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Gender differences in levels of suggestibility

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GENDER DIFFERENCES IN LEVELS OF SUGGESTIBILITY

by

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ABSTRACT

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GENDER DIFFERENCES IN LEVELS OF SUGGESTIBILITY

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Dr. Gaer

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This study examined differences in levels of suggestibility with regard to gender
and three personality characteristics (self-esteem, self-monitoring, and social
desirability) and how these differences apply to matters of eyewitness testimony.
A total of 70 undergraduates (37 male, 33 female) completed a memory task
followed by three personality inventories (the Rosenberg Self-Esteem Scale, the
Self-Monitoring Scale, and the Marlowe-Crowne Social Desirability Scale) and
then a questionnaire relating to the memory task. The dependent variable was
number wrong for factual vs. leading questions. More leading questions were
answered incorrectly than factual which was a significant difference. A repeated
measures ANOVA revealed no overall gender differences in levels of
suggestibility, but there were significant differences found independent of gender.
There was a significant difference in the number wrong when compared to
different levels of self-esteem. Those highest in self-esteem answered the most
factual questions correctly and the most leading incorrectly. Data also show

gender differences found with regard to the personality variables tested. Females high in self-monitoring got fewer wrong than males, and males medium and high on social desirability got many more wrong than females medium and high in social desirability.

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LITERATURE REVIEW

Eyewitness accounts of a crime are often a critical factor in criminal investigations. Jurors rely heavily on eyewitness testimony in making their decisions on whether to convict or not convict someone on trial. Research shows that 90% of convictions are found when there is a single eyewitness even without any forensic evidence linking them to the crime and even with an extensive amount of evidence arguing against it (Haber & Haber, 2000). People listening to the testimony of an eyewitness accept what the witness says almost uncritically and Jurors report that they find it very difficult to consider any alternatives to a confident statement made by an eyewitness. Knowing this it is quite frightening that eyewitness identifications often have a false-positive rate of over 25% (Haber & Haber, 2000). When juries convict based on a false-positive, innocent people are sent to prison. The average person, a potential juror, does not realize the fallibility of human memory and often treat it as highly accurate and reliable. They are not aware that eyewitness testimony, or memory in general, is frequently in error.

People have many beliefs regarding their memory and over the years research has come to dispel these beliefs as myths. Research scientists presented 10 statements of beliefs about memory to typical people who might become members of a jury. These people were asked to rate each statement on a 5- point Likert scale ranging from 'Strongly Disagree' to 'Strongly agree.' Most of those asked rated each of the following 10 statements as either agree or strongly agree while most memory experts disagree with each of them.

1. Memory is like a video recording of your observations that can be played back at will.

2. When you are very confident about your memory for an observed event you are more likely to be correct.

3. Memory is stable over time.

4. The memory for what you originally saw can be kept separate from things you learned after observing the event.

5. People's faces stand out when you observe them and it is easy to remember faces.

6. An eyewitness report is accurate evidence as to who was present and what happened.

7. Repeatedly telling the story of an event that happened reinforces it and makes it resistant to change.

8. When a weapon is visible during a crime, witnesses are more accurate in remembering the details of the crime.

9. Personally experienced traumatic events are remembered more accurately then everyday ones.

10. Observed violent events are remembered more accurately then everyday events (Haber & Haber, 2000).

All of the examples were taken from different studies where most of the statements were used in more than one study (Haber & Haber, 2000).

The view that memory acts like a video recorder is quite common among lay people as well as some professionals. This view would hold that experiences are laid down in memory like images on a film and remembering an event involves finding the right segment of film and playing it back. In the 1950's this view gained strong support from the work of Wilder Penfield, a neurosurgeon who electrically stimulated the exposed cortex in patients being operated on for intractable epilepsy (Spanos, 1996). Penfield would apply a mild electric current to certain portions of the temporal lobe and patients sometimes appeared to vividly recollect long-forgotten

memories that unfolded in sequence, as if the electrical stimulation operated as a playback button. It wasn't long before criticism of this theory began. Critics pointed out that the reports from Penfield's patients often consisted of unrealistic elements and much obvious distortion that could not represent accurate memories. Instead of a tape-recorder model Penfield's work seemed more consistent with the notion that memory is essentially reconstructive in nature (Spanos, 1996).

What we remember is a reconstruction of events influenced by factors such as expectations, mood states, information obtained since the original experiences, attitudes, current concerns, and other dynamic psychological factors. This was first developed by Bartlett (1932). Bartlett had a series of influential studies where he would ask subjects to read a complex but ambiguous story and then have subjects recall the story at various time intervals. The best known was "The War of the Ghosts." He found that, during recall, subjects were adding details that were never in the original story, but that make intuitive sense. In other words, remembering the story was not a matter of "playing back" information from the story that was stored in memory. Instead it involved constructing a story that included some of the elements of the original, but that was also shaped in terms of the subjects' implicit understandings and cultural categories. They included details and sequences that made intuitive sense to them based on the subjects' implicit, culturally derived expectations. Bartlett's (1932) notion that recall is influenced by such factors as expectation and psychological set is now well established and numerous studies have indicated that variables like expectation can distort as well as facilitate recall (Spanos, 1996).

As we have just reviewed, the human memory is quite variable and mis-remembering an event could be the result of a variety of factors (Spanos, 1996). These factors could affect one's memory before the event took place, such as during encoding or after the event during repeated

interviews and questioning. Multiple eyewitnesses often give different descriptions of the same event. Differences in reports from witnesses can arise from differences in how the individuals have encoded the event into memory. There are five factors that might lead witnesses to make or remember different observations of the same event. These factors lead to a decrease in encoding accuracy and are all having to do with the witness him/herself. These factors are:

1. The observational point of view of the witness.

2. The attentiveness of the witness.

3. Any special attentional focus that might reduce the breadth of a witnesses observations.

4. The witness's familiarity with the event and its details

5. The witness's expectations about what occurred and his/her understanding of its meaning (Haber & Haber, 2000).

The first three factors are governed by the characteristics of the scene itself while numbers 4 and 5 are determined by the background and experiences of the individual witnesses. An individual's observational point of view refers to one's physical location during the event. Were they face down on the floor? Were they viewing the event from across the street? How was the lighting? Were they wearing glasses needed for adequate vision? Basically, did the witness have sufficient opportunity to view the event from their position? (Haber & Haber, 2000)

The attentiveness of the witness during an event refers to the focus of the witness's attention at the time the event took place. At any given time the vast majority of events that occur do so outside of our attention and as a result nothing can be initially retained of those events, and therefore there can never be any subsequent recall of those events. The focus of one's

attention is essential in remembering an event as it will never be encoded into to memory if no attention is given. Focusing your attention greatly improves the amount and quality of information you pick up from the specific stimulation on which your attention is focused; but that focus reduces the amount you pick up from the rest of the scene. What you encode as an observer depends on where your attention is focused, not just where you happen to be looking (Haber & Haber, 2000).

At any given moment an individual is focused on matters of greatest importance to them. This is usually quite broad so most of the components of an event fall within the range of your attention. Often however, some aspects of an event cause a narrowing of your attention to some particular detail, so much so that the other parts of the event are not attended to at all, and therefore not encoded into memory. Scientific research on "weapon focus" for example, has shown that when a weapon is present, witnesses are far less able to remember distinctive features of the people present, including those of the person holding the weapon because the witness concentrates on the weapon and therefore has poor recall of other details. As a result, a witness's chance of making a correct identification of a person are reduced if that person is holding a weapon. The same is true for any highly dramatic, violent, or distasteful component of an event (Wagstaff, MacVeigh, Boston, Scott, Brunas-Wagstaff, & Cole, 2003).

The fourth factor deals with the witness's level of expertise of the event that the witness is reporting on. Events within one's area of expertise are more likely to be accurate then the reports of non-experts. For example, if you were a car expert and knew all kinds of information about the makes and models of cars, you would be able to give a better, more detailed description of a vehicle that sped by then someone who knew nothing about cars who might only be able to report the color (Haber & Haber, 2000).

The last factor that affects encoding accuracy pertains to the individual observer and their beliefs and expectations they use to organize and understand the event being observed. An individual's beliefs can produce fundamental changes in the reports of what was observed. They encode an event to be consistent with their beliefs. These are known as "Bartlett effects" (Haber & Haber, 2000). For example, Haber & Haber (2000) discuss one study concerned with racial prejudice which was conducted by Allport & Postman in 1947. This study asked subjects/witnesses to view a scene depicting two men in which one man held a knife: The witnesses were to describe the scene to other people who had not seen it. The two critical contents of the scene that were varied were whether both men were the same race and which one held the knife. When both men were of the same race, nearly all witnesses correctly described the critical element of who held the knife, as well as most of the details of dress and the position of the two men. However, if one man was Black and one White, most witnesses (Black and White alike) reported that the Black man held the knife even when it was held by the White man. Some witnesses who correctly described who held the knife incorrectly added that the White man was defending himself (there was nothing in either man's posture or position to suggest this conclusion). All of the witnesses stated that they believed that crimes were more likely to be committed by Blacks than by Whites. The results suggest that eyewitnesses sometimes encode and remember the event so as to be consistent with their beliefs rather than the way it actually happened.

We have just reviewed the factors that affect the way an event is encoded into memory if it is encoded at all. Now I will review that factors that cause an eyewitness to change their memory/ their report of an event. These changes are normal and are part of the memorial process. They are completely unintentional and the witness is completely unaware. These four

factors consist of:

1. The wrong focus of autobiographical memory

2. The effects of similar events on the memory of an event

3. Incorporation of post-event information

4. Systematic changes with the repetition of the report of the memory

Memories are very self-serving and very personal. They are autobiographical in nature. You see an event in terms of how it affects you so when you witness something you are not thinking about describing the other people and their actions as you're watching it occur. The memory is formed based on a psychological reality that helps you make sense of the world and yourself, but when you're reporting an event you report in the physical not psychological reality of what happened. You are just reporting the facts. The report, however, is going to be structured around the importance and meanings of the event for the witness themself. All information is remembered from the witness's perspective and point of view so what is reported is not necessarily what happened, it is what happened from the witness's standpoint. Therefore this information may not be very helpful when trying to determine how something took place (Haber & Haber, 2000).

Human beings are creatures of routine and a large part of your life is made up of repeating certain activities. You drive to work and back by the same route, park in the same lot, walk through the same building, perform the same tasks, and interact with the same people. When unique events occur they become interposed among the repetitions that provide the continuity of your life. This continuity has serious implications on your memory. In most instances it prevents you from keeping track of any one particular repeated event. On one end there is what is referred to as the "updating" problem (Bjork, 1978). When doing repetitive acts

like parking your car, for example, you want to remember where you parked your car today, not where you parked it yesterday or last Tuesday. So you need to update or erase the previous memory. Any failures to update will lead to the inability to find your car. People are usually good at updating which is evidenced by one's ability to remember where they parked their car each day and by not acting on the basis of an old memory. A result of this, people are very poor at retrieving earlier "erased" memories. If someone were to ask you where you parked your car two Tuesdays ago, any exact answer is likely to be wrong. Updating effectively erases the unique details of past events from memory.

At the other end of the problems produced by a repetitive life are your difficulties in keeping track of the uniqueness of each almost identical repeated event. For example, you may remember that you saw an unusual and odd looking man on the bus one day last week. But since you ride the bus daily how can you be sure which day that occurred, even when it becomes vitally important to date that unusual occurrence. The answer to that is that you usually can't. Research has shown that human beings have little ability to remember accurately a particular instance of a repeated event, especially its timing (Bjork, 1978).

This loss in marking time does not occur instantly, but only after there have been several further occurrences of the repeating event. At that point all you can remember is whether it occurred recently or distantly in the past and even that disappears with time. Therefore, if a witness claims to remember an accurate time distinction in a routine of repeated events, the memory is likely to be inferred, filled-in, or tainted rather then independent (Bjork, 1978).

Recollections of events can be distorted by misleading post-event information which can create new and potentially false memories. A witness may not be able to accurately recall an event if their memory has been influenced by erroneous post-event information. Research over

the past 25 years has revealed evidence that eyewitness accounts can be distorted by new

information, inconsistent with the original event, that has been encountered somewhere between

witnessing the event and recalling it. From this research two facts have emerged: first, witnesses

are not aware that they have acquired this new information from someone else therefore the

information is treated as it were a part of what they had originally observed; and second,

witnesses are not aware that they have changed their report based on this new information

(Haber & Haber, 2000). The memory of the witness is now considered to be 'tainted,'

'contaminated,' or 'false.' This new information may or may not be accurate, but the point is that

now the witness is unable to distinguish between what they themselves had observed and what

someone else told them. This information could be encountered in a variety of ways such as

assumptions made by police interviewers, overhearing another eyewitnesses accounts of events,

hearing a news report or reading about the event in the paper (Coxon & Valentine, 1997).

Misleading information can permanently alter the memory trace of the original event, deleting

existing trace items and replacing them with misleading items. Another interpretation is that the

misleading information is used to fill in the gaps of the witnesses original memory or that the

two coexist but the original event in formation is irretrievable due to access competition provided

by the misleading information at the time of retrieval (Coxon & Valentine, 1997).

Autobiographical memory for events changes with repetition. From the time an event

occurs to the time an eyewitness reaches the stand and questioned by counsel that witness has

told the story of the event dozens of times. They have been questioned by police officers,

lawyers, the media, and probably several friends and family members. During the repeated

retelling of the event in question the memory becomes tainted and is no longer the same memory

that they had immediately following the event. The first time the memory is recalled is

considered to be the most accurate. This is referred to as an independent memory. A report of a memory is independent when a. the witness has not yet spoken with or listened to anyone else speak about the observed event b. the witness is describing the event for the first time and c. the witness provides the description in the absence of leading questions. An independent memory is normally the most accurate description the witness will ever be able to produce about what they observed. This is because the memory is not yet tainted by post-event information and other people's accounts of the memory that you often, unknowingly, merge with your own (Haber & Haber, 2000). The independent memory is told to whoever first arrives at the scene. It is often unrecorded and by the time it is first recorded it may have already undergone many changes after having several prior rehearsals, each with its smoothing, rearrangements of facts, and attempts to be congruent with what has been learned from other witnesses (Haber & Haber, 2000).

The rehearsals for this witness have only just begun. More than one policeman will require an account of the story, then come the investigators and the lawyers. These interviewers press more for accuracy rather than autobiographical meaning. They all want completeness and are quite intolerant of responses such as "I don't remember that part" or "I'm not sure." In order to avoid being a poor witness and to please the interviewer the witness has to fill in the gaps in the memory (Marsh, 2007).

As memories are repeated many details drop out of subsequent reports and are never reported again. Other details become altered or added to make them fit more consistently with the overall description provided by the observer. Observers often alter their descriptions of an event depending on whom they are speaking to. Each person with whom they speak receives a different version and the witness is rarely aware of the different versions (Haber & Haber, 2000). These retellings are often much different and much more inaccurate then the actual

event/memory. What people tell and how the story is told is highly influenced by whom they are telling it to and their goals. If they are describing the event to friends it is for entertainment and entertaining stories typically have fewer story events and and more intrusions then accurate protocols. They are less accurate and detailed and are more exaggerated and entertaining and contained less factual information (Dudukovic, Marsh, & Tversky, 2004).

The act of simply retelling has consequences on the memory of the event as the simple act of retrieving a memory can change it. Lab studies on retrieval and rehearsal have shown both positive and negative results. Retellings have consequences for how an event is later remembered. More specifically, the perspective taken during the retelling affects the witnesses ability to later remember the original event as it was (Dudukovic, Marsh, & Tversky, 2004). Even retelling to an inattentive listener can have consequences for memory as speakers will shorten their narratives in response to a disengaged audience (Marsh, 2007).

When being interviewed regarding a witnessed event, whether by the police or anyone else involved in a criminal investigation, the expectations of the interviewer are transmitted in various ways and are often a cause of recall error on the part of the interviewee (Peiffer & Trull, 2000). The conveyance of ones expectations during this type of situation is known as suggestion and there is major concern that suggestive aspects of questioning may result in a false memory. The relevance of this concern is supported by the literature on both mis-leading post-events and interrogative suggestibility which I will now review (Peiffer & Trull, 2000). The use of suggestion is very subtle yet very powerful and both the interviewer and interviewee may not realize it is being employed. This could be very detrimental when used during a police interrogation because very often it leads one to mis-remember an event. Leading questions and negative interviewer feedback are just two very common examples of this.

Leading questions increase the likelihood that subjects will answer in line with the question and also impair the recall of accurate information and increase the confidence that the subjects place on their own recall. Consider some findings from recent research on leading questions and suggestibility:

a) Embedding a false presupposition into a question (asking "Did the red car stop or run the light just before the crash?" when the car's color had not been previously specified) will often change the witness's subsequent testimony as to the color of the car; b) varying the intensity of verbs in a question (asking "Did the car hit..., Did the car collide... Did the car smash...Did the car demolish...?") will often change the witness's subsequent testimony about the speed of the car; c) showing a witness line-up pictures of people not involved in the observed event will often result in the   witness subsequently choosing one of those innocent people as the criminal, even when the real criminal is present later in the line-up (Belli & Loftus, 1996).

These are all examples of how a witness can be led through the power of suggestion via misleading questions and post-event information to mis-remember an event. The more authoritative, trustworthy, or believable the source of this leading information the more likely it will be incorporated into the witness's memory thus creating a false memory (Belli & Loftus, 1996).

Interrogative pressure (IP) is any influence applied to interviewees during an interrogation which may interfere with their attempts accurately to recall an event. One such influence is negative feedback—a communication perceived by interviewees to mean that their

answers, or they themselves, are in some sense 'unsatisfactory'. IP may imply or require that the

interviewee should produce more or different information. Direct negative feedback may be less

prevalent in witness interviewing. However, negative feedback can be implicit in the repetition

of questions or in an unsupportive or disapproving interviewer manner (McGroarty & Baxter,

2007).

Gudjonsson and Clark (1986) argued that interviewees receiving negative feedback

would appraise it, then reject or accept it. Rejection of negative feedback may be more likely in a

forensic population (Gudjonsson & Singh, 1984) and may lead interviewees to resist further

suggestions, because they distrust their interviewers. Acceptance of negative feedback can

increase anxiety, temporarily reduce self-esteem and increase interviewees' uncertainty, such

that they come to rely on cues present in the interview rather than on their own recall. Negative

feedback is also likely to increase the 'psychological distance' between the interviewer and

interviewee (Gudjonsson & Lister, 1984). Interviewees who feel socially isolated may be more

anxious and may try to appease interviewers, at the expense of attending to the task of accurate

recall. Negative feedback can evoke a suggestible coping strategy in interviewees, characterized

by susceptibility to further IP and a tendency to change initial responses (Gudjonsson & Clark,

1986).

Over the years much research has been conducted in order to determine if some are more

susceptible to suggestion than others. Much of this research focuses on whether or not people

with certain factors are more suggestible than those without the presence of those factors. A

study by Gudjonsson (1983) administered a new suggestibility test to 45 participants and

compared the results to factors such as intelligence, memory recall, and personality. The findings

suggest that suggestibility was significantly related to low intelligence, poor memory recall,

neuroticism, and social desirability. Another study by Van Hook and Steele (2002) also found similar findings with respect to social desirability. The researchers randomly assigned 101 college students to either an experimental or control condition. They administered the Lindberg Suggestibility Assessment as a measure of memory and suggestibility to both groups followed by a short movie clip. Following the movie the two groups completed questionnaires with leading information on the experimental groups questionnaire. Both groups were then tested for *Ambiguity Tolerance* and lastly took the *Million Index of Personality Styles* which was used to assess personality characteristics. Results indicated that agreeing/social desirability were positively related to suggestibility.

Another factor that emerged from the research is self-esteem. Results of a study conducted on predictors of suggestibility and false-memory production in 103 college age women suggested that young women with low self-esteem may be more influenced by suggestive questions and interpersonal pressure then those with high self-esteem. The authors explained this by the relation between certain aspects of self-esteem and suggestibility. Those with low self-esteem typically feel that they have a low-effectiveness in achievement situations therefore, in the face of criticism or leading content, individuals with low confidence may doubt their own perceptions and opinions, assuming the person offering the feedback is more capable then they are (Peiffer & Trull, 2000). Research by Gudjonsson and Sigurdsson (2003) also found similar results with respect to self-esteem. After administering the Rosenberg Self-Esteem Scale (among others) to their 424 participants the results indicated that low self-esteem and denial coping were the best predictors of suggestibility. One explanation they gave for this is that people with low self-esteem tend to become preoccupied with distressing emotions, which makes them disengage from their goals when under stress.

The final characteristic that I will discuss in regards to suggestibility is Self-Monitoring. The term self-monitoring refers to the idea that people differ in the extent to which they can and do observe and control their expressive behavior and self-presentation (Snyder, 1979). Individuals high in self-monitoring are thought to regulate their expressive self-presentation for the sake of desired public appearances, and thus be highly responsive to social and interpersonal cues of situationally appropriate performances. Individuals low in self-monitoring are thought to lack either the ability or motivation to regulate their expressive self-presentations. Their expressive behaviors then are thought to more reflect their inner states, including their attitudes, traits, and feelings (Snyder & Gangestad, 1986). A study conducted by Bain, Baxter, and Ballantyne (2007) sought to find a relationship between self-monitoring and levels of interrogative suggestibility. The forty participants in this study were given the Self-monitoring scale and the Gudjonsson Suggestibility Scale 1. The results indicated that high self-monitors were more susceptible to interrogative suggestibility then low self-monitors as evidenced in their significantly higher scores on all measures of suggestibility. The authors explained that high self-monitors were more sensitive to the interrogative pressure associated with the administration of these scales.

There has been a lot of research linking the three characteristics just discussed to levels of suggestibility and there has also been some research showing gender differences on these characteristics. Gudjonsson & Sigurdsson, (2003) conducted research to see if there was a relationship between compliance and coping strategies and self-esteem. They administered the Gudjonsson Compliance Scale, the COPE Scale, and the Rosenberg Self-Esteem Scale to 212 men and 212 women. A multiple regression of test scores showed not only that self-esteem and denial coping were the best predictors in compliance, but also that significant sex differences

emerged on all three scales, with women having lower low self-esteem than men. Self-esteem was also the mediating variable for women's higher compliance scores. The sex differences in self-esteem were not surprising as Gudjonsson et al. (2002) found similar sex-differences on the Rosenberg Self-Esteem Scale among Icelandic University students.

A meta-analysis on gender differences in personality also revealed similar results regarding self-esteem. Feingold, (1994) conducted four meta-analysis to examine gender differences in personality in the literature from 1958-1992 and in normative data for well-known personality inventories between 1940 and 1992. In his search he used 25 studies on self-esteem and he found males to have higher self-esteem then females to be consistent in the literature. Kling et al., 1999 conducted a meta-analysis on Gender Differences in Self-Esteem. Two analysis were conducted. The first was a computerized literature search which yielded 216 effect sizes and represented the testing of 97,121 respondents. The overall effect size was .21, a small difference favoring males. It also showed that the largest difference emerged in late adolescence. In the second analysis gender differences were examined using three large, nationally representative data sets from the National Center for Education Statistics (NCES). All of the NCES effect sizes, which collectively summarizes the responses of approximately 48,000 young Americans, indicated higher male self-esteem. The two analyses taken together provide evidence that males score higher on standard measures of self-esteem then females.

A study by McCann, Stewin, and Short (1991) found evidence linking levels of social desirability to a gender. They examined the relationships between worry and sex differences, social desirability, masculinity and femininity. Their participants consisted of one hundred and forty five sophomore students of educational psychology at the University of Alberta. They were all given a questionnaire containing a worry scale, a social desirability measure (Crowne &

Marlowe, 1964), a sex-role inventory, a trait anxiety scale of the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, 1970), and several demographic questions. Results showed that women reported significantly higher levels of worry then men and worry was significantly correlated with lower social desirability. Therefore, women were shown to have lower levels of social desirability than men.

Frazier & Fatis (1980) researched gender differences in self-monitoring. They assessed the self-monitoring styles of 124 male and 128 female undergraduates. Significant differences were observed between the sexes. Males reported greater self-monitoring than females which indicates that females focus more on inner states to mediate behavior while males focus more on environmental and social cues.

PURPOSE OF THE STUDY

Based on the aforementioned research that shows the relationships between social desirability, self-esteem, and self-monitoring to suggestibility and the research that supports the tendency for these three characteristics to be more strongly linked to a particular gender, I am conducting research to see if there are gender differences in levels of suggestibility in regards to memory and how that in turn has an impact on false memories and eyewitness testimony. In congruence with the literature, I hypothesize that high self-monitors, those with low self-esteem, and those who have high social desirability will be more suggestible and will therefore be more likely to have false memories then low self-monitors, those with high self-esteem, and those with low social desirability. Even though the research shows that men are typically higher in social desirability and self-monitoring, (which would make them more suggestible and more likely to create false memories) I hypothesize that women will be more suggestible than men because I feel that the self-esteem factor will play more of a role then the self-monitoring and social

desirability and women typically score lower on measures of self-esteem.

METHOD

Participants

        A total of 70 participants (37 male and 33 female) participated in this study. Participants

were primarily freshmen and sophomore (freshmen= 27, sophomore= 28) undergraduate students

between the ages of 18 and 36. All were enrolled in psychology courses at Rowan University.

All were recruited via the university participant pool and received course credits for participating

in the study.

Design

A 3 x 3 x 2 x 2 repeated measures design was used.

Materials

The *Rosenberg Self-Esteem Scale* (Rosenberg, 1965) measures a person's self-esteem. The scale

consists of 10 positive and negative self-appraisal statements rated on a four-point scale ranging

from strongly agree to strongly disagree. Scores range from 0 to 30 with higher scores reflecting

high self-esteem (See appendix C).

The *Marlowe-Crown Scale-M-C 2(10 items)* (Strahan & Gerbasi, 1972). This scale is a short

form of the M-C 33. It's a ten item true/false questionnaire with statements concerning personal

attitudes and traits that is used to measure social desirability. Scores range from 0 to 10 with

higher scores reflecting high social-desirability (See appendix D).

The *Self-Monitoring Scale* (Snyder, 1974) is a twenty five item true/false questionnaire that

measures meaningful and systematic individual differences implicated in social behavior and

interaction such as self-presentation and expressive behavior. Scores range from 0 to 25 with 25 being a high self-monitor and zero being a low self-monitor (See appendix E).

Procedure

Short-term Memory task

After consent (See appendix A) and demographic forms (See appendix B) were completed I passed out the picture which served as the short-term memory task. The picture is similar to those used in the research of William Stern (1903-1904) (The "old-fashioned farm kitchen" and the "busy street crossing"). The picture contains numerous details to make the tasks more complex, realistic, and interesting (See appendix F). The participants were instructed to attend carefully to the memory task and told to study the picture for one minute. After the minute was up I collected the picture from each of the participants and directed them to move on to the personality inventories.

Filler task/variable testing

I passed out 3 different testing materials; the Rosenberg Self-Esteem Scale, the Self-Monitoring Scale, and the Marlowe-Crowne Social Desirability Scale. Participants were given approximately fifteen minutes to complete all three questionnaires. These were used as both a filler and a measure of my variables.

Questionnaire phase

Questionnaires containing 12 questions; 6 leading and 6 factual questions (all presented at the same time in a mixed order) were passed out. The questions refer to the picture the participants viewed prior to the filler task. The factual questions deal with actual details of the pictures. The leading questions focus on realistic details which, although appropriate in content

were not actually present in the picture. Both types of questions were written in simple, clear language without the use of 'tricky' phrasing (i.e., *Factual* question = "What kind of sport was being played in the picture?" *Leading* question = "How many silos were off in the background?") (See appendix G). Participants were given 5-10 minutes to complete the questions. When all participants finished I collected the questionnaires and debriefed them (See appendix H).

RESULTS

There were a total of 70 participants that participated in each of the three groups. The Social Desirability scores had three levels; Low, Medium and High. The number of participants in each level were Low= 32, Med= 16, and High= 22. The Self-Monitoring scores had only two levels, Low and High. The number of participants in each level were Low= 28 and High= 42. The Self-Esteem scores had three levels, Low, Medium, and High. The number of participants in each level were Low= 3, Med= 21, and High= 46. It is important to note that there is a surprisingly small number of participants in the Self-Esteem Low condition which could account for a skew in the results.

To analyze my data I conducted a repeated measures ANOVA. The results show that overall, there were no significant differences in gender on levels of suggestibility. Therefore, my hypothesis was incorrect. However, there were significant differences found related to factors independent of gender. There was a significant difference found in the amount of factual vs. leading questions answered incorrectly F= 7.664 (1,48), p=.008, effect size= .138, mean factual= 1.327 and mean leading= 2.151. The memory questionnaire consisted of twelve questions (6 factual and 6 leading) and overall, participants answered almost twice as many leading questions

incorrectly. There was also a significant difference found in regards to the variables number wrong x self-esteem F= 3.773 (2, 48), p= .030, effect size= .136, mean factual with low self-esteem= 1.750, factual with medium self-esteem= 1.585, factual with high self-esteem= 1.039, mean leading with low self-esteem= 2.250, leading with medium self-esteem= 2.020, and leading with high self-esteem= 2.239. The higher the self-esteem the more factual questions were answered correctly and also those with high self-esteem had the greatest difference in the number of factual questions answered incorrectly vs. the number of leading questions answered incorrectly (See figure 1). But, as I mentioned above, there was an unusually small number of participants rated with low self-esteem (N= 3) so the results are obviously going to favor one direction substantially more than the other.

While the data did not show differences in gender overall or between gender and individual personality variables, it did show that there were gender differences found in levels of suggestibility with regard to the different personality variables and numbers wrong. There was a significant difference found in regards to gender x self-monitoring x number wrong F= 7.507 (1,48), p= .009, effect size= .135, mean factual x males low in self-monitoring= 1.556, mean factual x males high in self-monitoring= 1.520, mean factual x females low in self-monitoring= 1.113, mean factual x females high in self-monitoring=1.117, mean leading x males low in self-monitoring= 2.500, mean leading x males high in self-monitoring= 2.417, mean leading x females low in self-monitoring= 2.247, mean leading x females high in self-monitoring= 1.500. Men both high and low in self-monitoring got more factual and leading questions wrong than females in all categories. Females low in self-monitoring got many more leading questions wrong then females high in self-monitoring whereas males scored very similarly on all questions (See figure 2). The results also yielded significant differences in gender x social desirability x

number wrong F= 5.965 (2,48), p=.005, effect size= .199, mean factual x males low in social desirability= 1.900, mean factual x males medium in social desirability= 1.500, mean factual x males high in social desirability= 1.111, mean factual x females low in social desirability= 1.273, mean factual x females medium in social desirability= .500, mean factual x females high in social desirability= 1.225, mean leading x males low in social desirability= 2.088, mean leading x males medium in social desirability= 2.475, mean leading x males high in social desirability= 2.944, mean leading x females low in social desirability= 2.367, mean leading x females medium in social desirability= 1.000, and mean leading x females high in social desirability= 1.600. As the level of social desirability increases males' accuracy on the factual questions increases as well while that of females stays roughly the same except for those with medium social desirability, but I suspect that number is very small due to a small number of females in that category (N= 5). For males, the number of wrong answers for the leading questions increases along with the level of social desirability while it decreases for women again, except for those in the medium category (See figure 3).

While the results were not statistically significant, there were also variable interactions that were approaching significance. Number wrong x self-monitoring x social desirability yielded a p value of .074 and an effect size of .103. There was also an interaction between number wrong x social desirability x self-esteem that was approaching significance with a p value of .064 and an effect size of .108. Had the participant size been larger these interactions may have yielded significant results.

DISCUSSION

The main purpose of this study was to investigate whether there were gender differences in levels of suggestibility and, if so, if any of the three personality characteristics that I analyzed

(self-esteem, social desirability, and self-monitoring) may have contributed to that difference. Based on the literature on eyewitness testimony and the variables that contribute to one's vulnerability to suggestibility, I predicted that women were more suggestible than men and that they would be more likely to create false memories or "mis-remember" previously witnessed events. The results of my study did not reveal any significant gender differences found in levels of suggestibility. To put it another way, women were not more easily led by my attempts to lead them via the leading questions in the memory questionnaire than men, independent of their personality characteristics. Therefore, my main hypothesis was not supported. There were, however, significant differences found independent of gender. These differences were found in the number of factual vs. the number of leading questions answered incorrectly. Specifically, participants answered more leading questions incorrectly than factual questions. This means both men and women respectively, "mis-remembered" more often than not, what they previously viewed in the picture as a result of the leading questions. This finding supports previous research in this area as there have not been significant gender differences found in levels of suggestibility independent of other factors and people are typically led by suggestive questioning more often than not.

I also hypothesized that those with low self-esteem will be more suggestible than those with high self-esteem. This hypothesis was not supported by the data. There was, however a significant difference found in the number of questions answered incorrectly when compared to different levels of self-esteem. The higher the self-esteem the more factual questions were answered correctly. Also those with high self-esteem had the greatest difference in the number of factual questions answered incorrectly vs. the number of leading questions answered incorrectly with the most leading questions answered incorrectly of the three groups. This finding was

surprising to me and the complete opposite of my hypothesis, as previous research suggests that the higher the self-esteem the less suggestible one is likely to be. These unexpected results could be due to the fact that the distribution of levels of self-esteem was so skewed with the large majority of participants having high self-esteem and only three people were rated to have low self-esteem.

The data also revealed gender differences with regard to the different personality variables tested. Gender x self-monitoring x number wrong and gender x social desirability x number wrong were found to be significant. Females high in self-monitoring got fewer wrong than males which only partially supports my hypothesis that high self-monitors would be more suggestible. Also, males medium and high in social desirability got many more wrong than females medium and high. This again only partially supports my hypothesis that those high in social desirability would be more suggestible. The fact that females got many more correct than males despite equal levels on the same personality variables could be due to an unknown variable that I did not test for, a factor more inherent in females. I speculate that this factor may be that females are more concerned with social cues or about being right than males. There were also gender related differences that were high, but not quite significant. These conditions were number wrong x gender x self-esteem with a p value of .066 and an effect size of .069 and also a between subjects gender difference with a p value of .088 and a medium effect size of .59.

According to the literature, previous research has found gender differences related to specific personality characteristics. The literature shows that men are typically higher in self-esteem, social desirability, and self-monitoring. The data from my research did not support those findings. I found no significant differences in gender when compared with any one of the three personality characteristics that I tested. However, the interactions show differences in gender in

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numbers wrong for specific personality characteristics.

LIMITATIONS

There are some noteworthy limitations of this study that should be addressed. The first of which is the small sample size of only 70 participants. Had the sample size been larger, more significant effects may have been found. A second limitation is the homogeneity of the subject pool. Participants were primarily Caucasian, undergraduate students attending a university in the northeast. Much literature shows that college students have inherent differences that are not necessarily generalizable to the rest of the population. One of these differences is higher self-esteem. College students typically have higher self-esteem than those of a similar age group who do not attend college. This could account for the fact that only three of those who participated in this study were rated to have low self-esteem. Had there been a more even distribution in self-esteem the results may have turned out differently. A third limitation of this study could be that it was all self-report. Those high in self-monitoring or social desirability may want to come across more favorably and therefore may have answered the personality inventories in such a way that would present themselves in a positive light. It is also possible that those high in self-monitoring or social desirability may have studied the picture more diligently than those who are not high in those traits because they care more about their performance on the questionnaires that followed.

RECOMMENDATIONS

Some suggestions to avoid these limitations in continued study of this area would be to have a larger sample size and test a more varied population. This is obviously preferable for all types of research, but understandably not always feasible. It is also suggested that the participants not be informed of the fact that they will be tested on the picture to make the questioning more unexpected and as a result, more representative of witnessing an actual crime/

event that takes place and the police interview that follows. Another suggestion is to make the memory questionnaire longer. The more questions asked may make even more of a distinction between the number of factual and leading questions answered incorrectly and could result in a stronger effect. A final suggestion is to increase the length of time between the memory stimulus and the memory questionnaire to make it more representative of real life. As I mentioned earlier, the length of time between witnessing an event/crime and being interviewed by the police could be substantially higher than the amount of time in this study.

Despite the small amount of time between the memory stimulus and the memory questionnaire, the small number of questions on the questionnaire, and the other limitations that make this study less like reality, there were still significant differences in the number wrong between the factual and leading questions. This clearly shows just how easy it is for a witness to be misled.

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FIGURE PAGE

Figure 1 Title: Number wrong x Self-Esteem

The higher the self-esteem the more factual questions were answered correctly. Also those with high self-esteem had the greatest difference in the number of factual questions answered incorrectly vs. the number of leading questions answered incorrectly.

Figure 2 Title: Gender x Self-Monitoring x Number Wrong

Men both high and low in self-monitoring got more factual and leading questions wrong than females in all categories. Females low in self-monitoring got many more leading questions wrong then females high in self-monitoring whereas males scored very similarly on all questions.

Figure 3 Title: Gender x Social Desirability x Number Wrong

As the level of social desirability increases males' accuracy on the factual questions increases as well while that of females stays roughly the same except for those with medium social desirability. For males, the number of wrong answers for the leading questions increases along with the level of social desirability while it decreases for women again, except for those in the medium category.
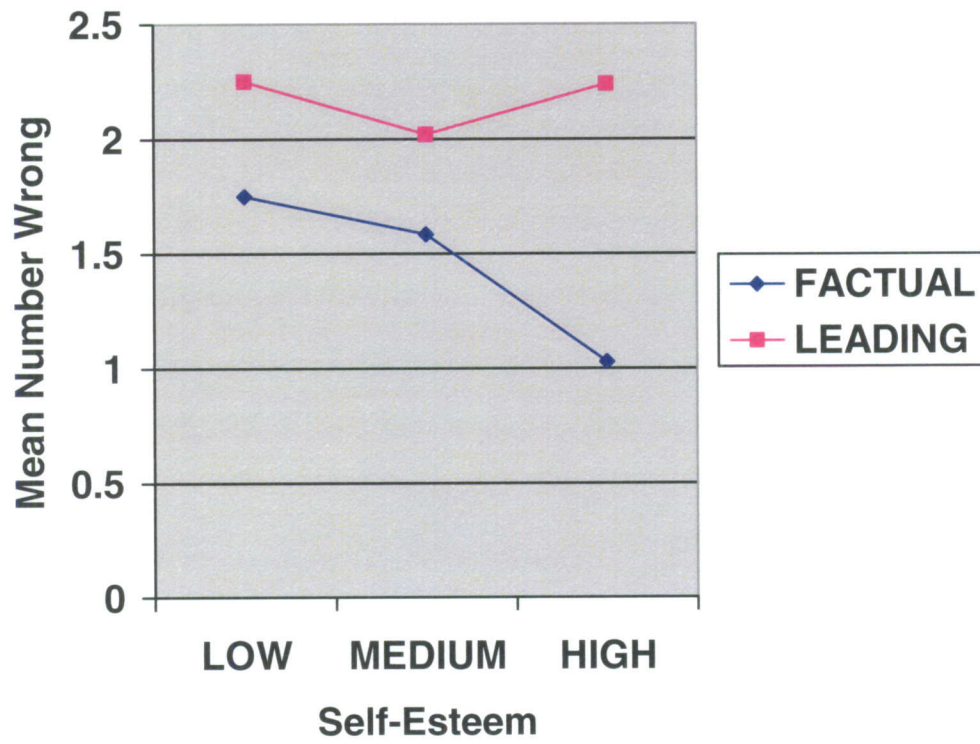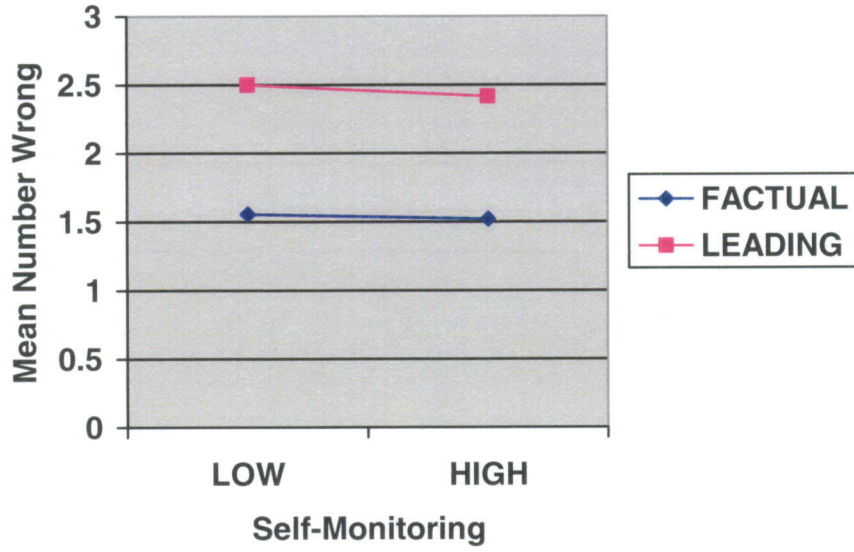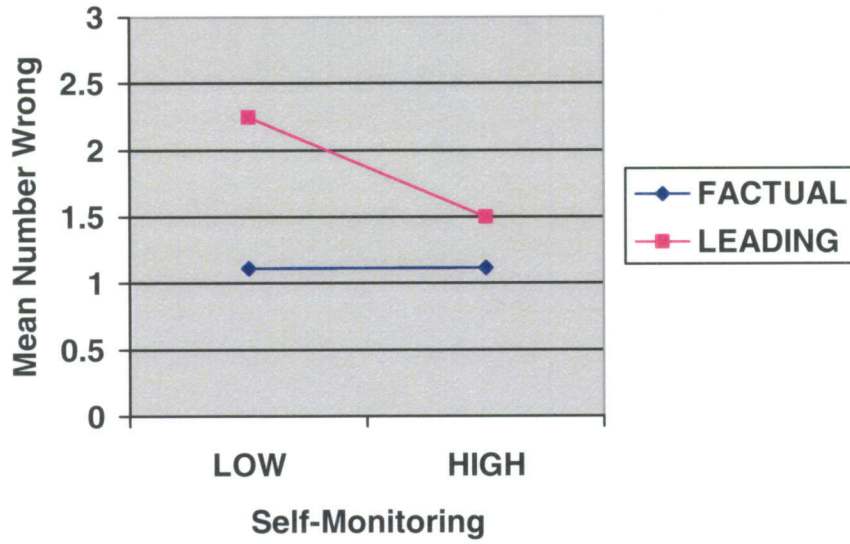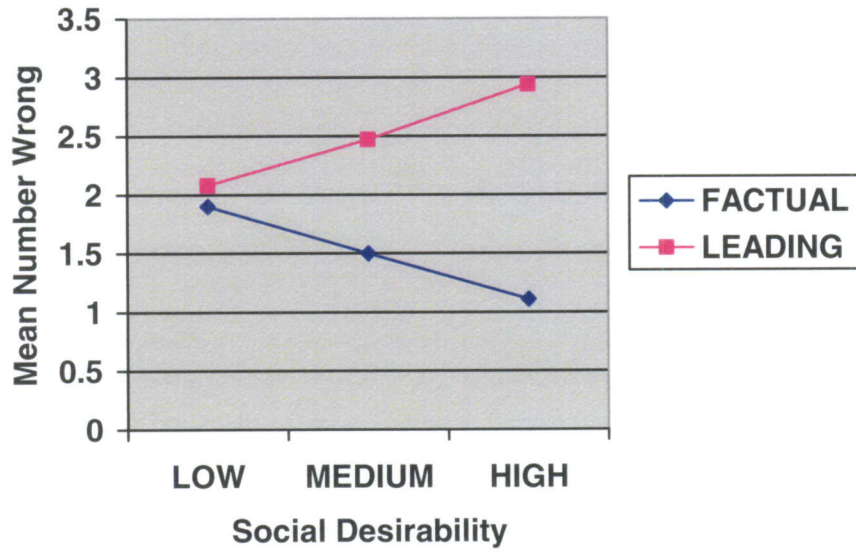
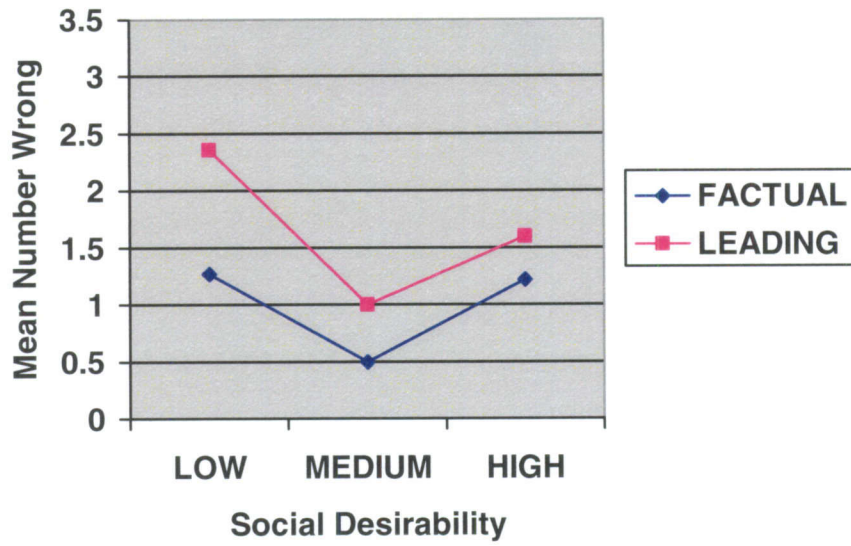# Self-Esteem

Figure 1

MALE

FEMALE

Figure 2

32

MALE

FEMALE

Figure 3

APPENDICES

APPENDIX A

Informed Consent

I agree to participate in a study entitled "Personality Factors and their Effects on Short-Term Memory", which is being conducted by Tara Godino of the Psychology Department, Rowan University.

The purpose of this study is to evaluate differences in short-term memory and differences in ratings of various personality characteristics.

I understand that I will be required to fill out four questionnaires as part of this research study and my participation in the study will take approximately 30 minutes.

I understand that my responses will be anonymous and that all the data gathered will be confidential. I agree that any information obtained from this study may be used in any way thought best for publication or education provided that I am in no way identified and my name is not used. I understand that there are no physical or psychological risks involved in this study, and that I am free to withdraw my participation at any time without penalty.

I understand that my participation does not imply employment with the state of New Jersey, Rowan University, the principal investigator, or any other project facilitator.

If I have any questions or problems concerning my participation in this study I may contact Tara Godino at 609-652-8963 or Dr. Eleanor Gaer at (856) 256-4872.

_____   _____

(Signature of Participant) (Date)

_____   _____

(Signature of Investigator) (Date)

APPENDIX B

Demographic Form

<u>Demographics Sheet</u>

Gender ('M' for male and 'F' for female): _____

Age: _____

Year in school: _____

Major in school: _____

APPENDIX C

Rosenberg Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.	I feel I do not have much to be proud of.	SA	A	D	SD
6.	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.	I wish I could have more respect for myself.	SA	A	D	SD
9.	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

APPENDIX D

Marlowe-Crowne 2(10) Social Desirability Scale

Listed below are a number of statements concerning personal attitudes and traits. Readeach item and decide whether the statement is true or false as it pertains to youpersonally and write a 'T' for 'true' or 'F' for 'false' on the line provided at the end of each statement.

1. I never hesitate to go out of my way to help someone in trouble. ___

2. I have never intensely disliked anyone. ___

3. There have been times when I was quite jealous of the good fortune of others. ___

4. I would never think of letting someone else be punished for my wrong doings. ___

5. I sometimes feel resentful when I don't get my way. ___

6. There have been times when I felt like rebelling against people in authority even though I knew they were right. ___

7. I am always courteous, even to people who are disagreeable. ___

8. When I don't know something I don't at all mind admitting it. ___

9. I can remember "playing sick" to get out of something. ___

10. I am sometimes irritated by people who ask favors of me. ___

APPENDIX E

SELF-MONITORING SCALE

Developed by Mark Snyder (1974)

DIRECTIONS: The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. IF a statement is TRUE or MOSTLY TRUE as applied to you, **circle the "T"** next to the question. If a statement is FALSE or NOT USUALLY TRUE as applied to you, **circle the "F"** next to the question.

(T) (F) 1. I find it hard to imitate the behavior of other people.

(T) (F) 2. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.

(T) (F) 3. At parties and social gatherings, I do not attempt to do or say things that others will like.

(T) (F) 4. I can only argue for ideas which I already believe.

(T) (F) 5. I can make impromptu speeches even on topics about which I have almost no information.

(T) (F) 6. I guess I put on a show to impress or entertain people.

(T) (F) 7. When I am uncertain how to act in a social situation, I look to the behavior of others for cues.

(T) (F) 8. I would probably make a good actor.

(T) (F) 9. I rarely seek the advice of my friends to choose movies, books, or music.

(T) (F) 10. I sometimes appear to others to be experiencing deeper emotions than I actually am.

(T) (F) 11. I laugh more when I watch a comedy with others than when alone.

(T) (F) 12. In groups of people, I am rarely the center of attention.

(T) (F) 13. In different situations and with different people, I often act like very different persons.

(T) (F) 14. I am not particularly good at making other people like me.

(T) (F) 15. Even if I am not enjoying myself, I often pretend to be having a good time.

(T) (F) 16. I'm not always the person I appear to be.

(T) (F) 17. I would not change my opinions (or the way I do things) in order to please someone else or win their favor.

(T) (F) 18. I have considered being an entertainer.

(T) (F) 19. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.

(T) (F) 20. I have never been good at games like charades or improvisational acting.

(T) (F) 21. I have trouble changing my behavior to suit different people and different situations.

(T) (F) 22. At a party, I let others keep the jokes and stories going.

(T) (F) 23. I feel a bit awkward in company and do not show up quite as well as I should.

(T) (F) 24. I can look anyone in the eye and tell a lie with a straight face (if for a right end).

(T) (F) 25. I may deceive people by being friendly when I really dislike them.

APPENDIX F

Short-term Memory Task

APPENDIX G

Memory Questionnaire

1. What kind of sport was being played in the picture?

A) Football   B) Hockey   C) Soccer   D) I don't know   E) No sport

2. What color team was playing against the blue team?

A) Green   B) Red   C) Yellow   D) I don't know   E) No team

3. What color sail boat is sailing in the background?

A) Blue   B) Brown   C) Red   D) I don't know   E) No color

4. What color birds were flying over the sailboats?

A) White   B) Brown   C) Red   D) I don't know   E) No color

5. What was the color of the schoolhouse?

A) Red   B) Brown   C) White   D) I don't know   E) No schoolhouse

6. How many players from the blue team were on the bench?

A) 4   B) 0   C) 5   D) 1   E) I don't know

7. How many dogs were on the sidelines?

A) 1   B) 3   C) 2   D) 0   E) I don't know

8. How many cars were parked behind the bus?

A) 2   B) 3   C) 1   D) 0   E) I don't know

9. How many cars were in the picture?

A) 0   B) 2   C) 1   D) 3   E) I don't know

10. How many silos were off in the background?

A) 1   B) 3   C) 2   D) 0   E) I don't know

11. How many school buses are in the picture?

A) 2   B) 1   C) 0   D) 3   E) I don't know

12. What was the horse doing by the stream?

A) Drinking   B) Eating hay   C) Sitting down   D) I don't know   E) No horse

APPENDIX H

Debriefing Form

For the Study entitled:

"Personality Factors and their Effects on Short-term Memory"

Dear Participant;

As part of this research study, you were asked to study a picture for 60 seconds and then complete four questionnaires. The purpose of the study was to evaluate differences in short-term memory and compare them to differences in ratings of various personality factors.

If you have any concerns about your participation or the data you provided please feel free to discuss this with me or my advisor. We will be happy to provide any information we can to help answer questions you have about this study. You are reminded that you are free to withdraw your participation at any time without penalty.

If you have questions about your participation in the study or questions about the results, please contact me at godino40@students.rowan.edu or 609-652-8963, or my faculty advisor, Dr. Eleanor Gaer, at 856-256-4872.

Please do not discuss this study with anyone until May 2009.

Please again accept our appreciation for your participation in this study.