 60	-.277
More than 60	.297*

* $p < .05$

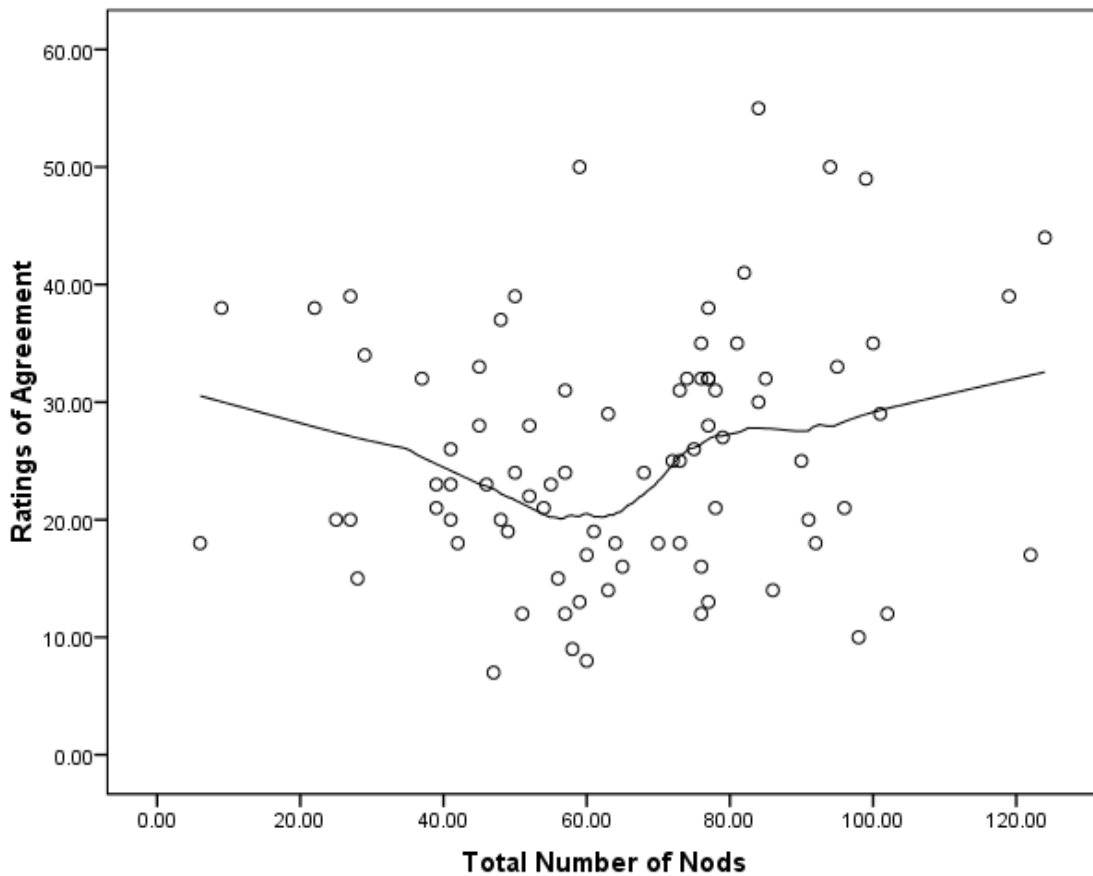


Figure 1. *Ratings of Agreement with the Testimony by Total Number of Nods*

A visual examination of credibility ratings plotted by total number of nods with a loess line showed a different type of relation. Rather than having a negative relation, then a positive relation as the number of nods increased, there appeared to be a general positive relation between number of nods and credibility ratings across the data (see Figure 2.). A correlational analysis showed a significant positive relation between total number of nods and ratings of credibility ($r = .30, p = .006$). There were also significant positive relations between total number of nods and

the subscales of likeability, and knowledge. The subscale of trustworthiness was approaching significance ($r = .21, p = .057$), but ratings of confidence was not significantly correlated with total number of nods (see Table 8).

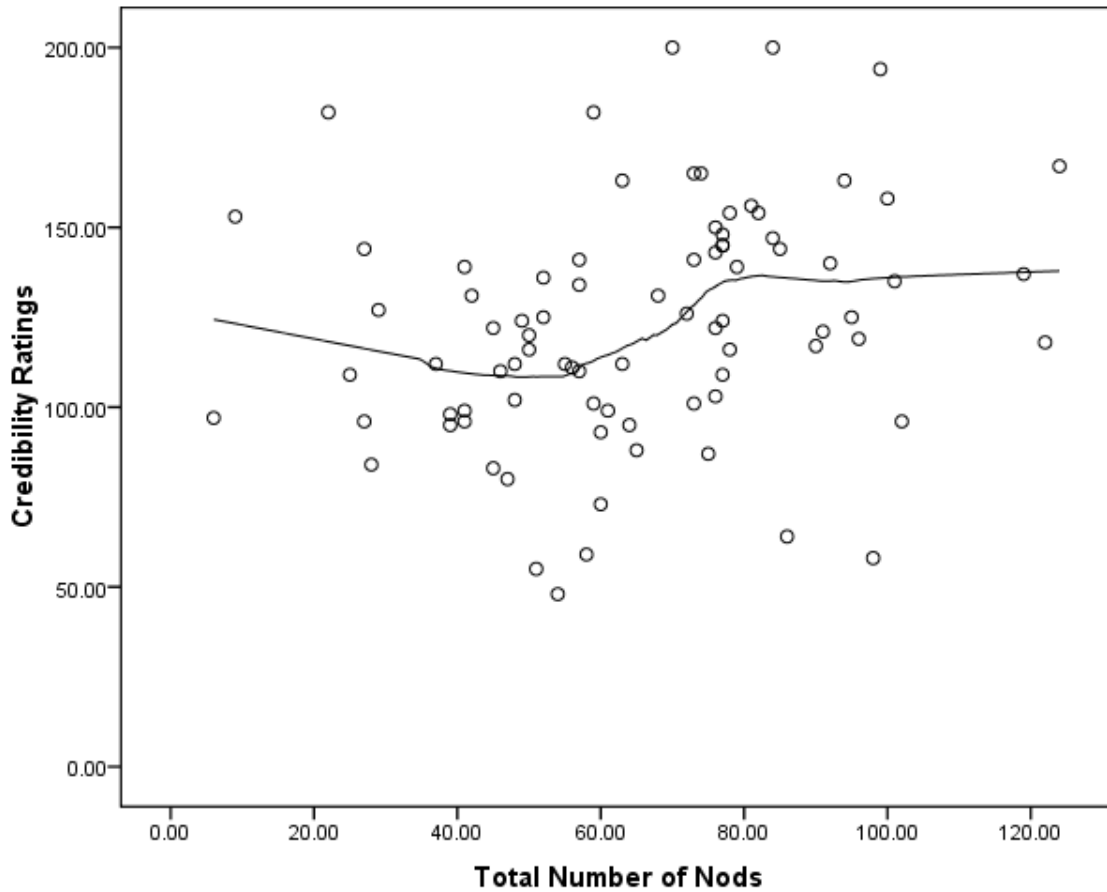


Figure 2. *Ratings of Credibility of the Expert by Total Number of Nods*

Table 8
Correlations between Credibility Ratings and Total Number of Nods (n = 83) (Pearson's r)

Scale	R
Credibility	.297**
Likeability	.333**
Confidence	.179
Trustworthiness	.210
Knowledge	.247*

* $p < .05$

** $p < .01$

Effect of Condition on Agreement and Credibility

For hypothesis 4, it was expected that as the number of mock jurors who nodded their head increased (15 versus 50 percent condition), the approval ratings and ratings of the expert credibility of the expert would also increase. This prediction was based on the influence of peripheral cues on individual's perceptions of messages (Cacioppo et al., 1996). Contrary to the hypothesized relation between condition and agreement with testimony, there was no significant relation between the variables, either when including all subjects in the analyses or when only including those individuals in sessions conducted by the primary researcher. Similarly, there were no significant effects of condition on ratings of expert credibility (see Table 4 for ANOVA results and Table 9 for means).

To ascertain if there were any significant differences between the sections of the jury box and the number of individuals that were instructed to nod, supplementary analyses were conducted. In these analyses, the participants were categorized into quadrants based on where they were located in the jury box (i.e. front of the room, front row; back of the room, front row; front of the room, back row; and back of the room, back row). Results of the between subject ANOVAs showed no significant relations between placement of the juror, nodding, and

condition on ratings of agreement with the testimony or credibility, in either the groups with all of the participants or groups run by the researcher. Similarly, the back versus the front row were compared using the same nodding and condition variables. Results again showed no significant relation between row and agreement or credibility ratings in either group.

Interaction Effects of Condition and Nodding

Hypothesis 5 predicted that individuals who were in the 50 percent condition and spontaneously nodded during the viewing of the expert witness testimony would have the highest rates of agreement with the testimony and ratings of expert credibility. However, given that there was no spontaneous nodding during the study, this hypothesis was modified to predict that those who were instructed to nod in the 50 percent condition would have the highest ratings of agreement and credibility. This hypothesis was investigated by analyzing the interaction between nodding and percentage of people nodding in that condition with the dependent variables of interest being agreement with the expert's testimony and credibility ratings of the expert.

Results of the analyses showed that when all the subjects were included, there was a significant interaction effect between nodding and condition ($F[1, 234] = 5.66, p = .018$) with ratings of agreement as the dependent variable. There was no significant interaction when the analysis only included the participants who were in groups run by the researcher; however, an exploration of the means showed a similar pattern to that of the significant interaction in the analysis with all the participants (see Figures 3 and 4). An examination of the estimated effect sizes using the *partial eta squared* for each of these analyses showed that the interaction had a small effect size ($\eta_p^2 = .024$) when all subjects were included in the analysis, and the analysis with only subjects the researcher ran did not have enough power to detect this effect. There was

no significant interaction between condition and nodding on ratings of expert credibility in either the groups run by the primary researcher or the research assistant (E2) (see Table 4 for ANOVA results and Table 9 for means).

Table 9
Means for Agreement and Credibility by Condition (ANOVA)

	15 Percent Condition				50 Percent Condition			
	Nodding		Non-Nodding		Nodding		Non-Nodding	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agreement								
E1 ^a	31.20	9.08	25.27	12.44	28.05	11.27	25.76	10.13
All	29.41	10.09	23.16	12.28	24.56	10.51	26.35	11.40
Participants ^b								
Credibility								
E1	138.50	26.04	120.95	28.52	130.93	33.79	119.27	28.82
All	129.35	30.06	116.44	31.96	121.15	33.10	122.50	32.93
Participants								

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 139$).

^b All participants ($n = 238$)

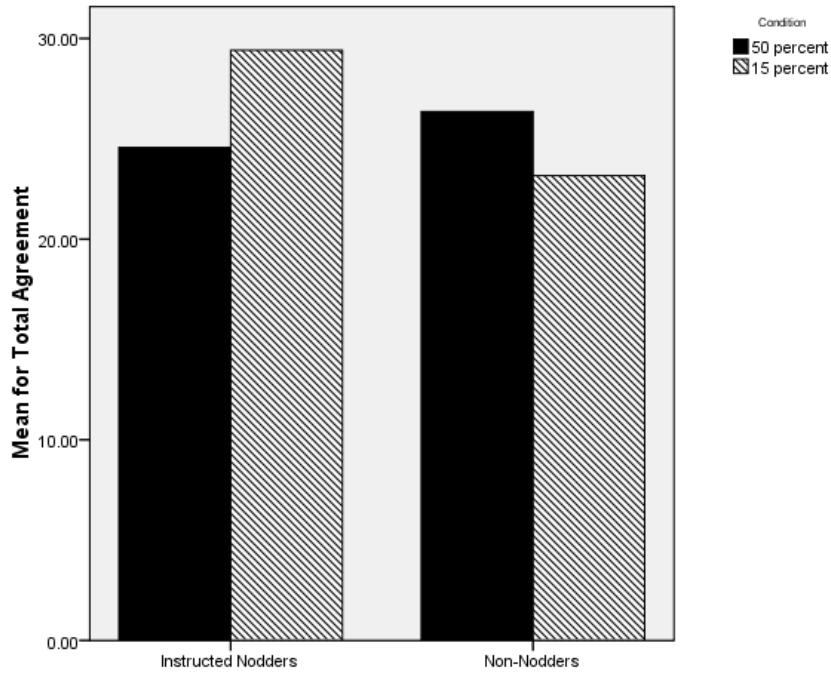


Figure 3. Means for Agreement by Condition and Nodding versus Non-Nodding with All Participants Included

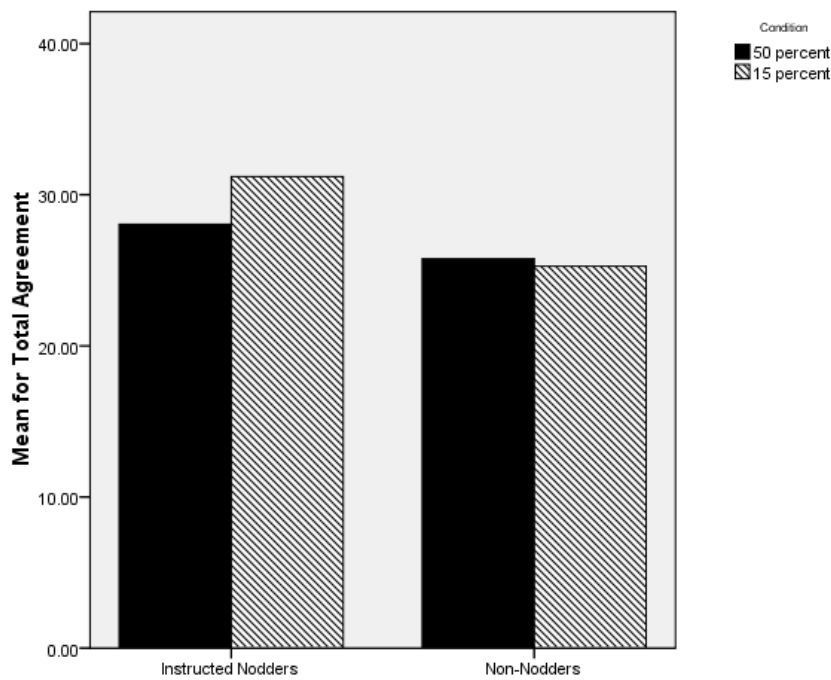


Figure 4. Means for Agreement by Condition and Nodding versus Non-Nodding with Only Subjects Run by the Researcher

A between subjects ANOVA was used as a supplementary test to ascertain if the interaction effect seen could be an artifact of differences in number of nods between the 15 and 50 percent conditions. In this model the independent variables were condition and instructor, with the dependent variable being the total number of nods. The results showed that there was a significant main effect of instructor ($F[1, 79] = 10.07, p = .02$), but there was no main effect of condition, or an interaction effect between condition and instructor that would account for the interaction effect seen above between condition and whether or not the individual was instructed to nod.

Exploratory Hypotheses

Similar to the limitations on the primary analyses due to a lack of spontaneous nodding by participants in the study as described above, exploratory hypotheses 7, 9, and 10 could not be analyzed.

Nodding and Need for Cognition

Research has shown that individuals low in need for cognition tended to process information peripherally (Cacioppo et al., 1996). Therefore, according to hypothesis 6, it was expected that individuals low in need for cognition would evidence higher ratings of agreement with the expert and expert credibility than those high in need for cognition, particularly in the 50% nodding condition. In contrast to the prediction, the General Linear Model results showed no significant interaction between nodding, need for cognition, and the number of individuals nodding in the condition, on either ratings of agreement with the testimony or credibility of the

expert witness. This result was the same for both the groups run by the research and the research assistant (E2) (see Table 10).

Table 10
General Linear Model Results with Need for Cognition

Source	<i>df</i>	<i>F</i>	η_p^2	<i>p</i>
Agreement				
E1^a				
Nodding (N)	1	1.55	.01	.215
Condition (C)	1	.01	< .01	.931
NFC	1	.08	< .01	.779
N X C X NFC	3	.14	< .01	.936
error	132	(1.30)		
All participants^b				
Nodding (N)	1	.02	< .01	.888
Condition (C)	1	.16	< .01	.692
NFC	1	.11	< .01	.745
N X C X NFC	3	1.02	.01	.384
Error	231	(1.36)		
Credibility				
E1^a				
Nodding (N)	1	4.04	.03	.047*
Condition (C)	1	.47	< .01	.493
NFC	1	.46	< .01	.499
N X C X NFC	3	.85	.02	.471
error	132	(915.85)		
All participants^b				
Nodding (N)	1	.26	< .01	.608
Condition (C)	1	.03	< .01	.854
NFC	1	.04	< .01	.849
N X C X NFC	3	.52	< .01	.668
Error	230	(1070.70)		

Note: Values in parentheses represent mean square errors.

^a E1 indicates sessions of the study conducted by the primary researcher (*n* = 139).

^b All participants (*n* = 238)

**p* < .05

Supplementary analyses demonstrated that there was no significant relation between need for cognition and agreement or credibility, and no relation between number of nods and need for

cognition, in either groups conducted by the researcher or the assistant (E2). In supplementary analyses, need for cognition was also separated into a dichotomous variable based on a split at the mid-point of the NFC scale (high or low). The same findings of a non-significant relation between need for cognition and agreement and credibility was found with the dichotomous variable (see Table 11).

In a series of T-tests with the dichotomous variable of need for cognition and the four components of the credibility scale, with a Bonferroni correction applied ($\alpha = .013$), it was found that need for cognition was approaching significance in relation to likeability of the expert ($t(235) = 2.39, p = .017$), with those low in need for cognition reporting higher rates of expert likeability ($M = 31.14, SD = 9.37$) than those high in need for cognition ($M = 27.76, SD = 10.27$) when all subjects were included in the analyses. Need for cognition was not significantly related to confidence, trustworthiness, or knowledge. There was no significant relation between the four components and need for cognition in only the groups run by the researcher.

There was also a significant negative correlation between need for cognition and how in favor the participant was of the death penalty ($r = -.14, p = .034$) when need for cognition was analyzed as a continuous variable with all participants included in the analysis, but not when it was analyzed as a dichotomous variable. However, in the groups run by the researcher, there was no significant relation between need for cognition and how in favor of the death penalty the participant was with either the continuous or dichotomous variables (see Table 11).

Table 11
Correlations with Need for Cognition

Scale	<i>r</i>
E1 ^a	
NFC continuous	
Credibility	.01
Agreement	-.04
Total Nods	.11
How in favor of Death	-.14
NFC Dichotomous	
Credibility	-.04
Agreement	-.04
Total Nods	.08
How in favor of Death	-.12
All Participants ^b	
NFC continuous	
Credibility	-.06
Agreement	-.06
Total Nods	.09
How in favor of Death	-.14*
NFC Dichotomous	
Credibility	-.11
Agreement	-.08
Total Nods	.01
How in favor of Death	-.12

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 139$).

^b All participants ($n = 238$)

* $p < .05$

The relation between need for cognition and sentencing decisions in the case were also explored. Need for cognition was approaching significance in relation to sentencing decisions when explored as a continuous variable in a General Linear Model with all subjects included ($F[1, 234] = 3.70, p = .055$), but not as a dichotomous variable. Analysis of a graph of the data showed a trend that those lower in need for cognition sentenced the defendant to death, whereas those higher in need for cognition sentenced him to life in prison (see Figure 5). There was no

significant relation with either the continuous or dichotomous need for cognition variable in sessions run by the researcher.

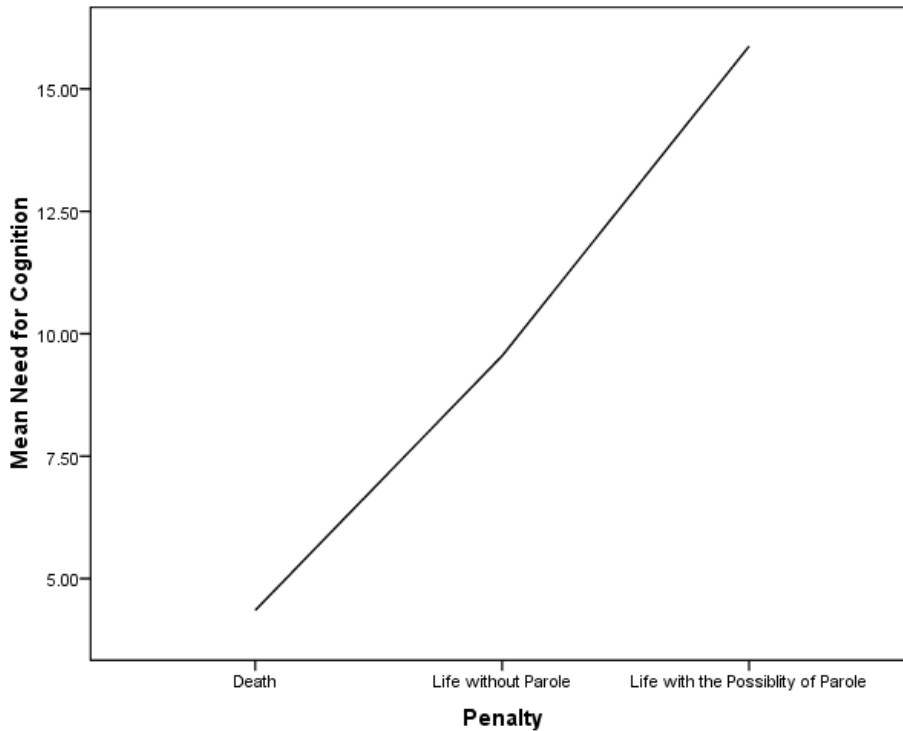


Figure 5. Sentencing Decision by Need for Cognition

Locus of control and Sentencing Decisions

Research has demonstrated that individuals with an external locus of control tended to give less harsh sentences than those with a more internal locus of control (Osborne, Rappaport, & Meyer, 1986); therefore, this same pattern was expected in the current study. Contrary to the prediction, the General Linear Model analysis showed there was no significant relation between locus of control and sentencing decisions, in either the groups run by the researcher or the

research assistant³ (E2) (see Table 12). The relation between locus of control and how in favor the individual was of the death penalty was explored in a supplementary analysis. Results of the correlational analysis showed no significant relation between the two variables. This result was consistent for both the groups run by the researcher and the assistant (E2). In additional supplementary analyses, the locus of control variable was dichotomized into high or low locus of control based on a median split of the data. Results of analyses using this locus of control variable showed no significant relation with sentencing decisions (see Table 12), but was approaching significance with regards to how in favor of the death penalty the participant rated themselves ($F[1, 206] = 3.37, p = .07$) when all subjects were included, but not in the groups only conducted by the primary researcher (E1).

³ In the locus of control analyses the subjects who were excluded from all other analyses based on not being considered “death qualified” were included. Otherwise, the range of responses would have been significantly limited.

Table 12

GLM Results for Locus of Control and Sentencing Decisions (Life, Life without Parole, or the Death Penalty)

Source	<i>df</i>	<i>F</i>	η_p^2	<i>p</i>
Continuous				
E1 ^a				
Locus of Control	1	1.89	.10	.172
error	142	(.27)		
All participants ^b				
Locus of Control	1	1.85	< .01	.175
Error	246	(.25)		
Dichotomous				
E1 ^a				
Locus of Control	1	.47	< .01	.495
error	142	(.27)		
All participants ^b				
Locus of Control	1	.45	< .01	.502
Error	246	(.25)		

Note: Values in parentheses represent mean square errors.

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 151$).

^b All participants ($n = 263$)

* $p < .05$

Supplementary Analyses: Demographic Variables and Nodding, Agreement, and Credibility

In an effort to explore further the data and factors associated with rates of agreement and credibility, the relation between demographic factors and the dependent variables was explored. Results of between subjects ANOVAs showed that there were no significant affects of the ethnicity or gender of the participants on ratings of agreement with testimony or ratings of expert credibility. This finding was the same in both groups run by the researcher and the assistant (E2) (see Table 13).

The relation between proportion of females in each mock jury session and ratings of agreement and credibility were also explored. There was no significant correlation between percentage of female jurors and ratings of credibility ($r = -.092, p > .05$). There was a significant negative correlation between percentage of female jurors and ratings of credibility when analyzed as a correlation ($r = -.15, p = .02$); however, when analyzed in a multiple regression analysis including the variable of whether the group was conducted by the researcher or a research assistant, the relation was no longer significant ($t(235) = -.44, p > .05$). Therefore, this relation appears to have been an artifact of instructor.

Table 13
ANOVA Results for Demographic Variables, Agreement, and Credibility

Source	<i>df</i>	<i>F</i>	η_p^2	<i>p</i>
Agreement				
E1 ^a				
Ethnicity	3	1.04	.02	.383
Gender	1	.40	< .01	.533
error	132	(1.29)		
All participants ^b				
Ethnicity	3	.90	.01	.441
Gender	1	.01	< .01	.938
Error	230	(1.38)		
Credibility				
E1 ^a				
Ethnicity	3	.19	< .01	.904
Gender	1	.01	< .01	.943
Error	132	(966.60)		
All participants ^b				
Ethnicity	3	.22	< .01	.883
Gender	1	.09	< .01	.765
Error	230	(1080.32)		

Note: Values in parentheses represent mean square errors.

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 139$).

^b All participants ($n = 238$)

* $p < .05$

A correlational analysis was also conducted to explore the relation between age and ratings of agreement and credibility. Given that there were significant differences found in age between groups run by the researcher and the research assistant (E2), these groups were analyzed separately. When all of the subjects were included, there was a significant relation between age and ratings of credibility ($r = .18, p = .01$) and was approaching significance with ratings of agreement with the testimony ($r = .12, p = .07$). When the groups run by the instructor were analyzed separate from the groups run by the research assistant (E2), there was no effect of age. It appears, therefore, that the effects of age on agreement and credibility were likely artifacts of instructor and when the data was collected by the researcher versus the research assistant (E2) (i.e. spring of academic year with the researcher versus fall of academic year with the research assistant E2).

Table 14

Correlations with Age

	<i>r</i>
E1 ^a	
Credibility	.16
Agreement	.06
E2 ^b	
Credibility	.18
Agreement	.16

^a E1 indicates sessions of the study conducted by the primary researcher ($n = 139$).

^b All participants ($n = 99$)

* $p < .05$

The influence of gender and ethnicity on total number of nods, speed of nodding, and the quality of nodding was explored. Despite all of the participants who displayed nodding having

been instructed regarding rate and quality of nodding, it was possible that there would be ethnic or gender differences in nodding based on previous observations (Erickson, 1979; Helweg-Larsen, et al., 2004). Results of a MANOVA analyses showed that there were no significant differences between genders ($F[3, 78] = 1.62, p > .05$) or ethnicities ($F[6, 156] = 1.13, p > .05$)⁴ on total number of nods, speed of nodding, or ratings of the quality of nodding .

⁴ One individual was excluded from analyses as he was the only nodding participant in his ethnic group and he had an abnormally high rate of nodding (i.e. 119 nods total).

DISCUSSION

Nonverbal behaviors are an important component of interpersonal communication. In particular, the act of head nodding is thought to be a powerful signal of agreement with and approval of the message conveyed by an individual (Helweg-Larsen et al., 2004; Stivers, 2008). Head nodding may be particularly applicable to the courtroom setting where jurors are not allowed to speak, but can convey messages nonverbally. In fact, it is believed that the nonverbal behaviors of jurors, such as nodding, may be a more accurate representation of their true feelings and attitudes than verbal responses elicited (Lieberman & Sales, 2007). There are many anecdotal accounts of expert witnesses and attorneys looking for head nodding by jurors as a signal that the information they are presenting is being accepted by the juror, and that they are in agreement with the position being argued (Aron et al., 1996). This perception of positive emotions conveyed by jurors through head nodding towards the individual is often believed to translate into adopting the position of the individual, and voting in a manner consistent with their position in the case.

Previous research has shown that head nodding in an affirmative manner while hearing a message leads to higher ratings of approval for the content of that message (Wells & Petty, 1980; Brinol & Petty, 2003), and to higher rates of agreement with the testimony of an expert, and perceptions of expert credibility (Brodsky et al., 2006, March). The present study sought not only to expand upon the work by Brodsky et al. (2006, March), but also to increase the ecological validity of the study by limiting the study session size to what would be expected in

an actual jury setting, and modifying the nodding instructions to only have the participants nod while the expert was speaking. This study also attempted to induce spontaneous nodding by jurors, so that perceptions of non-instructed nodding could be examined; however, this did not occur. Additionally, although the issue of nodding affecting attitude change in the individual who is nodding had been explored in the literature, what had not been investigated was the influence of the head nodding of jurors on their fellow jurors.

The purpose of the present study was to combine overt head movement with social influence and conformity. In order to accomplish the goal of integrating these two areas of research, the number of participants who were instructed to nod in a condition was manipulated, and both the effects of nodding on the individual and those around them were measured. Having a number of individuals performing an act has been shown to facilitate that behavior in others (Allport, 1924; Cialdini, 2001) and to influence perceptions (Axsom et al., 1987); therefore, the purpose of the present study was to ascertain if these same effects would be present in the jury box setting when jurors nodded their head.

Death Qualification in the Current Study

To create verisimilitude between what would actually occur in a death penalty trial in a courtroom, and the mock trial in the current study, those individuals who would not be considered “death qualified” were removed from analyses in the current study. “Death qualification” is a process whereby individuals who may be seated on a jury in a death penalty case go through voir dire regarding their attitudes towards the death penalty. According to the decision in *Witherspoon v. Illinois* (1968), any juror who would not consider all the evidence in deciding guilt and punishment could be excluded from death penalty juries for cause (Butler & Moran, 2002). In *Wainwright v. Witt* (1985) the Court further decided that those who, because of

their strong beliefs about the death penalty, would be significantly impaired in deciding the case are excludable from the jury (Butler & Moran, 2002).

Based on the *Witherspoon* and *Witt* decisions, any participants who asserted that they would not be able to set aside their anti-death penalty attitudes in making decisions about the mock case were excluded from analyses. Removal of these participants did not significantly affect any of the analyses conducted. Additionally, there were no significant differences in ethnicity, gender, or age between the “non-death qualified” individuals and those who were included in the analyses.

Experimenter Effects in the Current Study

There was observed to be significant differences between the groups run by the primary researcher and the groups run by the research assistant (E2) in the present study. The research assistant (E2) was part of the project from the beginning of data collection and was aware of the hypotheses of the study. Prior to the assistant (E2) running sessions of the study on her own, the researcher worked closely with the assistant to ensure she understood the process of the study sessions. The preparation for the research assistant to conduct sessions on her own included the researcher modeling the nodding instructions to the assistant (E2) several times to ensure consistency of administration, having the assistant (E2) model the instructions for the researcher, having the assistant participate in several study sessions, and the research assistant (E2) observing administration of the nodding instructions to a group of participants. Despite these precautions, there were differences between the amount, rate, and quality of nodding observed between sessions run by the researcher and the assistant (E2). Therefore, it appears that experimenter effects were a significant factor in the present study.

Chow (1995) described a set of factors known as *Social Psychology of the Psychological Experiment* (SPOPE), which compromise the integrity of experimental research data. Among these factors are experimenter effects, subject effects, and demand characteristics (Chow, 1995). According to the SPOPE perspective, the outcome of experimental research data is always influenced by who the experimenter is, and who the subjects are (Chow, 1995). The responses of subjects in research can be influenced by the personal characteristics and expectations of the experimenter, the individual characteristics of the subjects themselves, and by the “perceived roles entertained by the experimenter and subjects, the subjects' desire to ingratiate with the experimenter, and rumors about the experiment” (Chow, 1995, p. 273). Subjects’ responses may also be influenced by demand characteristics where the individual is willing to participate in meaningless tasks as a result of being in an experiment, although Chow (1995) argues there is little evidence to support demand characteristics as being significant factors in experimental research.

Research has supported the influence of experimenter on the responses of subjects. In particular, the sex of the experimenter has been found to interact with the sex of the participant and their level of extroversion on cognitive tasks (Gralton, Hayes, & Richardson, 1979); the perceived high-status of an individual has been shown to influence the “motive attribution” of participants, where acts are perceived more favorably the higher the status (Deutsch, 1961); the race of experimenter was found to influence biofeedback performance (Freeman, Gonzalez, & Montgomery, 1983); and the age of the experimenter has been found to differentially influence responses (Lewis & Harder, 1988). Of particular interest in the current study are the studies showing differences in the effect of experimenter with regards to status and age.

Lewis and Harder (1988) investigated the ability to induce mood states experimentally using the Velten (1968) instructions. Subjects were randomly assigned to one of two female researchers who gave standardized instructions in administration of the mood induction. Lewis and Harder (1988) found that there was a significant three-way interaction between the mood being induced, the sex of the participant, and the age of the experimenter. Although the effect was not significant, it was found that male participants reported more depressed mood to the younger of the female experimenters than did the female participants. The authors hypothesized that age of the experimenter was a factor in the study, and suggested a larger scale examination of this effect.

In the current study, age may have been a significant factor as well. The researcher was approximately seven years older than the primary research assistant (E2), chronologically, and the age difference may have been even more pronounced given that the primary research assistant (E2) appeared younger than her stated age. The research assistant (E2) reported that she is often mistaken for someone 18 years-old, and has had difficulty being viewed as an authority figure. It was possible that because of the young appearance of the research assistant (more consistent with the age of the subjects in the study than was the researcher), the subjects did not view her in the role of authority figure, but rather as a peer; and therefore perhaps were not as invested in performing as instructed.

In addition to the issues of age, it is possible that differences in subject responses were influenced by authority and status (i.e. Deutsch, 1961) through the presence of the primary researcher at the study session. The name of the primary researcher was included on the information sheet regarding the study, and many of the subjects were aware that they were being given instructions by the researcher (i.e the researcher introduced herself to the participants, and

had contact with many of them via email prior to the study to answer questions). Therefore, the participants in the groups led by the researcher may have tried to ingratiate themselves (Chow, 1995), or may have felt increased pressure to perform as instructed.

Despite the wording of the nodding instructions being standardized across conditions and experimenters, there was also the possibility that there were differences in the presentation of the nodding instructions through tone of voice, inflection, emphasis, and example of appropriate nodding technique. The issues described above, either alone or in combination, may have contributed to the experimenter effects seen in the present study. The experimenter effects resulted in differences in number, rate, and quality of nodding, which resulted in discrepancies between ratings of agreement and credibility between the participants run by the two instructors. Given these systematic differences, it is appropriate to look at the results of the groups run by the researcher separate from the other subjects, in addition to the overall results of the study, when looking for the effects of the manipulation of head nodding on the participants' responses.

Nodding in the Courtroom

Spontaneous Nodding

Given the anecdotal accounts that nodding by jurors is common when experts are testifying, it was expected in the current study that there would be spontaneous nodding by the participants. Contrary to expectations, there was no spontaneous nodding. This unexpected result may be explained by the purpose of the nonverbal behavior of nodding.

According to Helweg-Larsen et al. (2004), nodding is a signal of agreement with, and approval of, a message conveyed by an individual. Stivers (2008) further asserted that nodding acted as a nonverbal aid to the listener in "claiming access" to the story, and conveying a sense to the speaker that the listener will affiliate with their position. Nodding can therefore be seen as

a reciprocal type of communication where there is a giver and a receiver of information. It is reasonable to assume that the spontaneous nodding did not occur in the present study because the participants were asked to view a video of testimony by an expert, rather than observing an expert giving testimony in person. Therefore, since there was no interaction with another human which would facilitate or necessitate a nodding response, no spontaneous nodding occurred.

The Influence of Nodding on Perceptions of Credibility and Agreement with Testimony

Brodsky et al. (2006, March) pioneered the research on the influence of nodding on perceptions of expert witness testimony. They found that by instructing mock jurors to nod, the jurors' perceptions of expert credibility and agreement with the testimony of the expert were affected. The present study replicated many of their findings, but also added information regarding the differential effects of number, rate, and quality of nodding on ratings of expert credibility and agreement with testimony.

A number of findings regarding changes to the previous nodding paradigms were found. First, this study attempted to show that a more likely scenario of having a juror nod only while listening to the testimony of an expert, rather than continuously nodding, would have a similar positive effect on ratings of the expert testimony that were seen in the Brodsky et al. (2006, March) study, as well as the previous findings in the overt head movement literature (Wells & Petty, 1980; Brinol & Petty, 2003). This general finding was supported in the current study when the participants collected by the researcher were examined. There were significant effects of nodding on ratings of credibility of the expert, and the ratings of agreement with the expert were approaching significance with this modification to the original nodding paradigm. This shows that even if the nodding is not continuous at the rate of one nod per second (Wells & Petty, 1980; Brinol & Petty, 2003; Brodsky et al., 2006, March), there is still a marked effect on

perceptions. However, the non-significance of the analyses with all the subjects in the study showed that there has to be at least some consistency in the nodding to create this effect (i.e. the nodding in groups run by the research assistant (E2) were not consistent enough to induce the overt head movement effect).

In a closer examination of nodding and the effect on ratings of agreement, it was found that there was a negative relation up to the point of 60 nods, and a positive relation when there was equal to or greater than 60 nods by the participant during the study session. The 60 nods during the study session roughly translated to one nod every two seconds. This result demonstrates that when the nodding rate is at least one nod every two seconds, even if the nodding is not continuous, there is a positive effect on perceptions of agreement.

Viewed through the framework of the self-validation hypothesis (Brinol & Petty, 2003), one could argue that this nodding pattern shows that when a participant nodded less than 60 times, or at a rate of less than one nod every two seconds, they perceived their attitude relevant thoughts as invalid; therefore, resulting in decreased belief in those thoughts, and decreased ratings of agreement. The negative relation also shows that the more nods up to the point of 60, the more salient the invalidity of the perceptions; which would explain why someone with only a few nods would have higher rates of agreement than someone with 59 nods. This result also explains why there was a type of “backfire” effect in the groups run by the research assistant (E2) where ratings of agreement were lower for those instructed to nod than the individuals not given any instruction regarding nodding. The nodding in these groups was less consistent, and therefore was likely less self-validating.

However, at the 60 nod point, or one nod every two seconds, the positive effects of overt head movement on attitude change (Wells & Petty, 1980; Brinol & Petty, 2003) appear to have

occurred. At this higher rate of nodding, the thoughts that the individuals' had regarding agreeing with the testimony were favorable and considered valid. Therefore, as predicted by the self-validation hypothesis (Brinol & Petty, 2003), the vertical movements of the participants' head served as an internal cue of the validity of their own thoughts, and in turn had a strong impact on positive attitudes regarding agreement with the testimony.

Based on the relation between nodding and agreement with the testimony, it would be expected that ratings of credibility of the expert would follow the same pattern. In contrast, there was found to be a positive linear relation, with no significant changes at the 60 nod mark. This dissimilarity in patterns suggests that nodding differentially influences agreement and credibility. In fact, although it would be predicted that nodding would have a stronger effect on agreement (Wells & Petty, 1980; Brinol & Petty, 2003), it appears from the results of this study and the Brodsky et al. (2006, March) study, that nodding has a stronger impact on credibility than on agreement.

When the multiple facets that comprise the creditability scale were examined with the total number of nods, it was found that in particular, nodding influenced how likeable and knowledgeable they judged the expert to be. Judgments of trustworthiness were also approaching significance. Tom et al. (1991) showed that head nodding by a participant increased preference for a previously neutral object; therefore, in the current study, perhaps the nodding created a preference for the message of the expert and a "liking" of the expert, which translated into ratings of credibility, but not necessarily ratings of agreement. It was also possible that nodding served as a peripheral cue of the validity of positive thoughts regarding the credibility of the expert, consistent with the self-validation hypothesis, and in turn the participant believed the expert to be more knowledgeable and trustworthy to be in congruence with their valid, positive

thoughts (but again, not necessarily with agreement with the testimony). Brinol, Petty, and Tormala (2004) demonstrated that the credibility of a source can influence the confidence the individual has in the validity of their own thoughts regarding a persuasive message. In particular, a high credibility source can result in increased persuasion towards a message over a low credibility source (Brinol, Petty, and Tormala, 2004; Tormala, Brinol, and Petty, 2006), and this appears to have occurred in the current study as well.

Social Conformity, Social Facilitation, Social Proof, and Nodding

Based on the conceptual framework of social conformity (Asch; 1956; Campbell & Fairey, 1989), social facilitation (Allport, 1924), and social proof (Cialdini, 2001), it was expected in the current study that having a higher number of people nodding in a study session would result in increased ratings of expert witness credibility and agreement with the testimony. It was predicted that having a large number of individuals performing an act (such as nodding), would increase the normative conformity pressure on the individuals not given any instruction regarding nodding, and having a small number of individuals nodding would increase the informational conformity pressure (Campbell & Fairey, 1989). Additionally, social proof (Cialdini, 2001) would predict that since the courtroom environment is an unfamiliar situation for most individuals, and that the participants in the study would be similar to one another in many ways, that the jurors would look to one another for how to act in the situation. Therefore, it was hypothesized that there would be higher rates of agreement when there was 50 percent of individuals nodding as opposed to the 15 percent of individuals nodding. In contrast to the prediction, there were no significant effects of condition (15 or 50 percent) in this study. There are several possible explanations for why this effect was not found.

First, as stated above, social proof works particularly well when the individual is in an unfamiliar situation or environment (Cialdini, 2001). It was believed that having the mock courtroom setting and having the individuals participate as jurors would create this ambiguous situation. However, this component may not have been produced in the study because the participants were all required to participate in other research studies as part of the fulfillment of their Psychology 101 requirement. Additionally, it was possible that the subjects had experience with other juror decision-making studies, since at least one other study co-occurring with this study involved juror decision-making. Secondly, despite trying to create the unfamiliarity of a courtroom environment, the study sessions were held in two of the commonly used classrooms on the university campus. Without this effect of ambiguity, one of the major requirements for a social proof effect was not met; thereby, not creating the type of environment necessary for a conformity effect to occur.

It is also possible that there was not an effect of condition because the participants were so focused on the video tape of the expert that they did not notice the head nodding by the other participants. Participants were instructed to pay close attention to the video and act as if they were real jurors in the mock case. From the videotapes of the participants, it appeared that almost all of the subjects were extremely attentive to the video, and did not look around the room at the other participants during the video. Tessler et al. (1983) found that the more the subjects attended to a stimulus, the less they responded to conformity, which is consistent with the findings of this study. Additionally, only six of the 303 participants even reported noticing the nodding by others; which may have been in part due to nodding being such a normative behavior. Therefore, if the participants did not notice the nodding because they were attending to the expert's testimony, or did not attend to the nodding because it is such a normative

behavior, and were naïve to the manipulation in the study, it would be unlikely that they would notice any conformity pressures introduced by the nodding manipulation.

Although there was no significant effect of number of individuals instructed to nod in a condition, there was found to be an interaction between whether or not the individual was instructed to nod, and the condition (15 versus 50 percent), on ratings of agreement with the testimony. This interaction effect was in the opposite direction from what would be predicted by social conformity, social facilitation, and social proof. Rather than a higher number of individuals nodding in a condition having a facilitative effect with ratings of agreement, it had a negative effect. This type of opposite effect may be best explained by looking at the conceptual framework of the Flexible Correction Model (Petty & Wegner, 1993; Wegner, 1994; Wegner, Kerr, Fleming, & Petty, 2000).

According to the Flexible Correction Model (FCM; Petty & Wegner, 1993; Wegner, 1994; Wegner & Petty, 1995; Wegner et al., 2000), in some situations individuals have an initial reaction to a judgment, and then after identifying possible sources of bias for this judgment, make efforts to correct for this perceived bias. In identifying the source of bias, the individual creates what are termed “naïve theories” about what factors of the situation could be introducing bias into their beliefs (Petty & Wegner, 1993; Wegner & Petty, 1995; Wegner et al., 2000). The individual then uses these theories to avoid or remove the possible sources of bias (Petty & Wegner, 1993; Wegner & Petty, 1995; Wegner et al., 2000). The amount and direction of the correction for bias depends on many factors, including: the degree of the bias the individual perceives; the direction of the bias (i.e. in either a positive or negative direction); and the salience of the biasing factor (Wegner et al., 2000).

Wegner et al. (2000) asserted that the FCM is applicable to the situation jurors' face when they are part of a court case. In particular, jurors are asked to set aside their personal biases and beliefs when serving on a jury, and therefore, they have to assess their own sources of prejudice and work to avoid or correct for those biases (Wegner et al., 2000). In the present study, the participants were instructed several times to act as if they were a juror in an actual court case, which may have created this same type of demand to correct for any biases when making decisions in the mock court case.

It is likely that the instructed head nodding by individuals in the study was recognized as a possible biasing factor by the nodding participants in their assessment of agreement with the expert witness. In particular, the nodding manipulation would be especially salient to those instructed to nod in the fifty percent condition, since they were both aware of the manipulation, and there were many more people nodding in that condition than in the fifteen percent. The salience of the biasing factor of nodding, combined with the instructions given to the participants to act as if they were jurors, likely explains the interaction effect seen between condition and instructed nodding when all subjects in the study were analyzed. The ratings of agreement with the testimony of the expert were lower by those instructed to nod in the fifty percent condition, than in the fifteen percent condition; therefore, it appears that when the biasing factor of the instructed nodding was more salient, there may have been a downward correction of scores in an effort to remove the perceived bias created by the head nodding. This same type of pattern was also seen in the data collected by the primary researcher, but was not statistically significant.

Efforts to correct for bias were not seen in an interactive effect with condition and nodding on ratings of credibility of the expert. Nodding of one's head is a well-known and powerful signal of approval and agreement with a message (Helweg-Larsen et al., 2004; Stivers,

2008), but is not widely associated with signaling judgments of the credibility of a source. Therefore, it appears that the participants perceived the nodding as a biasing factor on agreement with the testimony, but not as a factor in their ratings of credibility; and therefore did not make efforts to correct for this potential source of bias.

Although it is possible that jurors noticing other jurors nodding while in the actual courtroom environment could be perceived as a biasing factor in need of correction, it is less likely in that scenario than in the one created during the current study. All of the nodding in this study was generated through instruction, rather than through spontaneous nonverbal communication efforts. It is likely that the manipulated context of the nodding is what created the belief in the participants that there was a factor that may bias their ratings of agreement with the expert. However, in the real-world jury environment, the nodding by jurors would be self-generated, and therefore would be less likely to trigger the biasing correction predicted by the FCM.

Nodding and the Influence of Demographic Variables

Differences in nodding quality (minimal versus energetic) were expected between the different ethnic groups, and particularly between white and black individuals given the more minimal nodding movements by black individuals (Erickson, 1979). There was also expected to be more nodding by female participants than males given the findings by Helweg-Larsen et al. (2004). These predictions were based on the natural nodding movements that would be observed in spontaneous nodding; however, in the current study there was only instructed nodding. The participants who were instructed to nod were given specific direction regarding the rate and quality of nodding; and therefore, the natural differences seen in nodding between genders and ethnicities were not found in this study.

Personality Variables and Nodding

Need for Cognition

Peripheral kinesthetic cues have been shown to have a significant influence on the perceptions of a message in individuals low in motivation to think critically and process information with effort (Axsom et al., 1987). The literature has also shown that information is considered more favorable when the source is deemed to be more likeable or credible (Wilson & Sherell, 1993). It was anticipated that nodding would serve as a type of peripheral kinesthetic cue and would affect the ratings of agreement and credibility of the expert, particularly in those who were low in need for cognition. Contrary to the predictions in this study, need for cognition did not show any significant effects on ratings of agreement or credibility, regardless of whether the participant was in the fifteen or fifty percent condition. There was, however, a significant relation between need for cognition and ratings of likability, where individuals low in need for cognition had higher ratings of likability of the expert, which is consistent with the literature (Wilson & Sherell, 1993). Although those low in need for cognition found the expert more likable, that did not translate into significantly higher ratings of agreement with the expert.

It is possible in the current study, as described above, that the nodding by fellow participants was not widely noticed. If the peripheral kinesthetic cue is not noticed, it is unlikely that perceptions of the individuals not instructed to nod would be influenced by this cue. Therefore, it appears that the nodding by participants did not serve as a strong cue to the participants who were not instructed to nod, and did not persuade their opinions regarding agreement with the testimony or credibility of the expert; with the exception of those low in need for cognition reporting higher rates of liking the expert.

The negative relation found between need for cognition and how in favor of the death penalty the individual participant was, and the relation that was approaching significance between sentencing decisions and need for cognition (where low need for cognition individuals more often sentenced the defendant to death), are consistent with the findings of Butler and Moran (2007b). Their study demonstrated that individuals who were “death qualified” tended to have lower need for cognition than individuals who would not be considered “death qualified.” Butler and Moran (2007b) also found that death qualified individuals tended to be less critical of information presented by an expert witness, and therefore were more likely to consider evidence that contained biased information. They further argued that this uncritical consideration of evidence in capital cases puts the defendant at a serious disadvantage (Butler & Moran, 2007b). The findings of the current study and the Butler and Moran (2007b) study have implications for jury selection. It would appear that selecting jurors with higher need for cognition, but still death qualified, would be in the best interest of defendants in capital trials.

Locus of Control

Locus of control is commonly thought of as a personality characteristic describing why some people actively try to handle negative circumstances, and others give in to the negative emotions of a situation (Lefcourt, 1991). Previous research regarding locus of control in the legal system has found that those with an internal locus of control gave significantly more harsh sentences than those with an external locus of control (Osborne, Rappaport, & Meyer, 1986) and that those who had a more internal locus of control were more likely to be death qualified than individuals who were not death qualified (Butler & Moran, 2007a). It was predicted that there would be the same type of effect of locus of control on sentencing decisions; however, this was not observed in the current study. The finding that there were no significant relations between

locus of control and sentencing decisions was contrary to what was found in the Osborne, Rappaport, and Meyer (1986) study; however, the finding that locus of control was approaching significance in relation to how in favor of the death penalty the individual rated themselves is consistent with the Butler and Moran (2007a) study showing that individuals with a more internal locus of control were more likely to be death qualified. It appears from these results that selecting jurors with a more external locus of control, but still death qualified, would be most beneficial for the defendant in a capital trial.

Implications

The overall findings of the present study have a number of implications for the growing body of knowledge regarding overt head movement and attitude change. First, the results replicated the findings of Brodsky et al. (2006, March) that head nodding by jurors influenced perceptions of expert credibility and agreement with the testimony of the expert. However, this study further showed that changes to the previous nodding paradigms of having continuous nodding at the rate of one nod per second, could still affect attitude change. Namely, the examination of number of nods showed that intermittent nodding at the rate of approximately one nod every two seconds had significant effects. It is possible that this more sporadic and inconsistent rate of nodding could be shown by an actual juror in a trial, and that the nodding could have similar positive effects on agreement with the testimony and perceptions of credibility. Additionally, the findings with regards to the positive relation between number of nods and credibility showed that even a small number of nods (i.e. six or more) had positive effects on perceptions of credibility. This likely has implications in the actual jury setting, where a small number of inconsistent nods would be more likely than consistent nodding. A further

exploration of how number of nods differentially influences perceptions would be a worthwhile endeavor, and may have implications for the nodding by actual jurors.

Second, although the results did not show any significant differences between when there was “a little nodding” versus “a lot of nodding” on the panel (i.e. 15 versus 50 percent), likely due to a lack of attention to the nodding by other participants, this result adds to the research regarding the importance of attention to the stimuli in order for conformity pressures have an affect (Tessler et al., 1983). Third, the interaction effects seen between nodding and the number of individuals nodding in a condition showed that the act of head nodding can be perceived as a factor introducing bias into the perceptions of an individual, and can trigger that individual to correct for the perceived bias (Wegner et al., 2000). This effect should be considered in all studies regarding head movement and attitude change, particularly if there is more than one nodder per session. Finally, the results of the need for cognition and locus of control variables with regards to favorable attitudes towards the death penalty showed that these are important factors when selecting a jury in a capital sentencing trial. It appears from the results that selecting jurors with a higher need for cognition, and a more external locus of control, will be the most beneficial combination of personality attributes for the defendants in capital trials.

Limitations of the Present Study

One of the greatest limitations in the current study was the inconsistent performance on nodding seen as a result of the effects of experimenter. Given this systematic difference, the data had to be separated based on whether the instructor of the session was the primary researcher, or if the analysis was exploring the entire group of subjects. This parceling led to a more limited sample size for many analyses, since most of the effects seen in the study were observed only in the groups run by the primary researcher, where there were more “good noddors.” Although

there were a number of effects detected and explored in the current study, it is possible that the limited sample size in the groups run by the researcher did not have enough power to detect some of the smaller effects in the study (i.e. potential effects of condition).

The lack of observed spontaneous nodding is another limitation of the present study. This study attempted to induce spontaneous nodding so that information regarding un-instructed nodding in a jury-type setting could be observed and measured. This type of nodding would be more comparable to that which is seen in the actual courtroom setting, rather than a laboratory setting. Given that spontaneous nodding did not occur, the generalizations of the present study to nodding in the courtroom environment are limited.

Another limitation involves issues of measurement. Although the credibility measure developed in the Expert Witness Testimony Research Lab has demonstrated reliability and validity in a number of studies conducted by the lab, it is a relatively new, and not yet widely used instrument. Additionally, the measure of agreement with the testimony, while judged to be an internally consistent measure in this study, has only been used in one other study (Brodsky et al., 2006, March), and has not been published or accepted by the research community. Therefore, the validity of this instrument as a comprehensive measure of agreement with testimony has not been researched.

A final limitation involves the inclusion of non-death qualified participants in the study sessions. In the actual court setting, jurors who were not “death qualified” would not be able to participate as a juror or hear any testimony in the case. Although there is no reason to believe that the anti-death penalty attitudes of the 25 jurors who were excluded from analyses affected the perceptions of any of the other participants (i.e. because this study did not include

deliberation or any other verbal communication between the mock jurors), excluding those jurors before the study would have been more comparable to what occurs in an actual jury setting.

Future Areas of Research

The findings in this study suggest many avenues of continued research on head nodding, and in particular head nodding by jurors. Our understanding of what head nodding means in the context of the courtroom is still in its infancy, despite nodding being a frequently observed and noted nonverbal communication by jurors. One of the main limitations of this study's applicability to the real courtroom setting was the lack of spontaneous nodding observed. Future studies should focus on creating an environment where spontaneous nodding is likely to occur. For example, in the current study, the expert testimony was viewed via video rather than in person as a real juror would. Without having a person present in the courtroom and connecting with the jurors, there was not the same type of demand for reciprocal nonverbal communication; and therefore no spontaneous nodding. It is more likely that a study where there was an actual person testifying before the jury would create an environment where nodding would occur. This study could be done using the same script as the current study, and having actors play the roles of attorney and expert in the room with the jury. It would also be interesting to add a condition of no instructed nodding, in addition to the fifteen and fifty percent conditions, to gauge if there is any differences in spontaneous nodding across these three conditions when a live expert is testifying.

Although there was no effect of condition in the current study, there remains the possibility that social conformity pressures from head nodding are present in the jury box setting. It is possible that the number of individuals nodding in the session did not have an effect because the nodding was not noticed, or because the nodding towards a video seemed unnatural to the

naïve participants. A future study, such as the one described above using actors for the attorney and expert, may want to revisit the issue of condition since it is more likely that the nodding would seem appropriate in that study situation. Additionally, the jurors in that type of study may look around the courtroom more and notice the nodding as they switch their gaze from the attorney to the expert as each of the actors speaks.

Finally, another interesting avenue of research suggested by this study is a further exploration of how number and quality of nodding influences perceptions. Perhaps nodding should not be viewed as a dichotomous, “yes or no,” variable, but rather a continuous variable where the number of nods has differential effects on the individual. It would be interesting to manipulate the number of nods an individual makes during an experiment, and see if there are the same curvilinear patterns with rates of agreement as seen in this study. Varying the rate of nodding by the participants, such as clustering the nods into sets of three nods, would also likely elucidate the differing effects of nodding on perceptions, and would increase the verisimilitude of the study to what is actually observed in the courtroom setting.

REFERENCES

- Allport, F. H. (1924). Response to social stimulation in the group. In F. H. Allport (Ed.), *Social Psychology* (pp. 260-291). Hillsdale, NJ: Earlbaum.
- Aron, R., Fast, J., & Klein, R. B. (1996). *Trial Communication Skills*. Deerfield, IL: Clark Boardman Callaghan.
- Asch, S. E. (1956). Studies of independence and submission to group pressure: I. A minority of one against a unanimous majority. *Psychological Monographs*, 70(9, Whole No. 417).
- Axsom, D., Yates, S., & Chaiken, S. (1987). Audience response as a heuristic cue in persuasion. *Journal of Personality and Social Psychology*, 53(1), 30-40.
- Bornstein, B. H. (1999). The ecological validity of jury simulation: Is the jury still out? *Law and Human Behavior*, 23(1), 75-91.
- Bray, R. M., & Kerr, N. L. (1982). Methodological considerations in the study of the psychology of the courtroom. In N.L. Kerr & R. M. Bray (Eds.), *The Psychology of the Courtroom* (pp. 287-323). New York: Academic Press.
- Brightman, V. J., Segal, Asl. L., Werther, P., & Steiner, J. (1977). Facial expression and hedonic response to taste stimuli. *Journal of Dental research*, 56, B161 (Abstract).
- Briñol, P. and Petty, R.E. (2003). Overt head movements and persuasion: A self-validation analysis. *Journal of Personality and Social Psychology*, 84, 1123-1139.
- Brinol, P., Petty, R. E., & Tormala, Z. L. (2004). Self-validation of cognitive responses to advertisements. *Journal of Consumer Research*, 30(4), 559-573.

- Brodsky, S.L., Griffin, M.P., Stevens, J., & Blackwood, H. (2006, March). Head nodding in jurors and expert witnesses. Paper presented at the meeting of the American Psychology-Law Society, St. Petersburg, FL.
- Buck, R., Loslow, J. I., Murphy, M. M., & Costanzo, P. (1992). Social facilitation and inhibition of emotional expression and communication. *Journal of Personality and Social Psychology*, 63(6), 962-968.
- Burgoon, J. K., Buller, D. B., & Woodall, W. G. (1996). *Nonverbal Communication: The Unspoken Dialogue*. New York: Harper & Row.
- Butler, B., & Moran, G. (2002). The role of death qualification in venirepersons' evaluations of mitigating and aggravating circumstances in capital trials. *Law and Human Behavior*, 26(2), 175-184.
- Butler, B., & Moran, G. (2007a). The impact of death qualification, belief in a just world, legal authoritarianism, and locus of control on venirepersons' evaluations of aggravating and mitigating circumstances in capital trials. *Behavioral Sciences and the Law*, 25, 57-68.
- Butler, B., & Moran, G. (2007b). The role of death qualification and need for cognition in venireperson's evaluations of expert scientific testimony in capital trials. *Behavioral Sciences and the Law*, 25, 561-571.
- Campbell, J. D., & Fairey, P. J. (199). Informational and normative routes to conformity: The effect of faction size as a function of norm extremity and attention to the stimulus. *Journal of Personality and Social Psychology*, 57(3), 457-468.
- Cialdini, R. E. (1995). Principles and techniques of social influence. In A. Tesser (Ed.). *Advanced Social Psychology* (pp. 257-275). Boston: McGraw-Hill.

- Cialdini, R. E. (2001). *Influence Science and Practice – Fourth Edition*. Boston: Allyn and Bacon.
- Cacioppo, J. T. & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116-131.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119(2), 197-253.
- Cacioppo, J. T., Petty, R. E., & Feng Kao, C. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, 48, 306-307.
- Cacioppo, J. T., Petty, R. E., Feng Kao, C., & Rodriguez, R. (1986). Central and peripheral routes to persuasion: An individual difference perspective. *Journal of Personality and Social Psychology*, 51, 1032-1043.
- Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, 39(5) 752-766.
- Chow, S. L. (1995). In defense of experimental data in a relativistic milieu. *New Ideas in Psychology*, 13(3), 259-279.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences – Third Edition*. Mahwah, New Jersey: Lawrence Earlbaum Associates, Inc.
- Deaux, K. (1985). Sex and gender. *Annual Review of Psychology*, 36, 49-81.
- DeCoster, J. (2002). Using ANOVA to examine data from groups and dyads. <http://www.stat-help.com/group.pdf>. Accessed March 15, 2009.

- DePaulo, B. M. (1992). Nonverbal behavior and self-presentation. *Psychology Bulletin*, 203-243.
- Devine, D., Clayton, L., Dunford, B., Seying, R., & Pryce, J. (2001). Jury decision making: 45 years of empirical research on deliberating groups. *Psychology, Public Policy, & Law*, 7(3), 622-727.
- Diamond, S. S. (1997). Illuminations and shadows from jury simulations. *Law and Human Behavior*, 21(5), 561-571.
- Djikic, M. Chan, I., & Jordan, B. (2007). Reducing memory distortions in egoistic self-enhancers: Effects of indirect social facilitation. *Personality and Individual Differences*, 42(4), 723-731.
- Erickson, F. (1979). Talking down: Some cultural sources of miscommunication in interracial interviews. In A. Wolfgang (Ed.), *Nonverbal Behavior: Applications and Cross-Cultural Implications*. New York: Academic Press.
- Feldman, R. S. (1985). Nonverbal behavior, race, and the classroom teacher. *Theory Into Practice*, 24(1), 45-49.
- Finkel, N. J., & Handel, S F. (1989). How jurors construe “insanity.” *Law and Human Behavior*, 13, 41-59.
- Freeman, F. E., Gonzalez, D., & Montgomery, G. T. (1983). Experimenter effects in biofeedback training. *Journal of Social Psychology*, 119(1), 119-123.
- G Power (1996). General power analysis program [Electronic version]. Retrieved August 2, 2007, from <http://www.psych.uni-uesseldorf.de/aap/projects/gpower/>.
- Gralton, M. A., Hayes, Y., & Richardson, J. T. (1979). Introversion-extroversion and mental imagery. *Journal of Mental Imagery*, 3(1-2), 1-10.

- Griffin, M.P., Brodsky, S.L., Blackwood, H., Abboud, B. & Flanagan, C. Bradsell. (2005, March) The Development of Credibility Scales for Witness Research. Paper presented at the meeting of the American Psychology-Law Society, LaJolla, CA.
- Hall, J. A. (2006). Nonverbal behavior, status, and gender: How do we understand their relations? *Psychology of Women Quarterly*, 30, 384-391.
- Helweg-Larsen, M., Cunningham, S.J., Carrico, A., & Pergram, A.M. (2004). *To nod or not to nod: An observational study of nonverbal communication and status in female and male college students*. *Psychology of Women Quarterly*, 28, 358-361.
- Hetherington, M. M., Anderson, A. S, Norton, G. N. M. (2006). Situation effects on meal intake: A comparison of eating alone and eating with others. *Physiology & Behavior*, 88(4-5), 498-505.
- Hinkle, A. L., Smeltzer, D. J., Allen, C. A., & King, G. D. (1983). The judgments of college students and jurors concerning sanity and guilt of an alleged murder. *The Journal of Social Psychology*, 120, 253-257.
- Hornstein, H. A., Fisch, E., & Holmes, M. (1968). Influence of a model's feeling about his behavior and his relevance as a comparison other on observers' helping behavior. *Journal of Personality and Social Psychology*, 10, 222-226.
- Jones, S. S., & Raag, T. (1989). Smile production in older infants: The importance of a social recipient for the facial signal. *Child Development*, 60, 811-818.
- Kaplan, M. F, & Miller, C. E. (1987). Group decision making and normative versus information influence: Effects of type f issue and assigned decision rule. *Journal of Personality and Social Psychology*, 53, 306-313.

- Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H.T. Reis & C.M. Judd (Eds.), *Handbook of Research Methods in Social and Personality Psychology* (pp. 451-477). London: Cambridge university Press.
- Kassin, S. M., Reddy, M. E., & Tulloch, W. F. (1990). Juror interpretations of ambiguous evidence: The need for cognition, presentation order, and persuasion. *Law and Human Behavior, 14*, 43-55.
- Krauss, D. A., & Sales, B. D. (2001). The effects of clinical and scientific expert testimony on juror decision making in capital sentencing. *Psychology, Public Policy, and Law, 7*(2), 267-310.
- Latane, B. (1981). The psychology of social impact. *American Psychologist, 36*, 343-356.
- Lefcourt, H. M. (1991). Locus of Control. In John P. Robinson, Phillip R. Shaver, & Lawrence S. Wrigthsman (Eds.), *Measures of Personality and Social Psychological Attitudes*, (pp.413-493). New York: Academic Press.
- Leippe, M. R., Eisenstadt, D., Rauch, S. M., & Seib, H. M. (2004). Timing of eyewitness expert testimony, jurors' need for cognition, and case strength as determinants of trial verdicts. *Journal of Applied Psychology, 89*, 524-541.
- Lewis, S. J., & Harder, D. W. (1988). Velton's mood induction technique: "real" change and the effects of personality and sex on affect states. *Journal of Clinical Psychology, 44*(3), 441-444.
- Lieberman, J. D., & Sales, B. D. (2007). *Scientific Jury Selection*. Washington DC: American Psychological Association.

- Melton, G., Petrila, J., Poythress, N., & Slobogin, C. (1997). *Psychological evaluations for the courts: A handbook for mental health professional and lawyers* (2nd ed.), New York: Guildford.
- Moscovici, S. (1980). Toward a theory of conversion behavior. In L. Berkowitz (Ed.). *Advances in Experimental Social Psychology* ((Vol. 13, pp. 209-239). New York: Academic Press.
- O'Brien, J.S., & Holborn, S.W. (1979). *Verbal and non-verbal expressions as reinforcers in verbal conditioning of adult conversation*. *Journal of Behavior Therapy and Experimental Psychiatry*, 10 (3), 267.
- Osborne, Y. H., Rappaport, N. B., Meyer, R. G. (1986). An investigation of persuasion and sentencing severity with mock juries. *Behavioral Sciences and the Law*, 4(3), 339-349.
- Petty, R. E., & Cacioppo, J. T. (1981). *Attitudes and Persuasion: Classic and Contemporary Approaches*. Dubuque, IA: William C. Brown.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In Leonard Berkowitz (Ed), *Advances in Experimental Social Psychology*, Vol 19 (pp. 123-205). New York: Academic Press.
- Petty, R. E., & Wegener, D. T. (1993). Flexible correction processes in social judgment: Correcting for context-induced contrast. *Journal of Experimental Social Psychology*, 29, 137-165.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80(1, Whole No. 609).
- Rucker, D. D., & Petty, R. E. (2006) Increasing the effectiveness of communications to consumers: Recommendations based on elaboration likelihood and attitude certainty perspectives. *Journal of Public Policy & Marketing*, 25(1), 39-52.

- Rugs, D., Kaplan, M. F. (1993). Effectiveness of information and normative influence in group decision making depends on the group interactive goal. *Journal of Social Psychology*, 32(2), 147-158.
- Schegloff, E. A. (1982). Discourse as an interactional achievement: Some uses of 'uh huh' and other things that come between sentences. In D. Tannen (Ed.), *Analyzing discourse: Georgetown University Roundtable on Languages and Linguistics 1981* (pp. 71–93). Washington DC: Georgetown University Press.
- Schuller, R. A., Terry, D., & McKimmie, B. (2001). The impact of an expert's gender on jurors' decisions. *Law and Psychology Review*, 25, 59-79.
- Sears, D. O. (1986). College sophomores in the laboratory: Influences of a narrow database on social psychology's view of human nature. *Journal of Personality and Social Psychology*, 51(3), 515-530.
- Smart, R. G. (1966). Subject selection bias in psychological research. *The Canadian Psychologist*, 7, 115-121.
- Spector, P. E. (1983). Locus of control and social influence susceptibility: Are externals normative or informational conformers. *The Journal of Psychology*, 115, 199-201.
- Starr, V. H., & McCormick, M. (2001). *Jury Selection – Third Edition*. New York: Aspen Law and Business.
- Stivers, T. (2008). Stance, alignment, and affiliation during story-telling: When nodding is a token of affiliation. *Research on Language and Social Interaction*, 41(1), 31-57.
- Tanford, S., & Penrod, S. (1984). Social influence model: A formal integration of research on majority and minority influence processes. *Psychological Bulletin*, 95, 189-225.

- Tesser, A., Campbell, J. & Mickler, S. (1983). The role of social pressure, attention to the stimulus, and self-doubt in conformity. *European Journal of Social Psychology, 13*, 217-233.
- Tom, G., Petterson, P., Lau, T., Burton, T., & Cook, J. (1991). The role of overt head movement in the formation of affect. *Basic and Applied Social Psychology, 12*, 281-289.
- Tormala, Z. L., Brinol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of Experimental Social Psychology, 42*, 684-691.
- Tormala, Z. L., & Clarkson, J. J. (2008). Source trustworthiness and information processing in multiple message situations: A contextual analysis. *Social Cognition, 26*(3), 357-367.
- Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *American Journal of Psychology, 9*, 507-533.
- Uziel, L. (2007). Individual differences in the social facilitation effect: A review and meta-analysis. *Journal of Research in Personality, 41*, 579-601.
- Velten, E. (1968). A laboratory task for the induction of mood states. *Behavior Research and Therapy, 6*, 473-482.
- Wainwright v. Witt, 469 U.S. 412 (1985).
- Wegner, D. T., Kerr, N. L., Flemming, M. A., & Petty, R. E. (2000). Flexible corrections of juror judgments: Implications for jury instructions. *Psychology, Public Policy, and Law, 6*(3), 629-654.
- Wegner, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgment: The role of naïve theories in corrections for perceived bias. *Journal of Personality and Social Psychology, 68*(1), 36-51.

- Wells, G. L., & Petty, R. E. (1980). The effects of overt head movements on persuasion: Compatibility and incompatibility of responses. *Basic and Applied Social Psychology, 1*, 219-230.
- Wilson, E., & Sherrell, D. (1993). Source effects in communication and persuasion research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science, 21*, 101–112.
- Witherspoon v. Illinois, 391 U.S. 510 (1968)
- Wooten, D. B., & Reed, A. (1998). Informational influence and the ambiguity of product experience: Order effects on the weighting of evidence. *Journal of Consumer Research, 7*, 79-99.
- Zajonc, R. B. (1965). Social facilitation. *Science, 149*, 269-274.

APPENDIX A

Transcript of Expert Witness Testimony

"This is the capital sentencing phase of S. Jones Case # 12517. Mr. Jones has already been found guilty of 1st degree murder. The only question before you, the jury, is whether Mr. Jones should be sentenced to death. It must be shown beyond a reasonable doubt that there is *a probability* that the defendant would commit criminal acts of violence that would constitute a continuing danger in society. If this is shown, then the sentence (correction)- the defendant will be sentenced to death. If this is not true the defendant will be sentenced to life in prison."

"Prosecution calls Dr. Jack Hoffman to the stand"

Defense: Dr. Hoffman are you absolutely sure that Steven Jones represents a continuing danger to society?

Expert: I'm reasonably sure. In my field you can never be 100% sure but I've seen enough psychopaths like Mr. Jones to know that he will continue to present a danger to society.

Defense: Well do you know how often clinical psychologist's predictions of dangerousness are actually wrong?

Expert: No, as far as I know I've never been wrong.

Defense: Well, are you familiar with several early studies of dangerousness prediction that showed clinicians were inaccurate in their predictions 1 out of 3 times and other research, which shows that they greatly overestimate this risk of dangerousness?

Expert: Ahh...I think I remember those studies but they suffered from a number of methodological flaws.

Defense: That may be correct but a more recent study has shown that clinicians are accurate just about over 50% of the time when predicting dangerousness are you aware of that study?

Expert: Well I don't know the studies but they did not do them on me.

Defense: So let me be sure I have this correct. Research shows that psychologists are only slightly better than flipping a coin at predicting dangerousness and yet it is your expert testimony that there is a high probability that Mr. Jones presents a continuing danger to society.

Expert: Yes, I do. When you have worked in this area as long as I have you learn to trust your instincts.

Defense: Well isn't it true that the American Psychiatric Association submitted a brief to the United States Supreme Court claiming that mental health clinicians could not accurately predict dangerousness?

Expert: Umm, I am not familiar with that document but I am a psychologist, not a psychiatrist.

Defense: Well, isn't it also true that many members of your field do not believe that dangerousness can be accurately predicted.

Expert: Well, I don't really know the feeling of all psychologists, but I do know that many of them believe the dangerousness can be predicted.

Defense: Have you received any special training in dangerousness prediction?

Expert: I worked at Mountain Correction Facility for over 14 years.

Defense: That's not what I mean. Do you have a degree in forensic psychology?

Expert: No, I have a degree in clinical psychology.

Defense: Well, have you taken any specific training classes on the prediction of dangerousness?

Expert: No, I took all the required courses in clinical psychology.

Defense: So I guess then you are not familiar with decision theory or the cognitive biases psychologists may be influenced by when they attempt to make predictions.

Expert: Well, I am somewhat aware, but I don't see how that is important to my opinion in this case.

Defense: Well, let me attempt to show you. Are you aware that clinicians greatly overestimate the rates of violence in individuals they are predicting to be dangerous?

Expert: No, I don't believe they overestimate violence in that group.

Defense: Do you know what the base rate of violence are or how often violence is likely to occur among similarly situated individuals to Mr. Jones.

Expert: Um, I'm not sure, but I would imagine it is quite a lot.

Defense: Well, what percentage would you say?

Expert: I'm not sure. I would say well over 60%.

Defense: Well, would it surprise you to learn that it is closer to 30 or 40%?

Expert: Uhh...that number is way too low, I'm sure there is something wrong with those studies.

Defense: Well, are you aware that there are scientific instruments that are designed to help clinicians in their prediction of dangerousness?

Expert: Well, yes...I have heard they exist but they are not better than my judgement.

Defense: Well, do you use a dangerousness assessment instrument to aid in your prediction of Mr. Jones' dangerousness?

Expert: No, I don't believe in their usefulness.

Defense: Well, are you aware that many research studies have shown that these instruments are considerably more accurate than predictions of dangerousness based solely on a clinician's expertise?

Expert: No, I told you I don't believe in them. I trust my clinical expertise and not some instrument. Stephen Jones is a psychopath and is a continuing danger to society.

Defense: Well, are you aware that confidence in your judgment has been demonstrated not to be linked to accuracy? Studies have shown that just because your confident doesn't make you more accurate.

Expert: Those again...those are ivory tower studies. I work in the real world and have learned to trust my instincts.

Defense: So you are offering an "expert" opinion as to Stephen Jones' dangerousness and you haven't even used the scientific information that is out there to form your opinion, have you?

Expert: I really on my clinical experience which I got in the real world, where Mr. Jones committed this crime and where he might return if he is not found to be dangerous.

Defense: Well, let me get this straight. You trust your instincts even though research has shown that you may be wrong about half the time, you have no special training in dangerousness prediction, you greatly overestimate the risk of violence in the capital sentencing population, you did not rely on any scientifically derived instrument that has been shown to outperform mere clinical judgments, and your inaccurate opinion might lead to the death of Stephen Jones which can not be taken back or fixed.

Expert: I don't believe my opinions are biased. I have real world experience and I still believe that the defendant represents a continuing danger to society.

Defense: I have no further questions for this witness.

APPENDIX B

Credibility Scale

CS

Instructions: Please rate the *expert witness* for the following items on the scale provided. If you are unsure, please take your *BEST GUESS*. Check the *Appropriate* answer.

Example:

		√							
--	--	---	--	--	--	--	--	--	--

Dressed formally *Dressed Informally*

1.

--	--	--	--	--	--	--	--	--	--

Ill-mannered Well-mannered

2.

--	--	--	--	--	--	--	--	--	--

Inarticulate Well-spoken

3.

--	--	--	--	--	--	--	--	--	--

Not confident Confident

4.

--	--	--	--	--	--	--	--	--	--

Shaken Poised

5.

--	--	--	--	--	--	--	--	--	--

Disrespectful Respectful

6.

--	--	--	--	--	--	--	--	--	--

Unpleasant Pleasant

7.

--	--	--	--	--	--	--	--	--	--

Unfriendly Friendly

8.

--	--	--	--	--	--	--	--	--	--

Untruthful Truthful

9.

--	--	--	--	--	--	--	--	--	--

Illogical Logical

10.

--	--	--	--	--	--	--	--	--	--

Not self-assured Self-assured

11.

--	--	--	--	--	--	--	--	--	--

Uninformed Informed

12.

--	--	--	--	--	--	--	--	--	--

Unscientific Scientific

13.

--	--	--	--	--	--	--	--	--	--

Uneducated Educated

14.

--	--	--	--	--	--	--	--	--	--

Undependable Dependable

15.

--	--	--	--	--	--	--	--	--	--

Untrustworthy Trustworthy

16.

--	--	--	--	--	--	--	--	--	--

Unreliable Reliable

17.

--	--	--	--	--	--	--	--	--	--

Dishonest Honest

18.

--	--	--	--	--	--	--	--	--	--

Tense Relaxed

19.

--	--	--	--	--	--	--	--	--	--

Unkind

Kind

20.

--	--	--	--	--	--	--	--	--	--

Unwise

Wise

APPENDIX C

Need for Cognition Scale

Please rate the following items based on the scale below.

-4	-3	-2	-1	0	1	2	3	4
extremely				uncertain				extremely
inaccurate								accurate

- _____ 1. I would prefer complex to simple problems
- _____ 2. I like to have the responsibility of handling a situation that requires a lot of thinking.
- _____ 3. Thinking is not my idea of fun.
- _____ 4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
- _____ 5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.
- _____ 6. I find satisfaction in deliberating hard and for long hours.
- _____ 7. I only think as hard as I have to.
- _____ 8. I prefer to think about small, daily projects to long-term ones.
- _____ 9. I like tasks that require little thought once I've learned them.
- _____ 10. The idea of relying on thought to make my way to the top appeals to me.
- _____ 11. I really enjoy a task that involves coming up with new solutions to problems.
- _____ 12. Learning new ways to think doesn't excite me very much.
- _____ 13. I prefer my life to be filled with puzzles that I must solve.

- _____ 14. The notion of thinking abstractly is appealing to me.
- _____ 15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
- _____ 16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.
- _____ 17. It's enough for me that something gets the job done; I don't care how or why it works.
- _____ 18. I usually end up deliberating about issues even when they do not affect me personally.

APPENDIX D

Internal-External Locus of Control Scale

Circle which item (a or b) which best describes how you feel

- 1)
 - a) Children get into trouble because their parents punish them too much.
 - b) The trouble with most children nowadays is that their parents are too easy with them.
- 2)
 - a) Many of the unhappy things in people's lives are partly due to bad luck.
 - b) People's misfortunes result from the mistakes they make.
- 3)
 - a) One of the major reasons why we have wars is because people don't take enough interest in politics.
 - b) There will always be wars, no matter how hard people try to prevent them.
- 4)
 - a) In the long run people get the respect they deserve in this world.
 - b) Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
- 5)
 - a) The idea that teachers are unfair to students is nonsense.
 - b) Most students don't realize the extent to which their grades are influenced by accidental happenings.
- 6)
 - a) Without the right breaks one cannot be an effective leader.
 - b) Capable people who fail to become leaders have not taken advantage of their opportunities.
- 7)
 - a) No matter how hard you try some people just don't like you.
 - b) People who can't get others to like them don't understand how to get along with others.
- 8)
 - a) Heredity plays a major role in determining one's personality.
 - b) It is one's experiences in life which determine what one is like.
- 9)
 - a) I have often found that what is going to happen will happen.
 - b) Trusting to fate has never turned out as well for me as making a decision to make a definite course of action.
- 10)
 - a) In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.
 - b) Many times exam questions tend to be so unrelated to course work that studying is really useless.
- 11)
 - a) Becoming a success is a matter of hard work, luck has little or nothing to do with it.

- b) Getting a good job depends mainly on being in the right place at the right time.
- 12)
- a) The average citizen can have an influence in government decisions.
- b) This world is run by the few people in power, and there is not much the little guy can do about it.
- 13)
- a) When I make plans, I am almost certain that I can make them work.
- b) It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
- 14)
- a) There are certain people who are just no good.
- b) There is some good in everybody.
- 15)
- a) In my case getting what I want has little or nothing to do with luck.
- b) Many times we might just as well decide what to do by flipping a coin.
- 16)
- a) Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- b) Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
- 17)
- a) As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
- b) By taking an active part in political and social affairs, the people can control world events.
- 18)
- a) Most people don't realize the extent to which their lives are controlled by accidental happenings.
- b) There really is no such thing as "luck."
- 19)
- a) One should always be willing to admit mistakes.
- b) It is usually best to cover up one's mistakes.
- 20)
- a) It is hard to know whether or not a person really likes you.
- b) How many friends you have depends on how nice a person you are.
- 21)
- a) In the long run the bad things that happen to us are balanced by the good ones.
- b) Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
- 22)
- a) With enough effort we can wipe out political corruption.
- b) It is difficult for people to have much control over the things politicians do in office.
- 23)
- a) Sometimes I can't understand how teachers arrive at the grades they give.
- b) There is a direct connection between how hard I study and the grades I get.
- 24)
- a) A good leader expects people to decide for themselves what they should do.

- b) A good leader makes it clear to everybody what their jobs are.
- 25)
- a) Many times I feel that I have little influence over the things that happen to me.
 - b) It is impossible for me to believe that chance or luck plays an important role in my life.
- 26)
- a) People are lonely because they don't try to be friendly.
 - b) There's not much use in trying too hard to please people, if they like you, they like you.
- 27)
- a) There is too much emphasis on athletics in high school.
 - b) Team sports are an excellent way to build character.
- 28)
- a) What happens to me is my own doing.
 - b) Sometimes I feel that I don't have enough control over the direction my life is taking.
- 29)
- a) Most of the time I can't understand why politicians behave the way they do.
 - b) In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX E

Juror Case Conclusions

Please answer the following questions:

1) Age: _____

2) Gender: Male Female

3) Ethnicity

- a) Caucasian
- b) African-American
- c) Hispanic
- d) Asian-American
- e) Other

Measure of Agreement with Testimony

Instructions: Circle the number that most identifies your answer to the appropriate item below.

Mark only one answer. Your responses should be a result of your subjective and personal reaction. **This is not a rating of the person, but the actual testimony.**

1. How much did you agree with the statements of the expert witness?

1	2	3	4	5	6	7	8	9	10
Disagree fully									Agree fully

2. How much sense did the testimony of the expert witness make to you?

1	2	3	4	5	6	7	8	9	10
Made no sense at all									Made perfect sense

3. How rational was the testimony of the expert witness?

1	2	3	4	5	6	7	8	9	10
Entirely irrational									Entirely rational

4. How inclined are you to believe the testimony of the expert witness?

1	2	3	4	5	6	7	8	9	10
Not at all inclined to believe									Entirely inclined to believe

5. What was your first reaction to the accuracy of the testimony?

1	2	3	4	5	6	7	8	9	10
The testimony was extremely inaccurate									The testimony was extremely accurate

6. How much would you rely on the testimony of the expert witness if you had to make a decision without other evidence being presented?

1	2	3	4	5	6	7	8	9	10
Would be not at all reliable									Would be fully reliable

Sentencing:

1. How in favor of the death penalty are you?

1	2	3	4	5	6	7	8	9	10
Strongly Opposed									Strongly in Favor

2. If you circled 1 or 2 in Question #1, please answer the following question:

Despite your strong opposition to the death penalty, would you have been able to set aside your beliefs and sentence the death penalty if there were more aggravating circumstances than mitigating circumstances? **Please circle your answer.**

YES

NO

Remember that you are to act as if you are a member of a jury in an actual criminal trial. The defendant has already been found guilty of first-degree murder which is a class A felony. With this in mind, and considering all of the evidence presented, what would your sentence be in this case?

_____ Death Penalty

_____ Life imprisonment **without** the possibility of parole

_____ Life imprisonment **with** the possibility of parole

APPENDIX F

Motivational Instructions

Initial Instructions:

During this experiment you will be viewing the testimony of an expert witness. It is your task to view the testimony with the same seriousness and attentiveness as if you were an actual juror in a criminal trial. It is important to the experimenter that you give the testimony you will hear your full attention and listen to the evidence presented, just as an actual juror would. After you hear the short excerpt of cross-examination of the expert, you will be asked to answer several questions relating to the credibility of the expert, the case presented, and your judgments in the case. The information you provide will be of great importance in learning what aspects of expert testimony help to get the information across. This knowledge will be invaluable for future expert witness' as they prepare to present information to juries. Thank you in advance for your attention and cooperation.

Second Instructions:

Now that you have viewed the testimony by the expert witness, it is your task to rate the expert on several characteristics and make some decisions regarding this case. Remember that you are to act as if you were a member of a jury in an actual criminal trial. It is important to the experimenter that you pay close attention to the questions asked and give your responses with careful thought. The information you provide will be invaluable for future expert witness' as they prepare to present information to juries. Thank you in advance for your attention and cooperation.

APPENDIX G

Example of Proposed Positioning of Jurors and Equipment

(50% Condition)

Projection Screen – Expert Witness Video Shown Here

Video
Camera

Numbers underlined and
italicized are jurors
instructed to nod

<u>1</u>	8
2	<u>9</u>
<u>3</u>	10
4	<u>11</u>
<u>5</u>	12
6	<u>13</u>
<u>7</u>	14

(15% Condition)

Projection Screen – Expert Witness Video Shown Here

Video
Camera

Numbers underlined and
italicized are jurors
instructed to nod

<u><i>1</i></u>	8
2	9
<u><i>3</i></u>	10
4	11
5	12
6	13
7	14

APPENDIX H

Information Sheet

You are invited to participate in a research study conducted by Jolene Tupling and Stanley Brodsky, from the University of Alabama Psychology Department. We hope to learn what issues influence jurors' views of experts and expert witness testimony. We also hope to gain a better understanding of how jurors make decisions on verdicts and sentencing recommendations. You were selected as a possible participant in this study because you are a part of the University of Alabama's research pool of introductory psychology students.

The current study is a research project conducted within the University of Alabama's Department of Psychology. If you decide to participate, you will be shown a videotaped excerpt of cross-examination of an expert witness in a criminal trial. You will then be asked to manually complete several questionnaires by paper and pencil, and be asked to think carefully about the material while participating. Your participation within the experiment will consist of one session of approximately one hour in length.

The study is about a criminal trial involving testimony on predictions of the future dangerousness of a defendant who has already been convicted of murder. Some individuals may feel some discomfort while listening to the testimony by the psychology expert witness. There are no other foreseeable risks associated with participating in this study. Other than receiving research participation credit, there are no direct benefits to you for participating, but you will be helping psychologists to learn what aspects of expert testimony help to get the information across to members of a jury.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and in a locked filing cabinet, and will be destroyed once all analyses are completed. You may be videotaped during this study in order for the examiner to gauge your reactions to hearing the expert witness testimony. The videotapes will not be used for any purpose other than research and will not be viewed by people outside of the Psychology Department. There will be no identifying information of any kind on the questionnaires that would allow the researcher, or anyone else, to determine which person completed the questionnaire after the videotape is destroyed.

Your participation is voluntary. There is no penalty of any kind for choosing not to participate. If you decide to participate, you are free to withdraw your agreement and discontinue participation at any time without penalty.

If you have any questions, please feel free to contact either the researcher Jolene Tupling (348-5000) or her supervisor, Dr. Stanley Brodsky (348-1920). If you have questions regarding your rights as a research subject, contact Ms. Tanta Myles, Research Compliance Officer, at 205-348-5152. You will be offered a copy of this form to keep.

Your participation indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw from participation at any time and

discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims.

Name: _____
(Please print your name)

APPENDIX I

Nodding Instructions

You all have been selected to play an important part in this experiment. Participants who were instructed to go in the other room are not being given the same instructions that you are being given right now. Your task is very important in this study. While you are watching the videotape of the expert testimony it is extremely important that you nod your head at the rate of one nod per second while the expert is speaking. Let's practice together: "nod . . .one-one thousand . . . nod . . . two-one thousand . . .nod". . . . You are to only nod your head while the expert is speaking. Do not nod your head while the defense attorney is asking questions. Please continue to give your attention to the testimony of the expert, but make sure you continue to nod your head whenever the expert witness is speaking. Your role in this experiment is vital and the experimenter greatly appreciates your help in this study. Do you have any questions?

APPENDIX J

Demographic Questionnaire

2. What do you think your college major/concentration will be?
 - a) Social science
 - b) Physical science
 - c) Business
 - d) Arts
 - e) Other

3. How many siblings do you have?
 - a) None
 - b) One
 - c) Two
 - d) Three
 - e) More than three

4. Do you have any pets?
 - a) Yes, if so what kind _____
 - b) No

5. How many years were between high school and admission to college?
 - a) Zero
 - b) 1-3 years
 - c) more than 3 years

6. What is your favorite subject in school?
7. What is your favorite type of food?
8. What is your favorite sport?
9. Do you live on campus or off campus?
10. What is your favorite vacation spot?
11. What do you foresee as your future career?

APPENDIX K

Debriefing Statement

The purpose of this study was to gauge individual reactions to hearing expert witness testimony. Another topic of interest in this study was juror reactions to seeing other members of the jury nodding his or her head and whether or not this affected how you perceived the expert testimony. In order to study reactions to head nodding in a courtroom situation I had to ensure that some of the participants in the study would be nodding while listening to the testimony, therefore some of the participants in this study were instructed to nod his or her head while others were not given any instructions regarding head movement. The information you provided will be of great importance in learning what aspects of expert testimony help to get the information across and if jury members nodding their head indicates agreement with or approval of the statements made by the expert. This knowledge will be invaluable for future expert witness' as they prepare to present information to juries. This is a very important project to the researcher and it is important to get the true reactions of other participants to seeing fellow jurors nod, therefore I would greatly appreciate it if you would please not share your specific experiences in this study with other students as this would jeopardize the results of the study.

If you have any questions or concerns over your participation in this study please feel free to ask me at the end of this session or you may contact me, my supervisor, or Ms. Tanta Myles of the Institutional Review Board. This contact information is listed on the information sheet I handed to you at the beginning of the study and is for you to keep. Thank you for your participation in this study.