SUGGESTION, PERCEPTION, REALITY:
A study into the relationship between suggestion and the reality it may produce.

A Thesis

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By

Scott D. Whippo

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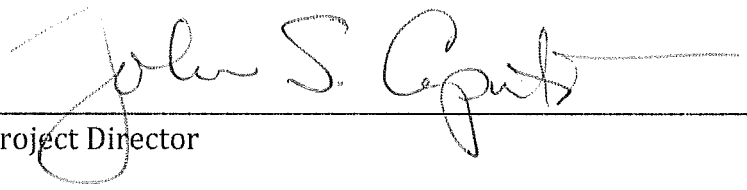
We the undersigned, certify that we read this thesis and approve it as adequate inscope and quality for the degree Master of Arts.



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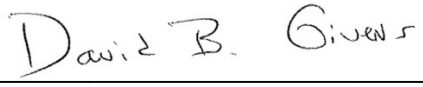

Faculty Mentor

Faculty Reader

Gonzaga University

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ABSTRACT

Suggestion is a part of communication that cannot be stripped from or be considered separate from verbal and nonverbal communication. It is through the need to view the communication processes from a complete understanding that this study investigated the possible influence that suggestion may have on an individual's perception of reality. The existing literature was reviewed with various results from different researchers, however, much of the literature supported previous research done by Spanos et al. (1984) and Bartels et al. (2006).
Their research showed some indications that suggestion, and possibly priming may have an influence on an individual's perception. Using their research as a starting point this study developed a mixed-method approach in order to test some aspects of their research. Ten volunteers participated in a mixed-methods experiment. A Factorial Design of 2 x 2 enabled a testing of two treatments at the same time. The participants were tested for level of suggestibility using the Stanford Scale and were then divided into one of four groups. Groups consisted of high or low suggestible participants who were treated with a suggestion or priming words to determine their level of discomfort when their arm was placed in ice water. The results were measured on a scale from one to ten.

The ANOVA showed no statistical difference in the groups. However, the number of individuals who were unable to complete the testing was all in the high suggestibility group and it appeared that individuals in the priming group, both high and low suggestible, had the greatest reduction in discomfort relative to their baseline.

Keywords: priming, suggestion, perception, reality, ice water, suggestibility, Spanos, Bartels

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CHAPTER 1. INTRODUCTION

Suggestion is one communication technique we use to control others. Sometimes the suggestion is implicit and at other times explicit. It seems we cannot help ourselves when we are communicating. It may be a verbal suggestion or a nonverbal suggestion, which ever it may be, it tends to have the same effect on the individual receiving the message. The suggestion can be so powerful that it can have untoward affects that are not intended. In Universities and other places of higher learning the instructors pride themselves on an open discussion in their class and yet at times, create a spiral-of-silence, through their verbal or nonverbal suggestion, that only comments supportive of the instructors view is approved.

Berkowitz et al. (2008) conducted experiments utilizing college students. These experiments were to see if suggestive materials could manipulate individuals and were intended to lead the participants to believe that Pluto at Disneyland had licked their ear. This information is important in a marketing communication context, because the study found that the false suggestion had an impact on the amount of money that an individual was willing to pay for Pluto items. This is also an important factor to take into consideration when reporting events in the news.

In 2004 a Disney employee was accused of sexually abusing a visitor. After the report was aired on TV an additional 24 visitors came forward to report that this same Disney character had also abused them. The Disney employee was cleared of all charges after it was proved that his costume prevented him from having the type of contact with visitors that he was accused of having with them (Berkowitz et al., 2008). In this case, the mere suggestion that a Disney character was acting inappropriately was enough to create false memories in other individuals.

What we communicate to others through suggestion has been shown to have a great effect on people and can change people's lives, sometimes for the better, and at other times for the worst.

The field of communication covers a wide array of different areas of study from marketing, political, medical, to leadership. It also considers verbal and nonverbal communication processes. One of the major aspects that run through all of these areas of communication studies, is the ability to persuade others through suggestion. How often have we seen commercials of athletes eating a certain cereal in the morning? In this case, the suggestion is that if you eat this cereal you will be an athlete. How the mechanism of suggestion is aimed by the sender, triggered, and then received by the recipient needs to be studied in greater depth, to determine how people can be helped through suggestion and how they are manipulated. Once these mechanisms are understood, it will become possible to improve outcomes, from medical to family communication.

When speaking of suggestion and outcomes, it is not only the untrained individuals in the general populace that we need to talk about, but individuals in positions of knowledge, who need to understand the power of suggestion. Individuals who are trained to be cautious of their surroundings and possible communication manipulation can also fall victim to misinformation though verbal or nonverbal techniques of suggestion. People who are exposed to misleading information, through direct or indirect suggestion, may fall victim to what is known as the "misinformation effect" (Morgan, et al., 2012). During a U.S. military survival school training exercise, Morgan et al. (2012) performed a study to measure the ability to implant false memories into individuals that were trained to resist misinformation and propaganda. What they found was that even individuals thus trained were susceptible to suggestion and misinformation. They found, that there was a higher acceptance of the suggested information, if the recipient

associated the information coming from a person in a position of authority. In Morgan's et al. (2012) conclusion, they state that the social status of medical personnel or law enforcement officers, may be of such a nature that either of these groups may be enough to create false memories, intentionally or unintentionally, in individuals by suggestion alone.

When Marshall McLuhan stated that, "the medium is the message"(Golden, p.137), he was referring to extensions to our natural organs such ears, eyes, touch, smell, etc.. When we replaced our feet with wheels we were effectively amputating one of our body parts (feet) and thus giving us a different perspective on which to build our society. He believed that when one or several of these natural senses was knocked out of balance, and thus gained a greater degree of influence over the other natural body parts, it would create a consequence in which we perceive and understand reality in a different way (Golden,1976). McLuhan's view that external manufactured mediums such as books, TV, and radio effect the perception of individuals based on their ability to enhance a particular natural sense, such as ears and eyes and thus knock them out of balance with the other senses is extended in this research. This study looks at the possibility that using suggestion, in the form of priming as the media, may also have a direct effect on our understanding of reality by creating an imbalance in our perceptions.

IMPORTANCE OF THE STUDY

It is commonly held by most people that perception is reality. Some individuals wonder why they are not as successful as others in certain aspects of their lives. How is it that one person seems to be able to control his/her situation and another cannot? The problem of a lack of success may begin well ahead of the event that an individual is trying to overcome. According to S.I. Hayakawa, "What we do…what tasks we undertake…are determined not so much by our

actual powers and limitations as by what we believe to be our powers and limitations…" (1964, p.321). The perception of the situation can change how an individual responds to the event. Perceptions are so powerful that they have literally lost and won wars, created success stories in business and government as well as brought them down. Suggestion is perhaps the most influential aspect of communication in our individual lives and has such an over whelming effect on our everyday activities that it is impossible to ignore. We see it from the time we are children, through direct verbal (eat your spinach and you will be strong like Popeye) and indirect nonverbal (a look of disapproval from our parents) cues. Suggestion is perhaps the biggest part of our lives whether being controlled by others or controlling others. To what level of influence suggestion has on perception is an important concept to understand. Through controlling the perceptions of others we may create or destroy their ability to succeed. Through the study of suggestion and its relationship to perception it is hoped that this study will be relevant to all aspects of our lives, from perceptions of discomfort, to leadership styles, to success in the work place.

STATEMENT OF THE PROBLEM

In a world that is connected with instant information the ability to change lives for the better or worse is a real and ongoing exercise in communication. To what extent suggestion has on reality is a question that needs to be answered in order to counteract the negative aspects of this communication phenomena and to reinforce the positive. Without looking at the relationship between suggestion, reality and that part of communication that plays in perceptions we will never fully understand how effective communication can come about. There have been several studies that have looked at suggestion but few have looked at the relationship between priming and the outcome of a given situation. Priming has been widely accepted as valid for several

years.

DEFINITIONS OF TERMS USED

Priming is a short suggestion that gives the subject a pre-conceived idea of what they should experience. The priming can be in a single word or a short phrase. During priming the priming word or phrase is repeated several times during the course of a very contracted amount of time by the tester, just prior to the test, and may be known or unknown to the subject.

Suggestibility is measured by a number of different standard tests, some of them lengthy such as the Gudjonsson Suggestibility Scale, which tests the suggestibility of a person to leading questions, the Stanford Scales of Hypnotic Susceptibility (SSHS), which tests a subjects physical responses to suggestion, or the Carlton University Responsiveness to Suggestion Scale.

Suggestion will be defined by Lundh's (1998) definition of suggestion and thus is used in this study, as follows:

> Suggestion is defined as a form of communication, or interpersonal priming, whereby (a) one person (the 'suggestor') intentionally or unintentionally influences another person (the 'suggestant') by means of verbal communication, non-verbal behaviours, and/or other contextual factors, (b) in such a way that the suggestant takes over intentions, feelings, beliefs, or desires from the suggestor, and (c) where this process of influencing relies on the automatic activation of meaning structures in the suggestant. By means of these processes the suggestor may influence the suggestant at various levels in his or her psychological functioning; suggestion, for example, may affect a person's perception, behaviour, cognition, emotion, or motivation (p.25).

ORGANIZATION OF REMAINING CHAPTERS

Chapter 2 will address the current literature on the subject by conducting an exemplary review of the materials available on suggestion, priming and perceptions. This review was conducted online through the Gonzaga University library system using peer reviewed articles and papers addressing original research. Published works in book form were also reviewed for relevant information that helped inform this study.

Chapter 3 will address the scope and methodology of the research. The scope will look at what is and is not included, as well as the depth of the study. The methodology will be discussed and how it assists in discovery of facts associated with the research questions. Also, in this chapter the data analysis will be presented, as will the discussion of the qualitative and quantitative methods used in the research. Although validity and reliability are not normally discussed in qualitative research it is discussed in chapter 3, as there is a quantitative component of the research.

Chapter 4 present the research in quantitative form using Box analysis and discuss its relationship to previous research and the research questions asked in this study.

Chapter 5 will discuss the conclusions of the quantitative and qualitative analysis, the limitations run into during the study and the potential for future research along this line of inquiry.

CHAPTER 2: REVIEW OF THE LITERATURE

PHILOSOPHICAL ASSUMPTIONS

It would appear that several things happen almost simultaneously in communication. The first of these is the conscious mind receiving the message. Some would say the first step is the sender's message, but, without the receiver there is no message. It is possible that in intrapersonal communication the message is always received and could therefore be considered the first in the sequence. But, since, in this case, the individual is both sender and receiver it is not possible to tell which comes first at the conscious level, and which is conscious or unconscious reacting to the other. The question also comes into play as to whether individuals who suffer from different forms of dementia, such as semantic dementia, ever receive, or to what extent are capable of sending an intrapersonal message to start the intrapersonal communication process. Intrapersonal communication requires a mental processes that includes activities such as displacement, conceptual memory, foresight and a certain level of planning (Vocate, 1994, p. 175). Therefore, it would appear that the idea of receivership is the first block in the communication process, whether it is visual, auditory or kinesthetic which is stimulated from an internal or external stimulus, and accepted by, the receiver. We understand the words as given to us by the normal usage and book definition and visual as well as kinesthetic knowledge based on experience.

The second step in the communication process is the message received by the unconscious mind. This is the message that we understand based on our personal perception of reality, much of which is based on our experiences in life. Hayakawa points out, that although we may understand the book definition of the words, the unconscious may re-interpret them

when fear is present or self-concept is threatened and in some cases may create a rationalization of our reality (1963, pp.36 – 50). .

The third step in this concept of communication is leakage. Leakage is a sign sent by the message sender that helps us determine if there is congruence in the message we are receiving. Sometimes we miss the congruence in the message because our unconscious may twist things around based on our life experiences. Each individual interprets the message to his or her need. This is known as a gain. A gain is neither good nor bad but gives the individual what they unconsciously need at that moment.

Structured communications (conscious) and unstructured communications (unconscious) help us make sense of our world. We start building our unconscious communication model while still in the womb. At this earliest stage, we start the formation of interaction with our mothers. We continue to develop unconscious communication throughout our lives by outside influences of interactions with others.

As these interactions develop into more sophisticated relations we learn how to control and manipulate others, whether we want to or not. Sometimes our manipulations are conscious suggestions and at other times they are unconscious and nonverbal. Even when our conscious mind tells us not to manipulate others or to hide the truth in order to gain an advantage, our unconscious will give telltale signs to manipulate the situation. These telltale signs can take the form of gross nonverbal movements such as a shrug of the shoulders (Givens, 2008), or a subtler micro-expression on the face (Ekman, 2003). This is part of the gain and may or may not benefit the manipulator. Much of body language is unconscious communication but can operate in parallel with the conscious reception of the message. An example would be if someone moved their foot in an upward motion towards the crotch of an individual, the receivers conscious

message is, “here comes a foot” while the unconscious message would be, “protect yourself.” Before the conscious mind can react, the unconscious has communicated the danger to the body. It is only through this unconscious communication process that the body saves itself from certain pain. It is possible that these quick communications to our brain are controlled by a physiological *gatekeeper* which allows for a quicker reaction to the message by short-circuiting part of the message and sending instructions back before the full message reaches the brain. The mind has been shown to be a powerful force and our unconscious communication is believed to help us deal with illness and recovery. Positive intrapersonal communication can make a huge difference of how we perceive ourselves and thus react to different stimuli, whether verbal, nonverbal, kinesthetic or biologic. As Egolf (2012) points out, intrapersonal communication is the ‘machine’ that keeps on churning and we are senders and receivers of the message (p.41). We are constantly motivated, persuaded, challenged by our own un-resting self-talk. But, that intrapersonal communication does not develop in a vacuum. Rossi believes that bioinformatics and neuroscience documents how heightened experiences of visual communication in art can stimulate the body to heal itself. This is accomplished by a four step process: (1) Observing Consciousness, which activates (2) Mirror Neurons and associated experiences of empathy, transference, and rapport to turn on their (3) Gene Expression/Protein Synthesis Cycle to create the building blocks of life, which generate (4) Brain Plasticity and the possibility of healing many body dysfunctions on the molecular-genomic level (Rossi, 2007). In other words, we are not only communicating intrapersonally with ourselves from a psychological and sociological standpoint but also from a biological one. The Biopsychosocial (BPS) perspective approach to communication helps us understand that communication is not a stand-alone aspect of life. Communication is an integral part of processes of living and should be considered from all

aspects, whether it is biological (intrapersonal/neural communication), to sociologic (interpersonal communication), too psychological (intrapersonal/self-talk).

Although there may be universal truths in ethics it is less certain as to which of those truths and to what degree carry over to communication. Communication appears to be subjective on many levels (psychological, social, and biological) and in most cases falls on a very thick gray line when trying to determine relationships between and within communicators. Communications cannot stand alone when determining ethics but must be subjugated to the society and context of which they are communicated. Most societies view two things as wrong and those are murder and theft. These two activities seem to go to the core of what is truth; all else appears to be bias in communication. Physical, cultural, societal surroundings and peer pressure to a great degree help form our internal design for communication and what is ethical.

Based on the fact that we operate in a Western civilization it is not incorrect that we should operate on a Western philosophy such as that of Rossi (2007). Rossi (2007) believed that there were several duties man owed to society and his fellow man but perhaps the most important of these, in this researchers view, was to do no harm. This is also perhaps one of the most important aspects of communication. This is not unlike Aristotle's philosophical view of the Golden Mean (Golden, 1976). To this end it is necessary that Social Scientists make no claims that are not defensible by logic, testing or direct observation. By limiting the circumstances under which statements are made, the least harm may be done and the extremes of the Golden Mean may be avoided.

We must ask and answer ethical questions on an individual basis and allow them to stand on their own merit. An example of such a question might be; Is it ethical to assume you know what others are going to say and display this by finishing their sentences, not allowing them to

finish their thoughts? Most people would agree that finishing someone else's sentences was at the least rude and possibly manipulative and unethical, but, it would appear that as people become more familiar with each other, communication becomes more predictive between the communicators. This can be seen in married couples that have spent many years together. At some point in time, they may finish their partner's sentence. In this case it is not usually seen as unethical or controlling but a case of symbiosis.

Sometimes, we may come to different conclusions of ethics based on experience. Tomorrow may bring a different message written or spoken in the exact same words. As we progress in our lives, we reframe the experience of living and therefore each communication develops differently and is reinterpreted. Each day we have more experiences, which in turn make our sending, and receiving message traffic different. For those who draw or paint, it would be the same as a point of view or perspective. If the painter moves one foot to the left or right, they will now see a different picture. We are like that. As we move forward through our lives the picture stays the same but we are moving forward, therefore the message is changing from our viewpoint. Our perception is changing based on our experiences. People that have spent a great deal of time away from family find this shift in perception to be true. Spouses may find that they have both experienced a shift in perspective during the absence of the other and now when they communicate they must reestablish the boundaries of their previous perceptions of the other. Perceptions are always moving but not necessarily in the same direction or same rate of speed. If given enough time these individuals will eventually find a common point of reference from which to begin their follow-on communications.

As has been noted before, communication is very difficult because there are probably no absolutes. Communication appears to be subjective depending on the outside influences. The

truths and ethics of communication will restructure and morph as we grow, thus making the philosophical relationship between suggestion, perception and reality a momentary observation built on sand. The philosophical and ethical stance that must be taken in all research requires a holistic approach to address the statement, "do no harm".

THEORETICAL BASIS

Expectancy violation theory (EVT), Interaction Adaption theory (IAT), and Affect-Dependent Theory (ADT) have all been used as a framework for the study of communications in reducing discomfort in subjects.

EVT has been used in various areas such as persuasion, deception, adaption patterns, group decision-making, interpersonal, and intercultural interaction (Burgoon, 2009). This theory postulates that violations are arousing and with the arousal a distraction is created away from the main topic. The arousal is created by a variance in expectation by the subject. The expectation is derived from three different variables. Actor variables are those items attributed to individuals such as age, gender, and race. Relationship variables are those things that are defined between two people such as marriage or social status to each other. Context variables are those items in which the interaction takes place. This is important to be aware of when designing the study, for suggestion only, as it may influence the outcome.

Burgoon, who developed EVT, also developed Interaction Adaption Theory (IAT), which expands on EVT. IAT addresses the biological and sociological influences that were not present in EVT. The underlying proposition of IAT is that other theories undervalue the relationship that people have on each other in everyday encounters. In developing this theory Burgoon lists nine principles and five concepts (Burgoon, 2009, pp 524-526). The overall principles state that people will adapt to social situations and respond to others in a like manner. An example of this

is when we smile at someone on the street they usually smile back. It is certain of the concepts in the theory that were looked at during this research. The three concepts that were be looked at during this study were, Requirement (R), Expectation (E), and Desire (D). Requirements are those things that are needed as a minimum to survive. Expectations are those things that are believed - consciously or unconsciously - will happen either verbally or nonverbally, and desires are our hoped for results (p. 525).

Although, Affect-Dependent Theory (ADT) of Stimulus Arrangement (Zillmann & Bryant, pp. 22-24) research is used in mass media research, it may also be useful in helping to explain the relationship between suggestion and reduction of discomfort. ADT indicates that most individuals will organize their surroundings to minimize unpleasant stimuli and maximize pleasant stimuli.

One aspect of communication that is seldom looked at by communication researchers is intrapersonal communication. Although this is an area that is usually left to psychologists and psychiatrists to research it is pointed out by Johnson in Communication Education (1984) that, "The nature and role of inner speech is one area which cannot and should not be overlooked in either communication research or communication pedagogy" (p. 221).

This review looked at studies that addressed very closely related questions to the study that was conducted. Both of the following studies that were conducted used similar research methods with slightly different results. Many of the research models utilize an Expectancy Violations Theory (EVT) or Interaction Adaption Theory (IAT) as well as quantitative and qualitative methods in their experiments.

The primary idea of these studies was to determine if physical sensations could be influenced by verbal and nonverbal suggestions. For this study the definition of suggestion

presented by Lundh (1998) is used, and is thus given:

> Suggestion is defined as a form of communication, or interpersonal priming, whereby (a) one person (the 'suggestor') intentionally or unintentionally influences another person (the 'suggestant') by means of verbal communication, non-verbal behaviours, and/or other contextual factors, (b) in such a way that the suggestant takes over intentions, feelings, beliefs, or desires from the suggestor, and (c) where this process of influencing relies on the automatic activation of meaning structures in the suggestant. By means of these processes the suggestor may influence the suggestant at various levels in his or her psychological functioning; suggestion, for example, may affect a person's perception, behaviour, cognition, emotion, or motivation.

The studies reviewed below found that there seems to be an ability to influence the physical sensations by external communication. The main difference in their findings came in the area of verbal suggestion. Not all studies used verbal communication alone to influence the results. A study conducted in the mid-1970s utilized music with verbal suggestion to measure the effect on pain reduction with similar results as most other studies in this area (Lavine, Buchsbaum, & Poncy, 1976). Patterson (2006) utilized Virtual Reality Distraction (VRD/ Computer animation) to understand the relationship between distraction, suggestion, and pain reduction. Although Patterson's (2006) study found similarities with Spanos et al. (1984) and Bartels et al. (2006), his approach was different. He addressed the question of pain reduction in relation to VRD. He found that although subjects with high suggestion susceptibility did well on pain reduction, those with a low suggestibility were not able to gain or maintain a pain reduction. During the use of VRD he found that both groups responded well to the distraction of the VRD.

As studies have continued over the past 40 years, there has been an awareness developed in the Health Service community that the manner in which a patient is addressed is as important as the medication given in reducing pain. Studies that were conducted in the 1980s showed similar results as Lavine et al. (1976). Not all studies agreed completely. Spanos et al. (1984)

found verbal suggestion alone was enough to influence physical sensation reduction. Bartels et al. (2006) study found that there was no significant difference between the verbal only suggestion group and the control group who received no suggestion or conditioning[2]

Priming has numerous definitions dependent on the science, book or author that is trying to define it. Although all the studies in the Review use the term, none of them care to define the term. This study uses the following definition for priming, which has been cobbled together from reading many sources. Priming is a verbal or nonverbal, conscious or unconscious process used to reinforced behavior in an individual to create a desired outcome and is given over a very short period of time, of two to three minutes, and just prior to the desired outcome of the suggestion.

As the number of studies increased, the question of suggestibility at increasing or decreasing physical sensation continued to grow. None of the studies asked exactly the same question with the same method, and approach to theory. Because of the variables involved it is impossible to compare them directly. Most studies did not address the level of suggestibility, or if the subjects were influenced by levels of suggestion. However, at least one of those studies did find a significant difference between the group using conditioning and suggestion, and the group that was conditioned only in the level of reported sensation. The group that received both suggestion and conditioning showed considerable less self-reported pain during the experiment (Bartels et al., p. 5).

These studies as a whole seem to agree that there is a correlation between external communication and internal perceptions. Although these studies seem to have confirmed certain findings, new questions such as, can verbal suggestions be used directly with consistent results,

to increase the efficacy of medical communication and psychological procedures, have yet to be answered?

THE LITERATURE

For a very long time, suggestion is believed to have had a great deal of power over individuals. The idea that suggestion does not have power over others could not be argued logically or with any deal of believability. Over a hundred years ago academics were asking many of the same questions that are being asked today about the degree of suggestibility on a subject. We think of suggestion and its effect on children as a new concept, discovered in the second half of the 20th Century and yet in the late 19th C. and early 20th C. academics and professionals were perusing the pedagogical literature of the time and reviewing personal experiences to show the connection between suggestion and its potential for influencing people and improving child rearing, commerce and industry (Scott, 1911).

Over the years, since the late 19th C. we have developed new theories of communication and methods for testing those theories. We have retired some theories and replaced them with new ones to that help to fill the gaps between theories. We are constantly trying on new cloths to fit the body of communications theories that are developed. These cloths come in the form of research methods. Like cloths, from time to time we must buy (into) new ones and discard the ones that no longer fit. One of those pieces that is still fairly new and has yet to be tested against time is called priming. Although there has yet to be a standard set for what constitutes priming, within a research setting, the majority of researchers understand it to be a verbal or nonverbal surreptitious and repetitious suggestion given a very short time (minutes or seconds) before testing the subject.

Priming may have short or long-term effect on individuals and may vary from individual to individual and media to media. The results of the research must also take into account the mental and physical condition of the subjects. Priming research has been conducted on individuals with semantic dementia, the results of which indicate that there was limited to no advantage in priming when trying to improve the subjects ability to recall words (Reilly, Martin, & Grossman, 2005). In a conference paper presented at the International Communication Association the presenters saw social cultivation in a number of short term priming effects (Toward a Dose-Response, 2012). Although they used a Tabloid paper as the priming method before testing individuals the process was similar to previous methods used to determine priming effects on individuals. It is not yet shown whether the use of different priming media on individuals has different levels of effect or the duration of the time that priming has an effect on the individual. As the author points out, higher stimulus intensity of as much as 20 minutes produces a stronger effect than stimulation of less then 5 minutes (p. 5). By utilizing different media for priming, a better picture of influencing factors on individual perceptions can be developed. It would appear from different studies reviewed for this research that it is very possible that media, time exposure and the number of repetitious exposures to the priming media may very well determine the effectiveness of the priming. The conference paper further shows through R analysis that there was a significant difference between one-day readers and seven-day readers of the Tabloid (p.19). It is therefore more important to keep track of the number, type and length of priming when doing a study in order to better control future research. Arendt (2013) fully agrees with other researchers that it is necessary to include time as a critical variable when using priming in research (p. 348). Although much of the research reviewed contained the statistical outcomes of the research, what were less well reported were the conditions

surrounding the research. With a few exceptions, the information that was reviewed for this literature review was sorely missing specific data on room configuration and condition, temperature, and specific types of equipment used to measure results. Also missing were specific information on verbal and nonverbal priming (scripts), length of time of the priming, number of repetitions of phrases and time lag between priming and testing. There were some studies that were detailed in this type of information such as the studies conducted by Weaver, Garcia, Schwarz, and Miller (2007), and Dorris and Wertheim (1976), which assists when comparing the methodologies with other studies. These are all important factors in the determining specifically the effect of priming on individuals under what circumstances. Without carrying out extremely detailed research and very detailed reporting it becomes more difficult to understand the relationship between suggestion and priming in the different studies. Where does suggestion leave off and priming begin?

Suggestion alone may be enough to create an active result or memory associated with reality. A number of studies seem to indicate that priming can increase the effect beyond suggestion. A false perception of reality based on suggestion or priming can be beneficial, as in the case of a health care worker controlling a patient's medical outcome, or disastrous based on false confessions or false memories of child abuse implanted by a social worker or therapist (Wilson, 2011). As most people realize, it may be easier to implant a negative perception or memory than a positive one. Dorris and Wetheim (1976) point-out in their study that when one faces a complex situation it is much easier for the individual to form a negative aspect of the situation than a positive one (p. 413).

Another aspects that may have an impact on the suggestion or prime are the repetition of the verbal or nonverbal communication during a phase prior to the

implementation or observation of the outcome. Although Weaver et al. (2007) were looking at the influence that one to three person(s) can have on the perception of groups through opinion repetition the outcomes appear to be similar as other studies using priming and suggestion to influence the outcome of a situation. One aspect of this study that is mentioned and could be an influence on the repetition is the familiarity with the suggested opinion that the subject already holds (p. 831).

We sometimes look at the effect of suggestion as something that is verbal or gestural and completely removed from all other influences. This approach may limit our understanding of how suggestion is used to perceive reality. All our senses play a part in our connection to the external world in which we live and help us form our understanding of reality. Even if our verbal and gestural communication is congruent when sending a message, if the context of the message or the intonation and timing is incorrect the entire message may be disqualified (Gouvier, 2002). It has been hypothesized that belief in the content immediately prior to an event can cause physical changes. During any research it is necessary to control as many variables as possible. It is possible to have an untoward effect on the experiment by something as simple as a change in vocal pitch by the researcher when giving instructions to different subjects.

The words may not be the things they represent (Korzybski, 1951) but they are certainly viewed by most people in real terms when spoken. "Ugly" is not a word that has an immediate physical impact on an individual but when spoken repetitiously may have an impact on an individuals perception of themselves or of another individual over a period of time. Some studies have shown a decay of priming over a short period of time (Arendt, 2013) but continue to show some priming residual over a year later (p. 349). This should

be taken into account when combined with other research that shows constant repetition of suggestion over weeks or months (Weaver et al., 2007). The implication of combining the results of these two studies might indicate a relationship between perception and constant reinforcement. In the absence of a long term study on suggestion, priming and perception it may not be possible to draw any long term assumptions on the efficacy of reinforcement through suggestion or priming. However, it appears at least in the short course of things the majority of literature supports some type of relationship between suggestion, priming, perception and an individuals' interpretation of reality.

RATIONAL

Over the years, opioids in the management of pain have increased. There have been a number of studies in the area of pain management with the use of suggestion. These studies are showing an efficacy in their approach to discomfort in subjects. Even though studies have shown the effectiveness of such approaches, the area of doctor-patient communication has a great deal to learn from a communication perspective. The present study will help fill a research gap in the area dealing with suggestibility and priming and the perception of reality. Previous studies do not all agree as to what level suggestion can have a direct effect on pain reduction. This could be, due to the various methods used in studies displaying few common denominators to make good comparisons. This study will attempt to address the gap between Spanos et al. (1984) and Bartels et al. (2006) studies, by looking at the relationship between low suggestible primed subjects and high suggestible non-primed subjects. Some of the studies that have been done to this point seem to indicate a possibility that those with low suggestibility may fair better in the reduction of discomfort when subjected to suggestion and priming. Priming is much like

conditioning but takes fewer suggestions than conditioning and is usually closer in time to the event being modified. However, as of yet this has not been tested.

If suggestibility and priming are more effective with low suggestible individuals the impact on doctor-patient communication outcomes may become more predictable. By concentrating on an IAT approach to this study, it may be possible to refine previous findings.

RESEARCH QUESTIONS

The philosophy, theory and literature of this chapter lead to the following research questions:

RQ1: Can low suggestible subjects experience the same level of comfort - when incorporating priming – that, high suggestible subjects experience with suggestion alone?

RQ2: Do high suggestible subjects experience a different level of comfort when primed, then high suggestible subjects who have received only a suggestion?

The process of developing a research methodology to address the gap between the work of Spanos et al. (1984) and Bartels et al. (2006) must look at several factors, not only to make sure the best method for measuring the variable is chosen but to maintain the integrity of the researchers philosophy of, do no harm. Combined with the literature just reviewed it is possible to select a methodology that meets the needs of the researcher based on ethical, philosophical, theoretical and pragmatic needs. In Chapter 3 the methodology that meets these needs will be discussed.

CHAPTER 3: SCOPE AND METHODOLOGY

THE SCOPE OF THE STUDY

During a three-week period, ten participants were studied to determine what if any effect priming has on the comfort levels of individuals. The study is be limited due to time constraints and participants available for the study. The ten participants studied assisted in determining whether priming, can physically influence individuals with low suggestibility to the same level as someone with high suggestibility can be physically influenced by suggestion alone. Another group helped determine any change between high suggestibility groups may be given different treatments. The study only looks at healthy participants between the ages of 18 and 65.

The study eliminated volunteers that have had any type of cold weather injury such as frostbite or hypothermia. Individuals with restricted blood flow or other physical limitations were also be rejected for this study.

METHODOLOGY OF THE STUDY

The study used a Factorial Design of 2 x 2. This design is used in the study for several reasons. Primary among them is the ability to test two treatments at the same time. The treatments were tested were suggestion and priming. Another reason for this design selection is the ability to only use two groups of participants without the traditional control group (Neuman, 2011).

The methods used were quantitative and qualitative. Although the mixed method is relative new it brings with it various advantages. One advantage is that it allows convergence or confirmation of information gained from the opposing method. It also increases the understanding between qualitative and quantitative methods (Creswell, 2003). The qualitative

and quantitative methods were introduced sequentially. The integration of the two methods was introduced during the interpretation section of the study with a heavier priority being placed on the quantitative results.

Participants were introduced to emersion of one arm in ice water while being timed (Spanos et al., 1984). The study used ten participants divided into two groups and two treatments. All participants were be tested as to their suggestibility using the Stanford test. The participants were then be placed into one of two groups dependent on their suggestibility. Each group contained high suggestible participants and low suggestible participants.

1) The first group will be divided into:

   Group H1 (high suggestibility) and

   Group L1 (low suggestibility)

   Group 1 was introduced to priming, which is a modification of Bartels et al. (2006) approach.

2) The second group was divided into:

   Group H2 (high suggestibility) and

   Group L2 (low suggestibility)

   Group 2 received suggestion only (Spanos et al., 1984)

Each group received a different treatment. The priming that was given to Group 1 was done over a three-minute treatment period just prior to the emersion and stopped once the participant started to place their arm in the water. The priming consisted of an unrelated discussion just prior to the emersion using such words as warm, comfortable, relaxed, slow, sunshine, tropic, vacation, etc. The priming words were interspersed in the conversation in such a way that the participant was not aware that they are being used to influence their perception. It

appeared to be a normal conversation to the participant. The researcher may have varied slightly from subject matter when engaged in conversation with the participant but all such deviations were within the scope of the other conversations held with other participants.

The suggestion that was given to Group 2 consisted of a written statement read by the researcher. The suggestion was read surreptitiously and imbedded in administrative conversation. The suggestion was read 10 minutes before arm submersion and contained one sentence suggesting that the water is not as cold as it looks.

The study measured the amount of time the participant's arm was in the ice water and the temperature of the water throughout the testing. The water was adjusted to between 4 – 5C during the testing period. Previous testing in this area has not done a constant measurement of water temperature throughout the test. Since not all people experience the same level discomfort, the variance in testing caused by individuals initial discomfort resistance was tested prior to the commencement of the study, by creating a baseline on each participant. The participant's baseline for normal skin temperature was measured by testing the temperature on the skin of their hand after a three-minute immersion in water set at a temperature of 32 - 35C (Bartels et al., 2006, p. 2). After a 10 minute rest from the skin temperature test they emerged their arm for 10 seconds in the ice water and self evaluated on a scale of 1 -10 their level of discomfort, 10 being the highest level of discomfort self-reported by the participant. The number the participant reported after 10 seconds became their adjusted one (1) on the discomfort scale. This process of adjusting the test to individual levels of discomfort experience should have operationalized the self-reported levels of discomfort during the testing. This information was added to the analysis. Both groups were given a suggestion as to their comfort level. Group 1 was given priming

phrases and words just prior to immersion. Group 2 was given a one-sentence suggestion 10 minutes before the immersion.

A follow-up phone call was be made several days later to asses their impressions of their experience during the immersion. This included a request to rescore their comfort level during the testing on a 1 to 10 scale. They were asked not to try and remember their scores but to report their current impression of the testing during the five-minute period.

RESEARCH INSTRUMENTS

Potential participants were screened for any medical condition, which may have caused them a problem or interfere with the collection and analysis of data. All participants were given the Stanford Suggestibility Test. They were graded either low or high suggestibility. An equal number of participants were selected and placed into high and low suggestibility groups.

The location used for this study was an office measuring 12 by 14 feet with light green and blue walls. The furniture in the office is overstuffed leather and '30s style furniture combined with modern art. The physical instruments used to conduct this study were a storage tub, ice, water, towel, a clock with a second hand, and a Non-contact Infrared Thermometer (TempIR).

DATA ANALYSIS

The participant will self-record their level of discomfort on a survey sheet (see Survey in appendix) during the submersion of their arm in water. The left column was alphabetized, A through J. On each of these lines (A-J) will appear to the right the numbers 1 – 10. At set timed intervals of 30 seconds the participants were asked to record their level of discomfort by

circling one of the numbers on the line. The information was collected and graphed against level of discomfort and time frame. After collection the information was quantified using "R" software, to develop statistical numbers and compared to find whether there is a significant statistical difference between group 1B and 2C. Any variance between group 1A and 2C will also be looked at and discussed.

Statistical analyses was conducted in R (R Core Development Team 2014). Adjusted discomfort score data was checked for normality and evenness of variance with a Shapiro-Wilk test and F test or Levene's test respectively. Outliers were identified within the analysis. Differences among reported discomfort of groups was determined using ANOVA. A post-hoc Tukey test was used to compare all pairwise relationships among groups.

The "R' analysis was conducted by Ross D. Whippo, Research Biologist at the Smithsonian Environmental Research Center (Smithsonian Institute).

VALIDITY

Although some researchers believe that reliability and validity are not relevant to qualitative research (Eriksson & Kovalainen, 2008, p. 240) others would argue that in order to obtain an authentic, fair, honest, and balanced account of information (Neuman, 2011, p.214) validity at least should be taken into consideration. In order to obtain as fair and balanced a result in the post-test interview, all questions were structured. The participants were asked questions by the interviewer from a prepared script. The number of questions consisted of two, and they were open ended, and answered the question, "what" (Eriksson & Kovalainen, 2008, p. 81). The questions were simple, neutral questions dealing with the participants experience during different time periods of the five-minute water submersion test. The comments made by the participants were compared for similarities and dissimilarities.

RELIABILTY

As the main part of this study involves a quantitative measurement it is necessary to gain a level of confidence in the data collected. Although all researchers are concerned with the ability to confirm their findings, it is debated in qualitative circles what measurements should be used, as some social researchers believe there is no "truth" (Ritchie & Lewis, 2003, p. 270). Quantitative measurement were analyzed using R. Control of the intra-rater reliability was determined through accurate and detailed information on the testing process as a whole and quality interpretation of the interview following the water submersion in particular.

TRIANGULATION

Both the qualitative post-test questions and the quantitative analysis using R was combined to form one study and further analyzed looking for patterns to discern an understanding of any relationship between the self-reporting test and the post-test perception by the participant. It is necessary to use validity to help verify reliability. Although validity and reliability are usually complimentary, when they are in conflict it allows for a further determination as to what in the study may be missing or misinterpreted, allowing for a second look at the data. It may also open a new line of inquiry.

ETHICAL CONSIDERATIONS

The research includes minimal risk to participants. All participants will sign an informed consent form, which explains the process of the experiment (Appendix A). The experiment was explained to them orally as well. The processes of suggestion and priming was explained to them after the testing was complete. Only participants over 18 years of age without mental or

physical limitations were selected to participate. An attempt was made to include a representational cross section of ethnic, racial and gendered participants. Developing a numeric system as soon as practical during the study ensured anonymity. A copy of the final research was provided to participants, and ten dollars as payment for their time.

The research will not include any individuals that are considered a member of a vulnerable population per the U.S. Department of Health & Human Services. The exclusion group includes but may not be limited to hospital patients, individuals under 18, and Prisoners. Individuals over 65 will not be included due to the increased likelihood that they may have additional health issues that are not readily apparent. Individuals outside of a 100-mile radius of the research location will also be excluded due to travel limitations. Anyone that has ever had a cold weather injury will also be excluded.

In order not to prejudice the participant one way or the other, the description of this research has been described in as neutral terms as possible. Although the main purpose of the research is to test for the level of discomfort using suggestion and priming it is felt by the Primary Investigator that those words and the associated suggestion that accompanies those words may set up the participant to expect discomfort and thereby make the results of the research suspect based on printed word priming prior to the actual suggestion and verbal priming. Therefore, any language that is too descriptive of the process and the reasoning behind the testing is eliminated from the information that is given to the prospective participant until after testing.

All participants will give name, sex, age, race, and contact information to the PI. This information was retained by the PI for 90 days and then destroyed through shredding and burning. All information that could be associated with an individual was date-time and sequence

coded. The personal information was coded and held separate from the raw data, which will also have the associated code. All information that was analyzed only had the code attached. Besides the PI the only other person with access to the raw data prior to publication was the individual that was conducting the R analysis. Any information that the analyst receives was coded.

In keeping with the need to "Do no Harm" during the testing of participants, several safeguards have been put in place. Participants in the study were informed before the test that they would be hypnotized and would be required to sign a form acknowledging and authorizing it. They were also informed that they will be asked to place their arm in water at different temperatures and will sign a separate consent form. They were given 10 minutes to think about whether they wanted to continue with the experiment. They were also allowed to make any phone calls they wanted in order to discuss the advisability of continuing the test. For the hypnosis section of the test they were informed about what hypnosis is and what it is not. They were also informed that they may withdraw from the testing at anytime before or during the testing.

Any harm that may have been done was more likely to be in the physical sense doing to the nature of the study. In order to control this, anyone with cold weather injuries or poor blood circulation was eliminated from the testing. The Primary Investigator was previously trained to recognize and treat cold weather injuries.

It is possible that an unintended reaction may have been encountered during the hypnosis. To reduce any unplanned event the PI was using the Stanford Hypnotic Susceptibility Scale. This is a standard test that has been used in the past without any adverse effect, as far as the PI is aware. In the case that a participant should have experience untoward effects of the hypnosis or revealed information that the participant

may not have wanted revealed the PI was guided by the Code of Ethics of the Association of Professional Hypnotists and Psychotherapists, of which the PI is a member and the reporting requirements of the Washington State Department of Health, with whom the PI is registered as a Clinical Hypnotherapist.

In order to *do no harm* the Primary Investigator complied with all ethical and legal standards required in order to assure the safety and well being of the participant.

CHAPTER 4: THE STUDY

INTRODUCTION

This chapter presents the quantitative and qualitative data collected during the period of 8 March to 29 March 2015. The chapter will begin by restating the purpose of the study and the research questions.

The study covered an area that has been previously studied to a limited degree. Although the area of suggestion has been studied for the past hundred years it was mostly addressed by psychologists and psychiatrists in the form of literature reviews with a limited amount of original qualitative or quantitative research. This chapter will look at the results of original quantitative and qualitative research conducted from a communication perspective and based in part on the research of Spanos et al. (1984) and Bartels et al. (2006).

SUMMARY OF DATA ANALYSIS

The quantitative data analysis for this study used R software. Ross Whippo MSc from the Smithsonian Environmental Research Center located in Edgewater, MD ran the R analysis.

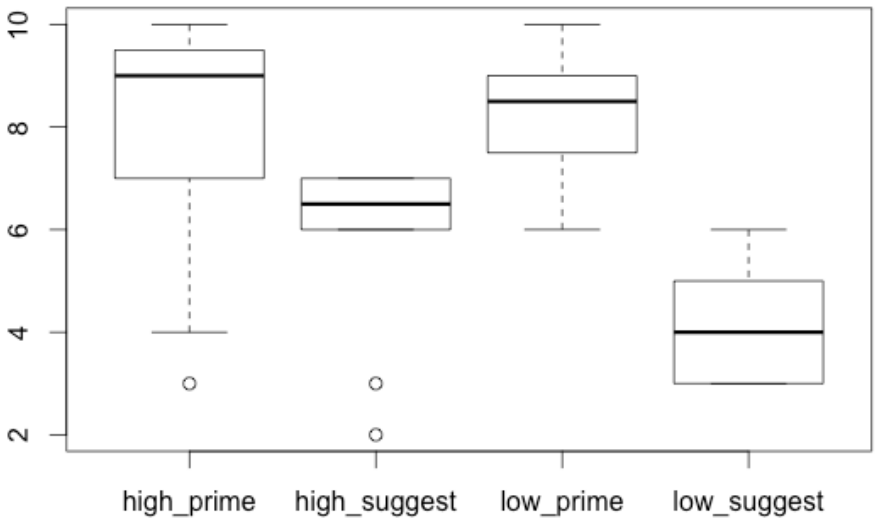

Fig. 1
This is a Boxplot of the results of testing. The results show an average mean indicated by the line through each box. All circles outside the box represent outliers, which represent non-completion of testing.

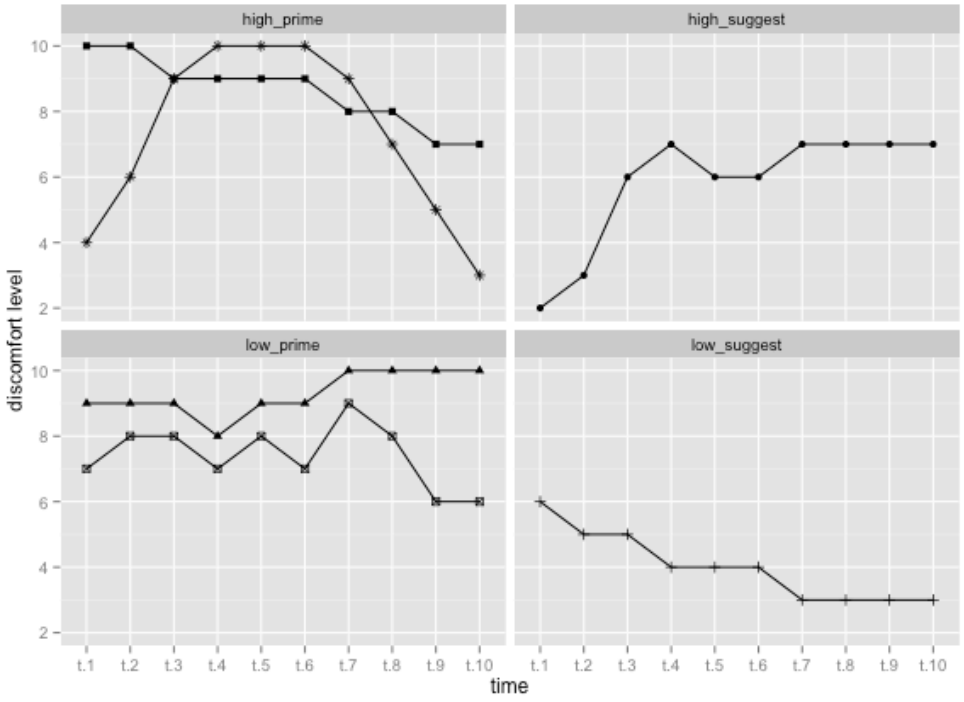

Fig. 2
Represents the individual plot points of participants who completed the testing, with one line representing one participant. Outliers were not plotted.

RESULTS OF THE STUDY

The discomfort rating analysis had 2 Treatments (Priming/Suggestion) X 2 Susceptibility Levels (High/Low) X 10 reporting periods (30s intervals). The testing began with ten participants due to the limited amount of time for the testing phase of the research, and the number of individuals who volunteered . Each participant required approximately two and a half hours to prepare, test and do follow up. The incentives for participating were minimum ($10 and a copy of the final research), thus limiting the number of participants to volunteer. Participants were divided into one of four groups based on their level of suggestibility observed during the Stanford test. Individuals with a high suggestibility level were placed in either group H1 (high

suggestibility with priming), H2 (high suggestibility with suggestion only), and those with a low suggestibility were placed in L1 (low suggestibility with priming) or L2 (low suggestibility with suggestion only). An attempted was made to place equal numbers of participants into each group. Because of the high level of participant who could not finish the test in the High Suggestion (H2) group, more individuals were assigned to this group in an effort to gain more equilibrium across the four groups. All participants were white/Caucasian with the youngest being 18 and the oldest being 64. There were eight males and two females. They were tested for suggestibility using the Stanford Hypnotic Susceptibility Scale. The results placed three participants in the H1 group, two participants in the L1 group, four participants in the H2 group and one participant in the L2 group. One participant from the H1 group and three participants from the H2 group were recorded as outliers on the R analysis due to incomplete testing.

The H1 group participants that were high suggestibility were primed using key words that would indicate a relaxed and warm environment. One participant went to a 10-discomfort level almost immediately upon placing their arm in the ice water and ended the test after 30 seconds. This would be consistent with Spanos et al. finding that the pain grows quickly in the first 60 seconds of submersion (1984). The other two participants in the H1 group indicated dissimilar levels of discomfort at the beginning of the testing. As the test progressed both participants showed a similar lowering of the level of discomfort. By the end of the testing they both showed a lower level of discomfort than they had at the beginning of the test (Fig. 2). Both participants showed a marked reduction in their discomfort level over the course of the testing.

The L1 group consisted of participants who were low suggestibility and were primed in an identical manner as the H1 group. The participants in the L1 group indicated that their level of discomfort was similar to the other participant in this group throughout the testing but grew

further apart from each other in the last minute of testing. One participant in this group finished the test at a level of 10 on the discomfort scale while the other participant dropped from a 9 down to a 6 on the discomfort scale (Fig. 2).

The H2 group had a high suggestibility and was treated with a suggestion ten minutes before the test started. The H2 group started with four participants. One participant went from a 7 to 9 on the discomfort scale within a minute and was unable to continue the test. Two other participants in the H2 group were unable to continue after registering a 9, and 10 respectfully after less than a minute. The other participant in the H2 group started the test at a discomfort level of two and leveled off at a discomfort level of seven for the last minute and a half of the test.

The L2 group consisted of one participant. This participant had a low suggestibility and was given a suggestion ten minutes before the test began. The participant started the test with a discomfort level of six and steadily decreased the level of discomfort to finish the test at a discomfort level of three.

The post-test was conducted between 23 of March and the 30th of March. The participants had at least a day to rest from the initial test. The post-test was conducted over a broad time period because of the availability of participants and the order in which they were being tested. The majority of participants showed a lower level of perceived discomfort during the post-test than they remember experiencing during the ice water test. In most cases the post-test showed a shadowing of the original discomfort level but at a lower level. As the discomfort level on the test varied up or down, the post-test followed the same pattern as the test but two to three discomfort points below. The one exception to this pattern was a participant in the H2 group of high suggestibility. The participants post-test showed an almost identical pattern and rating as

on the test.

Findings:

RQ1: Can low suggestible subjects experience the same level of comfort - when incorporating priming – that, high suggestible subjects experience with suggestion alone?

From looking at the Boxplot (Fig. 1) it would appear that low suggestible participants who were primed do not experience the same level of comfort as high suggestible participants experience that received a suggestion alone. However, when viewing Fig.2 it would appear that priming might have caused a shift in the amount of discomfort experienced by low suggestible participants. In the low suggestible participants they finished the testing at a lower level of discomfort than when they started the test.

RQ2: Do high suggestible subjects experience a different level of comfort when primed, than high suggestible subjects who have received only a suggestion?

When looking at the results of the high primed (H1) participants and the high suggestion (H2) participant it would appear that priming may have a greater effect on the perceptions of participants who have a higher suggestibility level as tested by the Stanford test. The participants in the high primed (H1) group dropped from a discomfort median level of 7 to a median level of 5. The participant in the high suggestion (H2) group increased from a discomfort level of 2 to a discomfort level of 7. It must be noted that the majority of participants who did not complete the testing because of the high level of discomfort were in the H2 group. Three of the four participants in the high suggestion (H2) group did not complete the test because of the almost immediate level of high discomfort felt when placing their arm in the water during the testing phase. One high suggestible participant in the high prime (H1) group was also not able to

finish the test, but did not show the same high level of nonverbal stress as indicated by those in the H2 group.

The ANOVA (Fig. 3) indicates that there is no difference between the groups from a statistical standpoint ($p = 0.207$).

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
group	3	15.86	5.288	3.991	0.207
Residuals	2	2.65	1.325		

Fig. 3
Analysis of Variance (ANOVA)

DISCUSSION

Participants had the back of their hand tested for temperature after the initial baseline testing in ice water in order to get a baseline of their skin temperature. This was done using a TempIr non-contact infrared thermometer Explain how it was done to determine how long it takes for the submerged had to return to a normal state comparable to the non-submerged hand. This was to ensure that a participant's hand and arm were not immersed for the test before the hand and arm had come back to normal temperature. The reason being that the results of the test may be adversely affected by a physiological rather than communicative (priming/suggestion) standpoint at the time of the test. It was found that it took from 5 to fifteen minutes for the surface temperature of the participants skin to approximate the temperature of their non-immersed hand.

During the processes of analysis there were three things that became apparent, one, was that the ANOVA (Fig. 3) shows no statistical difference in the groups. This may be due to the low number of samples taken during the testing. It is possible that the ANOVA may

have reflected a difference between the groups if there had been more participants included in the testing.

The second aspect that stood out was that the number of participants who did not complete the 5 minutes ice water test were all, high suggestibility individuals. Although they are plotted as outliers on the R analysis (Fig 1) their inclusion in the discussion is important because sometimes the outliers may be of more importance than the plots between the inner and outer fences. These outliers must be viewed from a qualitative and anecdotal standpoint.

The third thing that was noticed was when looking at the Plotbox analysis (Fig.1) the participants in Group 1, both high and low, appear to have a greater degree of discomfort than the participants in Group 2. It would appear that the priming group not only had the widest variance on the Plotbox from beginning to end but also had the greatest reduction in discomfort relative to their base line on the report curve (Fig.2). A number of things could have caused this swing from moderate to high to low. It is possible that these individuals in this group (H1) were susceptible to numbness from cold-water immersion. It is also possible that being individuals who have a high suggestibility level, they had enough time to talk themselves into believing the water was warmer. This may very well fall in with the three concepts that were discussed in chapter 1. As noted previously, Burgoon, who developed EVT, also developed Interaction Adaption Theory (IAT), which expands on EVT. Those concepts within IAT that may apply in this circumstance are Requirement (R), Expectation (E), and Desire (D). Requirements are those things that are needed as a minimum to survive. Expectations are those things that are believed will happen, and desires are our hoped for results (p. 525). It was obvious from observation that none of the participants wanted their arm to remain in the water for the entire five minutes. It is therefore plausible that the participants with a high level of suggestibility who completed the test

were able to keep their arm in the water because as high suggestibility participants it did not take them more than a few minutes to talk themselves into believing the water was warmer. However, It is possible that the participants with a high level of suggestibility who did not complete the test overcompensated based on their requirement, expectation and desire not to experience cold water. Their perception shot from cold to hot and they were thus not able to keep their arm in the water. There were no directions given as to whether they should try to resist the cold in any manner necessary but it is possible they decided on their own to reduce the level of cold because this was their desire to survive by manipulating their perception.

Another possibility for this change in a large swing in perception for those who did not complete the testing might be explained by the Affect-Dependent Theory (ADT) (Zillmann & Bryant, pp. 22-24) which states that most individuals will organize their surroundings to minimize unpleasant stimuli and maximize pleasant stimuli. As noted in the previous paragraph these individuals were high suggestibility and may have organized their perception of the cold to minimize the unpleasant sensation and in thus doing, overshot their comfort level much like a rubber band snapping back.

As mentioned in chapter 1 it is possible that before the conscious mind can react, the unconscious mind has communicated a danger to the body. Through this unconscious communication process the body may have developed a process that saves itself from certain pain. As mentioned previously this quick communications to our brain may be controlled through a physiological gatekeeper which allows for a quicker reaction to the message by short-circuiting part of the message and sending instructions back before the full message reaches the brain. In this manner the body may be working in unison with the mind to create a more acceptable outcome.

This is similar to the findings of Bartels et al. who found that suggestion alone produced only a marginal effect, whereas those receiving conditioning (priming) and suggestion showed significant differences from the control group (2006). In the case of the high suggestible' who did not complete the test it is possible that the expectation of warmer water caused them to experience something in violation of that which they had prepared themselves and the shock of it not being what they expected heightened their level of discomfort. It is interesting to note that all four participants who were unable to continue with the test were high suggestible. Two of these participants stated that their arm was burning after less then 30 seconds in the water at which point the test was terminated. Another of the participants who did not complete the 5-minute period questioned the Investigator as to whether the water had been reduced in temperature between the baseline test and the 5-minute test.

What is interesting is that during the baseline testing where the individuals placed their arms in the ice water for 10 seconds, two of the four reported a level of 2 on the comfort scale. The third individual reported a 3 on the baseline scale and the forth participant reported a 7 on the baseline scale. Of note is the fact that the three participants who had a baseline of 2 or 3 showed a marked increase of discomfort in their facial expressions within one second of placing their arm in the water during the testing phase. None of these expressions of discomfort were present during the baseline testing. One of these participants was in the H1 group that received priming and the other three were in the H2 group, which received a suggestion only. There was an hour plus lapse in time between the baseline testing and the test. The only activity between these two submersions in ice water was the conduct of the Stanford test and the suggestion for group H2 and the priming for group H1.

When looking at the participants that were categorized as low suggestible (Fig. 2) it

would appear that from the R analysis, there was very little difference whether they were primed or received the suggestion. The participant in L2 showed the same tendency as half the participants placed in L1. The L2 participant showed a decrease in the level of discomfort over the course of the testing. One participant in L1 showed a decrease in discomfort as well and the other L1 participant showed an increase in discomfort. Of the six participants who completed the test, four of them finished the testing at or below their baseline test.

The H2 group cannot be compared because three of the four participants did not complete the testing. However, if taken as anecdotal it would appear that those in the H2 group were not affected by the suggestion that the water was not cold. It would appear that the suggestion that the water was not cold had the opposite effect on their reaction. As one participant state, "It would have been better if you had told me it was going to be colder, that way I wouldn't be surprised at how cold it was." In Expectancy Violation Theory the violation of normal standards will take the participants' attention away from the main topic (Burgoon, 2009). In this case the ice water was supposed to be the main topic and the statement that the water was warmer than it actually was, was the expectancy violation. This outlier statement seems to be in opposition to the EVT. However, if you take into consideration that EVT also considers the psychological and physiological activations, the outcome may very well fit within the scope of EVT. On the physiological side of the equation is the temperature of the water, which was between 40 and 41 degrees Fahrenheit. On the psychological side of the equation is the suggestion that it is not cold. EVT theory also states that negative violations are predicted to produce more negative outcomes (Burgoon, 2009). This could explain the number of high suggestible participants that did not complete the testing if their interpretation of the process (Burgoon, 2009) was that the investigator had deceived them on what to expect on the temperature of the water thus creating

an expectancy violation between them and the Investigator. It was probably expected by the participant that the relationship would be based on trust. The violation may very well have been adapted at an unconscious level and reported at a conscious level on the test. If this is the case than the primary focus was the psychological trust and the violation was the ice water, thus taking away from the suggested statement that the water was not cold.

The post-test indicated that all participants with one exception perceived the water as less discomforting than they had reported on the test.

The findings of this study seem to support Spano's et al. (1984) findings that there was no significant difference between the high suggestion group and the low shadowing (priming) group. Spanos et al. also noted that the level of reduction in pain maybe expectancy generated from one situation to another. As Bartels et al. (2006) points out, with the addition of explicit expectation through verbal suggestion to highly susceptible groups, physical sensations maybe amplified. If Bartels et al. (2006) is correct, than this may explain the reaction that a number of participants in the high suggestion group had in this study. A number of participants in this study showed a very sudden level of discomfort during the test phase, whereas in the pretest they showed no signs of distress.

CHAPTER 5: SUMMARIES AND CONCLUSIONS

LIMITATIONS OF THE STUDY

Although the number of participants was limited, it is possible according to some sources that this does not have a significant outcome on the general analysis of the study. According to de Winter (2013), using small samples of groups of 3 is possible as long as the effect size is large. According to de Winter (2013) the use of electric shock or warmth may cause strong physical stimuli that increases the effect size. When looking at statistical results alone, it is possible that the sample size may cause inconclusive research results and may be influenced by outliers. However, when using a mixed approach of quantitative and qualitative methods, as this study does, this problem of sample size becomes less important for two reasons. The first being that the qualitative analysis may be utilized as a source to judge the relevance of the quantitative analysis and two, the qualitative information has been subject to measures of validity and reliability through the structure of the post-test.

Another possible shortcoming of the study was that the window of the study was over a very short period of time, encompassing a two-week timeframe in March. Because of this limited time period the study encompassed only volunteers who were available during that short window of time and may not be representative of the general population.

Another limitation to the study was the inability to balance the different quantitative sections of the study due to incomplete testing by individuals. With a large percentage of individuals, in the high suggestion (H2) group, not finishing the testing the ability to find a statistical average for this group was not possible. The same holds true for the low suggestion (L2) group, though this low number was caused by an inability to find enough low suggestible

individuals during the testing.

Because these two groups H2 and L2 could not be statistically tested, due to the inability to create a relevant mean score for the groups, much of the analysis was based on qualitative rather than quantitative information.

FURTHER STUDY OR RECOMMENDATIONS

This study was limited in nature due to numerous constraints, thus leaving many questions to be answered relative to the influence of suggestion on perception. One of the areas of this study that should be looked at in greater depth is the relationship between high suggestible individuals when given a suggestion only and when primed. The cursory information supplied in this study would indicate that suggestion alone may have a greater effect on certain high suggestible individuals than others. This may be due to the level of suggestibility each individual experiences, but was not tested in this study, although individuals were placed in general categories. In future studies individuals might be numerically rated by susceptibility, and tested by very specific criteria, to determine if level of susceptibility has a direct relation to level of perception of heat and cold.

Another study might also look at this same perspective from a low suggestible individual. By looking at the low suggestible individuals, independent of the high suggestible group, a better understanding of the priming effect may become clearer as it relates to low suggestible individuals.

The question of the priming effect might also be studied more from a mass media perspective as is used in television, radio, newspapers and the internet.

CONCLUSIONS

Although the statistical information may not have included a large enough sampling to be conclusive, the overall analysis that included qualitative information, indicated that previous studies along this line of enquiry might have had variances in their results due to different methods of application during the testing.

The primary purpose of this study was conducted to see if any difference in perception might be gained by priming low suggestible individuals (L1). The secondary reason for this research was to determine if high suggestible individuals could be influenced by priming (H1). The ability to understand the level of influence that was placed on the L1 group cannot be determined. However, the H1 group and the high suggestible in the H2 group became of much more interest after the test was completed and the plot (Fig. 2) was available.

Although we are looking at a rough estimate in Fig. 2, the information available is interesting. In the H1(upper left of Fig. 2) plot this group showed an average decrease in their overall level of discomfort, which leads the investigator to conclude that the priming may have had a very real effect on the individuals who were of a high suggestibility. More important then the individual that shows up on the H2 (upper right hand corner of Fig. 2), were the individuals who were assigned to this group but were unable to complete the test. These individuals are indicated in the Boxplot and are identified as outliers in Fig. 1 as high suggest. It is possible that these outliers were influenced to a greater degree by the suggestion than the one individual who completed the testing. This influence may have caused them to go beyond the expected increased level of comfort, to actually continue the increase in heat to the point where it became unmanageable. In short, they may have gone from very cold to very hot perception, rather than stopping at an acceptable comfort level. This is supported by at least two of the outliers who

stated they could not keep their arm in the water because, “it felt like it was on fire”. If this is the case then there may be a possibility that this follows the pattern of other studies that found that highly suggestible individuals were affected by suggestion alone. There is not enough statistical data to come to a detailed conclusion but in general when combined with the qualitative information, it seems to support previous findings by Spano’s (1984) and Bartels (2006) studies.

Though cold water was used as the processes by which to study the phenomena of suggestion, this and others studies of suggestion are relevant to our understanding of human communications in all its aspects. As this information is further studied a clearer understanding will develop in interpersonal communication, allowing a better understanding of how we influence others.

REFERENCES

"Toward a dose-response". Conference Papers -- International Communication Association [serial online]. 2012 Annual Meeting 2012;:1-32. Available from: *Communication & Mass Media Complete*, Ipswich, MA. Accessed February 5, 2015.

Arendt, F. (2013). News stereotypes, time, and fading priming effects. *Journalism and Mass Communication Quarterly*, 90(2), 347-362. Retrieved 07 May 2014 from http://search.proquest.com

Bartels, D.J.P., van Laarhoven, A.I.M., Haverkamp, E.A., Wilder-Smith, O.H., Donders, A.R.T., van Middendorp, H. V., van de Kerkhof, P.C.M., & Evers, A.W.M. (2006). Role of conditioning and verbal suggestion in placebo and nocebo effects on itch. *Plos One*, 9(3), 1-9. Retrieved May 20, 2014, from http://connection.ebscohost.com/c/articles/95436729/role-conditioning-verbal-suggestion-placebo-nocebo-effects-itch

Burgoon, J.K., Interaction adaption theory. As described by Hubbard, A.E., (2009) In S.W. Littlejohn, & K.A. Foss (Eds). *Encyclopedia of Communication Theory* (pp. 524-526). Thousand Oaks, CA, Sage

De Winter, J. C. F. (2013). Using the student's t-test with extremely small sample sizes. *Practical Assessment, Research & Evaluation,* 18(10). Retrieved from http//:www.pareonline.net

Dorris, J. A. (1976). An Attribution Approach to Investigating the Perception of Implicit Communications of Evaluation. *Journal Of Personality*, 44(3), 410.

Egolf, D.B., (2012), *Human communication and the brain*. Plymouth, UK, Lexington Books

Ekman, P., (2007). *Emotions revealed*. New York, St Martin's Press

Givens, D., (2008). *Crime signals: How to spot a criminal before you become a victim.* New York, St. Martin's Griffen.

Golden, J.L., Berquist, G.F., & Colman, W.E. (1976), *The rhetoric of western thought*. Dubuque, I.A., Kendall/Hunt Publishing Company

Gouvier, W. D. (2002). Channels of communication and related factors influencing the perception of meaning, value, and emotion. *Applied Neuropsychology*, 9(1), 1-2.

Johnson, J.R., (1984) The role of inner speech in human communication, *Communication Education*, 33:3, 211-222, doi:10.1080/03634528409384744

Korzybski, A. (1951). The role of language in the perceptual processes. Blake, R.R. & Ramsey, G.V. (Eds.), in *Perception; an approach to personality*. New York: The Ronald Press Company.

Lavine, R., Buchsbaum, M., & Poncy, M.S., (1976) Auditory analgesia: Somatosensory evoked response and subjective pain rating. *Psychophysiology* 13(2) 140-148,

Lundh, L. (1998). Normal suggestion. An analysis of the phenomenon and its role in psychotherapy. *Clinical Psychology & Psychotherapy*, 5(1), 24-38.

Patterson, D.R., Jensen, M.J., Hoffman, H.G., & Palacios, A.G. (2006). Analgesic effects of posthypnotic suggestions and virtual reality distraction on thermal pain. *Journal of Abnormal Psychology*, 115(4), 834-841, doi: 10.1037/0021-843X.115.4.834

Reilly, J., Martin, N., & Grossman, M. (2005). Verbal learning in semantic dementia: Is repetition priming a useful strategy?. *Aphasiology*, 19(3-5), 329-339. doi:10.1080/02687030444000787

Rossi, E., Rossi, K., Cozzolino, M., & Iannotti, S. (2007). Expectations of hypnosis future: A new neuroscience school of therapeutic hypnosis, psychotherapy, and rehabilitation. *European Journal Of Clinical Hypnosis*, 7(3), 2-8.

Scott, W. D. (1911). Suggestion. *Psychological Bulletin*, 8(9), 309-311. doi:10.1037/h0072005

Spanos, N.P., McNeil, C., Gwynn, M.I., & Stam, H.J. (1984). Effects of suggestion and distraction on reported pain in subjects high and low on hypnotic susceptibility. *Journal of Abnormal Psychology*, 93(3), 277-284

Weaver, K., Garcia, S. M., Schwarz, N., & Miller, D. T. (2007). Inferring the popularity of an opinion from its familiarity: A repetitive voice can sound like a chorus. *Journal Of Personality And Social Psychology*, 92(5), 821-833. doi:10.1037/0022-3514.92.5.821

Wilson, K. (2011). The power of suggestion. *Psychologist*, 24(10), 782-783.

Zillmann, D., & Bryant, J., Affect-dependent theory of stimulus arrangements. As described by Davis J.J., (2009). In S.W. Littljohn, & K.A. Foss (Eds.). *Encyclopedia of Communication Theory* (pp. 22-24). Thousand Oaks, CA: Sage

Appendix A

CONSENT FORM

[Perception of reality survey]

Scott D. Whippo, Graduate Student, School of Professional Studies, 425 244-5517, Responsible Project Investigator

[Investigator's statement.]

Purpose and Benefits

This study is to help determine the potential connection between perception and reality. This information will be used to create more effective communications between numerous groups of people from immediate family members to employers.

Procedures

This procedure will take no more than one and a half hours of your time. You will be asked to submerse your arm in ice water for a period of 10 minutes. During that time you will be asked to record your level of comfort or discomfort on a form numbered from 1 – 10, one being the most comfortable and ten being the least comfortable. This is a one-time event, requiring no follow-up visits from you.

Risk, Stress or Discomfort

Risk is minimal. You may experience a temporary sensation in your arm. Although the process itself will take less than fifteen minutes we will ask that you remain in the area for fifteen minutes after the survey is complete.

Other Information

Your identity will remain anonymous. Your results in the survey will only be identified by an alphanumeric code. Any information of a personal nature that can be identified with you will be removed from our records after 90 days. These 90 days will be required to make sure we have placed all research information properly before destroying all contact information. After 90 days

we will no longer have your name, telephone number or anything of a personal nature that may identify you with the survey.

Signature of Principal Investigator Date

[Subject's statement.]

[State: "the study described above has been explained to me, and I voluntarily consent to participate in this activity (study, research, etc. as appropriate)." State: "I have had an opportunity to ask questions." If applicable also state: "I give permission to record, intercept, and/or divulge conversations (as appropriate) in which I participate during this activity (study, research, etc. as appropriate)."]

Signature of Subject Date

[as appropriate]

Signature of Subject Advocate Date

[When completed form is more than one page in length, give title of project on second page and number the pages "Page 1 of Pages," etc. and place signatures on last page. Both the investigator and each subject must receive a copy of the signed consent form.]

[* Subject may usually waive the right to the advocate by signing in that space as well.]

Appendix B

Data Collection Form

	Low discomfort <									> High discomfort
A.	1	2	3	4	5	6	7	8	9	10
B.	1	2	3	4	5	6	7	8	9	10
C.	1	2	3	4	5	6	7	8	9	10
D.	1	2	3	4	5	6	7	8	9	10
E.	1	2	3	4	5	6	7	8	9	10
F.	1	2	3	4	5	6	7	8	9	10
G.	1	2	3	4	5	6	7	8	9	10
H.	1	2	3	4	5	6	7	8	9	10
I.	1	2	3	4	5	6	7	8	9	10
J.	1	2	3	4	5	6	7	8	9	10