AN EXAMINATION OF THE RELATIONSHIP BETWEEN CULTURALLY RECOGNIZED SYMBOLS AS AVATARS AND TRUST IN COMPUTER-MEDIATED COMMUNICATION ENVIRONMENTS

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Rodger Glenn Morrison, Jr.

Certificate of Approval:

_____	_____
Houston H. Carr Professor Management	Casey G. Cegielski, Chair Associate Professor Management
_____	_____
R. Kelly Rainer, Jr. George Phillips Privett Professor Management	George T. Flowers Dean Graduate School

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Rodger Glenn Morrison, Jr.

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Rodger Glenn Morrison, Jr.

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Signature of Author

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Date of Graduation

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Rodger Glenn Morrison, Jr.

Doctor of Philosophy, December 19, 2008
(M.B.A., Troy University, 2004)
(B.S., Troy University, 1999)
(A.A.S., Community College of the Air Force, 1992)

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One of the characterizations that distinguishes man from the rest of the animal world is the use of symbols. Many researchers consider the act of forming and using symbols as the central cognitive process in mankind's thinking. A study of human communication, then, would be incomplete without a consideration of the impact of symbolism. The use of symbols in communication has been a focus of study in many disciplines including psychology, religion, literature, and more. While psychologists have focused primarily on the cognitive processes involved in forming and using symbols, anthropologists have focused on commonly accepted meanings of particular symbols. In religion and literature, researchers note certain symbolic themes and their

associations with certain abstract meanings meant to be understood by the readers of the works being considered. In more contemporary research fields, such as computer-mediated communication, the study of culture and symbols is a relatively new focus of research efforts. While it is well known that the meanings of symbols is both taught and learned through cultural phenomena, little research exists on the cultural influence of symbol meaning on user trust.

The methodologies used to gather data in this study include two opinion surveys and a lab experiment. In the first two phases of the research, student opinions of commonly recognized symbols and their meanings are obtained. In the third phase of the research, student subjects were each shown one of three different communication transcripts between two fictitious students. Each transcript differed only in the avatar used to represent one of the students. Student perceptions of the trustworthiness of one of the fictitious students were measured, as was student willingness to engage in trusting behavior. ANOVA revealed sufficient evidence to suggest that the use of symbols associated with positive character traits resulted in increased trust development. ANCOVA revealed sufficient evidence to suggest that the use of symbols associated with positive character traits resulted in increased trust development. Interactions between respondent gender and specific symbol used were also significant. These results suggest that the use of certain symbols as avatars influences the amount of trust developed toward them, as well as willingness to engage in trusting behavior, key factors in the successful implementation of technologies such as automated online virtual agents, certain knowledge sharing systems, and more. Additionally, these results suggest implications in other areas such as corporate branding, advertising, and more.

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CHAPTER I

INTRODUCTION

One of the characterizations that distinguishes mankind from the rest of the animal world is the use of symbols (Cassirer, 1944). Man is the only animal that is said to use symbols in everyday life and has even come to be dominated by them (Petocz, 2005). Many researchers consider the act of forming and using symbols as the central cognitive process in mankind's thinking, "like eating, looking, or moving about. It is the fundamental process of his mind, and goes on all the time." (Langer, 1942, p. 41) A study of human communications behavior, then, would be incomplete without a consideration of the impact of symbolism. The use of symbols in communication has been a focus of study in many disciplines including psychology, religion, literature, and more. While psychologists have focused primarily on the cognitive processes involved in forming and using symbols, anthropologists have focused on commonly accepted meanings of certain symbols. In religion and literature, researchers note certain symbolic themes and their associations with certain abstract meanings meant to be understood by the readers of the works being considered. In more contemporary research fields, such as technology-mediated communications or human-computer interaction, the study of symbols and their use is a relatively new focus of research efforts, especially in the areas related to social interaction, emotion, and cognition.

For instance, researchers have shown that the symbols used as avatars to represent the individuals in online chat sessions are often related to self-identification and self-disclosure (Kang & Yang, 2006). The use of small graphic symbols, or emoticons, as surrogates for non-verbal emotive expression in online chat environments have come under increased study as well. In fact, researchers have shown that using symbols is such an integral part of how humans communicate that we often do not even realize that it is occurring, even in online communication environments. It is this subconscious processing of symbols and their meanings wherein the subject of this study lies.

To illustrate the need for understanding how humans process the meanings of symbols in computer-mediated communication environments, consider one of the areas currently under study, that of online virtual agents. These automated software routines, or *bots*, are often designed to mimic humans in some way such as appearance, behavior, sound, grammar, and more. When deployed in customer service, these agents assist customers by solving technical problems, responding to inquiries, entering sales orders, and much more. The success of these agents in terms of competitive advantage can be significant. In one comparative study, the cost of a live-body customer service call was approximately four dollars, while the average cost of an automated online virtual agent interaction was approximately twenty-five cents (Trott, 2000, p. 31). Another example involves a California school district that introduced and began using MySite Agent, an online, interactive, virtual agent designed to handle online student inquiries. Using conversational English, students ask the agent questions and the agent software formulates a response based on keywords and sentence structure. The result is then given back to the students in conversational English (Kattner, 2004). Using existing instant

messaging technology and providers, the MySite Agent system was programmed to distinguish explicit from tacit knowledge and respond accordingly, either by providing answers from a database or by referring students to a live human agent.

While early online virtual agents such as these were historically passive in nature and only replied to inquiries and requests, this is no longer the case. Automated agents have recently been designed to be more active and direct. Virtual agents that seek out possible customers from massive online databases, and then contact those customers to make sales pitches via email or instant messaging have become commonplace.

Recent trends in automated online virtual agents also include the deployment of agents that actively collect personal information from the humans they communicate with, just like their human counterparts. When a web site visitor communicates with this type of agent, the software controlling the agent creates a database entry and records the IP address, cookie information, user name, and more. During the communication exchange, the agent either actively solicits information from or collects information freely given by the visitor in the course of addressing whatever problem or request is at hand. This information is recorded in the organization's databases and may later be used in sales, marketing, product improvement, collections, etc. To be successful, these automated systems must collect and maintain as much information as possible, which is often not freely given by the human users.

One phenomenon that has been noted by researchers is the ability for humans to communicate with online agents and avatars in the same way that they do with other humans. Humans often form pseudo-social relationships with the graphic components of communication interfaces presented by their computers (Isbister, Nakanishi, Ishida, &

Nass, 2000). As in relationships between humans, the relationships between humans and computer interfaces is often influenced by non-verbal as well as verbal exchanges of information (Cassell et al., 1999). Many researchers believe that the non-verbal component of communications may actually deliver more information in the communication process than verbal behavior does (Birdwhistell, 1970; Mehrabian, 1968). For example, most information about emotion, empathy, and social presence in interpersonal relationships is relayed non-verbally (Knapp & Hall, 2002). One of the biggest difficulties in developing interaction environments that utilize virtual agents, especially those that resemble humans in appearance, has been modeling human non-verbal behavior so that it properly augments verbal communication (Nakanishi, Shimizu, & Isbister, 2005a).

A key factor contributing to successful verbal and non-verbal interpersonal communication between humans is interpersonal trust. Rotter (1967) defined interpersonal trust as "an expectancy held by an individual or a group that the word, promise, or verbal or written statement of another individual or group can be relied upon". In situations of higher media richness such as face-to-face, video, and audio communications, a higher level of trust develops than when text alone is used (Bos, Olson, Gergle, Olson, & Wright, 2002), such as in a chat session. This suggests that information not found in text-only environments influences trust levels. That is, the non-verbal components of the communication environment influence the level of trust that develops.

One of the phenomena related to interacting with an online agent, especially those that are animated or mimic human behavior, is that it allows both verbal and non-verbal

information to be exchanged (Cassell et al., 1999; Cassell, Sullivan, Prevost, & Churchill, 2000). This holds true even when multiple people or multiple agents are involved. For example, in training environments that use simulated humans in emergency situations, programmed non-verbal communication was found to have a strong influence on group behavior (Nakanishi et al., 2005a).

Most people understand that the overall physical appearance of the individual can project trustworthiness. This is why network news anchors are careful about their appearance. Their neat dress gives the viewing audience an impression of trustworthiness. The clearly distinguishable uniforms of authority figures (e.g. policemen or doctors) can also lead to perceptions of trustworthiness (Joseph, 1986). Likewise, older people are considered by most societies to be more trustworthy than younger people (Doob, 1983). Many people put faith in authority figures and older people, even when their actual trustworthiness is unknown, a practice evident in the American culture when we teach young children to trust police officers, doctors, and teachers. Indirectly, this reaffirms the belief that the appearance of authority and experience is a reflection of an individual's trustworthiness. Most people assume, and we teach children, that an individual's experience helps them understand our needs so that they can help others. That is, people consider those that appear to have more experience to be more trustworthy because they are more able to understand the problem at hand or empathize with those in need. The appearance of symbols that represent authority or age, therefore, is culturally taught in the American culture to be associated with trustworthiness.

When humans communicate with each other, or with an online virtual agent in a computer-mediated communications environment such as online chat, it is often the case

that a graphic image or symbol is chosen as an avatar to represent the presence of those communicating. Often, this is the only visual clue that exists to the other's trustworthiness. Because these are typically chosen by each individual, or by the person responsible for programming a humanized agent, these avatars become a form of self-expression similar to an individual's clothing, hairstyle, or jewelry.

The purpose of this study is to show that the appearance of an avatar, or symbol used to represent a human or a virtual human in computer-mediated communications, can be manipulated through the use of culturally-recognized symbols to influence perceptions of trustworthiness and the behavior that follows. To that end, this study is written and divided into this introductory chapter and four additional chapters.

In Chapter two, a logical presentation of the extant literature from several different, but related, disciplines will be given. Because symbols permeate most aspects of the human existence, studies on symbol usage have been fecund. While psychologists have been studying the cognitive aspects and sociologist have been working with the social aspects of symbol usage, researchers in other areas have also been prolific. In the area of religious studies, researchers often study symbols for a deeper understand of religious works. Likewise, in the humanities, accurate symbol interpretation is key to understanding the works of architects, poets, authors, composers, and painters. The use of symbols in many of these disciplines will be discussed, as well as in the area of computer-mediated communications and trust studies. Numerous symbols are identified that are commonly found in the literature in three research disciplines, Religion, Arts and Literature, and Psychology. Two hypotheses are developed relating to the effect of

culturally-recognized symbols and trust in computer-mediated communication environments.

Chapter three describes the method used to test the hypotheses developed in Chapter two. The testing method described in Chapter three is divided into three parts, or phases. In Phase one, symbols identified in Chapter two are presented to respondents in order to identify keywords or phrases associated with each. In Phase two, symbols and word combinations from the responses in Phase one are presented to respondents to give an opinion regarding the strength of association, which will be used to identify which symbols will be used in Phase three. In Phase three, respondents will be asked to complete an instrument that measures predisposition to trust, read the text of one of three different chat sessions, and then complete instruments related to willingness to perform a trusting act and general trust levels that develop. Chapter four will provide a detailed analysis of data collected during the three data gathering phases described in Chapter three. Chapter five will contain conclusions and implications for this research, along with discussions of possible bias, limitations, generalizability, and future research possibilities.

CHAPTER II

LITERATURE REVIEW

Overview

This chapter will provide basic introductions to the fields of computer-mediated communication, symbolism, and interpersonal trust. First, descriptions of key characteristics of both face-to-face communication and computer-mediated communication are given, focusing on significant differences between the two. Second, an overview is provided that outlines key definitions and rhetoric used in symbolism studies. Information on symbol usage from the fields of Psychology, Literature, and Religion, along with descriptions of symbols commonly found in all three of these research disciplines, is also included. Third, a brief discussion of interpersonal trust is provided that includes key concepts, dimensions, and definitions. The role and importance of trust in both computer-mediated communication and Face-to-face communications is outlined in general terms. Finally, a brief description of recent research into interpersonal trust and the use of symbols in computer-mediated communication are outlined. In this section, current trends in the areas of changing culture, business communications, and marketing are described that highlight the importance of studying symbol usage in business research. The final section of this chapter also contains the research problem investigated in this study and a model used to

describe the relationship between trust and symbol usage in computer-mediated communications.

Computer-Mediated Communications

Galbraith (1977) describes communication as one of the processes used by the individuals in an organization to reduce uncertainty. Although in the past managers tended to communicate more often in face-to-face communication environments than in others (D'Ambra, Rice, & O'Connor, 1998), this is now changing. Technological influences on communication media have resulted in systems built specifically to replace face-to-face communications such as e-mail, instant messaging, and chat systems. The widespread use of these systems has led researchers to expand studies of interpersonal communications to include the distinctive characteristics found in them. These computer-mediated communication systems, "use computers to structure and process information and use communication networks to facilitate its exchange" (D'Ambra et al., 1998, p. 164), and have been the focus of an increasing amount of research.

Most of the extant literature involving business communication uses face-to-face communication environments as the benchmark to which most other interpersonal communication environments are compared (Berry, 2006). The characteristics of face-to-face communication have been well documented and are assumed be consistent across most situations (McGrath & Hollingshead, 1990). These characteristics include the co-presence of the communicating parties, a general lack of anonymity, the use of non-verbal communication, the possibility of immediate feedback, the expression of emotion, and an unequal division of time among speakers. Further, the one person speaking typically exercises some form of control over the pace of the communication process,

who the next speaker will be, the allowance of interruptions, and the expression of emotional cues. Lastly, the participants in a face-to-face communication situation that may be allowed to speak typically include only those individuals that are actually present. These participants typically do not share the speaking time equally and usually speak to everyone present rather than to those that are not.

In computer-mediated communication, however, many of these characteristics may differ, which in turn creates phenomena not found in face-to-face communication. For example, in an email exchange, it is rare for the parties exchanging email to be in the same place and time during the exchange, as they would be in a face-to-face communication exchange. This lack of co-presence results in an inability of both parties to use non-verbal communication to provide cues to trustworthiness, emotion, and understanding. For example, in situations where trustworthiness is important, the use of email over face-to-face communication may delay the development of a trusting relationship because both parties cannot observe the other during the communication process. The facial language of an individual making a statement in an email is generally not observable, and is therefore not usable for the reinforcement of what was communicated verbally, which in turn delays the development of a trusting relationship.

Although computer-mediated communication often takes place without non-verbal input to the communication process, participants may adapt the verbal communication process to express non-verbal information. For example, the absence of simple non-verbal gesturing in online chat sessions has led to the widespread use of text-based emotional expressions, such as ":)", ";)" and ":(", as surrogates for the traditional face-to-face communication gestures of smiling, winking, and frowning. Similarly, it is

understood by many that typing an email or chat session in all capital letters may be viewed as speaking loudly or yelling, whereas typing the same message in all lower case may be viewed as whispering.

Although the absence of non-verbal input into the communication process can be problematic, the use of computer-mediated communication has its advantages as well. For example, the use of email, chat, or instant messaging allows individuals to communicate when separated by time and/or distance. A factory manager at the Hyundai assembly plant in Montgomery, Alabama, can communicate asynchronously with an engineer in Seoul, South Korea. Rather than place an inter-continental telephone call, each individual can send and receive email messages at their leisure and communicate over several days. Furthermore, the entire contents of the communication can be forwarded to other individuals if necessary if the need arises to get others involved. Records of these communication exchanges can be stored for future use by others within the organization that may not be participants in the original communication process.

Another benefit of asynchronous computer-mediated communication over face-to-face communication is the enlarging of the span of control that some managers have over subordinates. In the past, managers could properly supervise only as many subordinates as he or she could directly observe and communicate within face-to-face communication environments. The advent of computer-mediated communication has led to significant changes in the way that managers supervise their subordinates. Email and instant-messaging session often substitute for face-to-face communication, and work product can often be reviewed electronically. This has allowed workers to remain dispersed among many isolated sites, be they at home or in remote work centers, rather

than gathering at large offices. Workers that *telecommute* to their work environment rather than drive often benefit from more flexible schedules, reduced commuting times, and less direct involvement with others in the work place (Jerving, 2007; Mears, 2007). Handicapped workers and those with special familial obligations are now able to enter the work place by telecommuting for organizations that were once beyond their reach.

Where organizations were once forced to invest in large office buildings, parking lots, and large teams of managers, this is no longer the case. Fewer workers need to be co-present and many work from home, which often results in fewer cars in smaller parking lots outside of smaller office buildings. Computer-mediated communication also broadens the span of control within organizations, which lowers the number of managers required to supervise a given number of workers. Organizations then become leaner and more efficient. While face-to-face communication has been the standard communication protocol in organizations in the past, computer-mediated communication has allowed the re-engineering of key business processes for efficiency. Researchers have realized the need for more study into the similarities, differences, and issues regarding face-to-face communication and computer-mediated communication, noting many differences between the two processes that can be both capitalized on and that present new challenges.

For example, when compared to face-to-face communication, the characteristics of computer-mediated communication include reduced non-verbal communication (Hiltz & Turoff, 2002), an increase in the ability to communicate anonymously (Green, 2006; Pissarra & Jesuino, 2005), reduced perceptions of social presence (Rice, 1993), slower development of trusting relationships (Bos et al., 2002), an increase in group polarization

(Williams, 1977), and more. The presence of these characteristics in the communication process has allowed, if not necessitated, changes to organizational structures, team dynamics, decision making by managers, and more (Kiesler & Sproull, 1992). Computer-mediated communication has therefore become an important research area in business communications, decision-making, and organizational dynamics.

One aspect of communications that is often studied, whether the researcher is working in the field of face-to-face communication or computer-mediated communication, is the effect of cultural forces on the communication process. Many researchers have studied the effects of culture on many aspects of the communication process including knowledge sharing (Ducate, 2003), majority influence on decision making (B. C. Y. Tan, Wei, Watson, Clapper, & McLean, 1998), group decision making (Swamy, 2005), and even gender-specific issues (Baek, 2005). However, one key component of culture that is only now beginning to be the focus of computer-mediated communication studies is that of symbol usage and interpretation. Once found primarily in the domain of marketing research, the study of how culture affects the interpretation of symbols in the communication process is only now beginning to find its way into the research domain of computer-mediated communication.

Symbolism

Overview of Symbolism Studies

In *Hymn to Hermes*, Homer makes what is now believed to be the first use of the term *symbol* when he describes Hermes seeing a turtle and loudly proclaims it a "symbolon" (Evelyn-White, 1914) before turning it into a lyre. In its original Greek, the etymology of the English word *symbol* comes from the verb συμβάλλειν, which means

'to throw together', and the noun σύμβολον, which refers to a 'tally' (Merriam-Webster, 2005; Petocz, 2005, p. 9). Originally used as a reference to a small item broken into two pieces and given to contract parties as security (Liddell, Scott, Jones, & McKenzie, 1996), it later came to mean many different things (Von Bertalanffy, 1965) including iconic images, characters for mathematical operations, and more. The many different uses of the term have become so diverse that an organized and thorough summary of the use of the term 'symbol' would be beyond the scope of this study and would be useful only to show the lack of unity in symbol studies. However, by limiting discussions to a clearly defined use of the word, such a review becomes more useful. **For the purposes of this study, the following review of symbol-related studies is limited to those that regard the symbol as a special type of sign, the meaning of which is culturally transmitted through a social learning process rather than by a conditioned or instinctive one.**

Some of the earliest works concerning symbolism date back to Aristotle and Augustine. In his *On Interpretation,* Aristotle referred to spoken words as "symbols of mental experience" (350 B.C.E.). His expositions form some of the earliest written records of symbol studies. From Aristotle, we get glimpses into thoughts on signs, symbols, and meanings. Later, Sextus Empiricus expounds on these concepts and introduces the concepts of the *signifier* and the *signified* in *Against the Logicians* (200 C.E.). The former being a term meant to represent an artifact used to represent something, and the latter, a term to represent the something being represented (Todorov, 1982). Sextus Empiricus, like Aristotle, limits his discourse to the spoken word and does not include the expression of visual symbols at all.

While Aristotle and Sextus Empiricus spoke of symbols as concrete associations of spoken words and their concrete relationships to the things they represent, Clement of Alexandria went further. In his work, *The Miscellanies,* he suggested a more abstract connection between the signifier and the signified, or "what is expressed in veiled term"(Wilson, 1869). While the discourses of Clement were similar to those of Aristotle and Sextus Empiricus in that they were also firmly entrenched in the realm of the linguistic, he was among the first to distinguish between the direct and the indirect types of relationships between signifiers and things signified. The former relationships were later referred to by scholars as semiotics, or related to signs, and the latter as symbolic, or related to symbols (Harman, 1986; Hinderer, 1968; Mick, 1986; Todorov, 1982).

Yet, it was not until the religious writings of Augustine in the late fourth and early 5th centuries that we find a clearly stated definition of a *sign*. "A sign is something which is itself sensed and which indicates to the mind something beyond the sign itself" (Augustine, trans. 1975). Because his definition is suitable for signs in general, it is insufficient for a discourse on symbols as a special subset of signs (Todorov, 1982). In *On Christian Doctrine* (trans. 1958), Augustine relates that all signs must fall into either of two categories, the literal or the figurative, and uses the example of an ox. In the case of the literal, the signifier, or sign, "ox" refers to the signified, a particular type of herding animal. However, in the figurative, the same word can be used to refer to a preacher. Augustine refers to an interpreted scripture, "Thou shalt not muzzle the ox that treadeth the corn" (1 Cor 9:9, King James Version). Thus, Augustine is among the first to describe the difference between two distinctly different types of signs, which later researchers referred to as proper signs and transposed signs, or symbols (Todorov, 1982).

While much of the research in semiotics and symbolic since Augustine has served to clarify and further define the relationships that exist between signifiers and things signified, some of it seems contradictory. The linguist Saussure, for example, held that because symbolic relationships are originally motivated by experience, they are not arbitrary (Holdcroft, 1991; Saussure, 1959). He puts forth that signs must therefore be created arbitrarily. Peirce (1931-58) on the other hand, as a logician and philosopher, suggests just the opposite. Peirce regards the sign as the motivated artifact and the symbol as the arbitrarily defined one. This stems mainly from his view that logic was closely related to semiotics, or the study of the sign. Like Saussure and Pierce, most researchers tend to view symbols and their use from the vantage point of their own discipline. Although this seems an obvious conclusion, it is an important one. For example, researchers such as Langer and others in aesthetic fields tend to view symbols as tools to express abstract concepts such as beauty, evil, godliness, etc (Jenkins, 1987; Langer, 1948; Whitehead, 1927). Researchers in Anthropology, on the other hand, are more concerned with the forms of symbols and their use and interpretations in a cultural context (Carlson, 1999; Roberts, 1994). The diversity of research areas in which the symbol has been a focus of study, therefore, resulted in a lack of unity among researchers as to the definition, meaning, and use of symbols in general (Bertalanffy, 1981; Safouan, 1982; Whitehead, 1927).

Most researchers, however, agree that symbols are a phenomena of relationships expressed indirectly (Petocz, 2005), the meaning of which are taught and learned through cultural phenomena (Eco, 2000; Prodi, 1977; Von Bertalanffy, 1965). Although culture expresses itself in a multitude of different ways, many anthropologists might agree that

one of the keys to studying culture in general is to study symbols. In fact, Some researchers go so far as to suggest that the presence of symbols may be a litmus test for the presence of culture (Tuttle, 2001, p. 408).

Definitions

However, before one can begin a discourse into the importance of studying symbolism in a cultural context, it seems logical to define what a symbol is. Even though symbolism is generally accepted to be a distinctly human behavior (Von Bertalanffy, 1965), the lack of a commonly accepted definition for what a symbol is has been a subject of debate. Among the first researchers to address this issue were Cassirer (1944), Von Bertalanffy (1947), and Langer (1948) over a half-century ago.

Cassirer's definition of the symbol is related to the concept that symbols are a natural product of language and the cultural categorization of concepts. However, while he clearly notes that the use of symbols is heavily dependent on culture; his descriptions of symbols fall short in distinguishing human behavior from sub-human behavior in the use of signs. That is, his description of symbols as a "system of categories," (1953, p. 271) is not sufficient to distinguish culturally transmitted language and meaning in human behavior from instinctive transmitted expressions found in nature such as the mating calls of insects and birds. Cassirer's work was very broad in scope and was concerned mainly with the different types, or forms, of symbols rather than their use. While this approach may be appropriate for philosophical discourse, it would also be inadequate for behavioral research efforts that require clear delineation between the use of concrete signs and the use of abstract symbols.

Langer's descriptions of symbol usage, however, were focused on the symbol as a logical way to express the abstract qualities of beauty and grace found in art. In fact, her work was mainly an effort to use logic to explain the connected emotive expressions found in painting, sculpture, music, drama, and other aesthetic arts (Langer, 1948; Von Bertalanffy, 1965). Although her work lends itself well to research efforts of symbol usage in these more aesthetic areas, it does not work well in others. While those of Cassirer heavily influenced her ideas, she also put forth the notion that the symbol was of the same logical form as the thing or concept being symbolized. Her logic would suggest, for example, that some musical phrases may sound mournful and are often used to express the emotion of sorrow. Likewise in art, dark colors may be used to express a dark mood (Tindall, 1955). While her analysis may sometimes be true, it is not always so. Further, another issue with Langer's work is that she does not clearly distinguish the use of signs from the use of symbols (Levesque, 1997), which is necessary for this research effort. Bertalanffy, on the other hand, does precisely that.

Bertalanffy's (1947) definition of the symbol includes three distinct points in that symbols are signs that are, "freely created", "representative", and are "transmitted by tradition." His idea that symbols are freely created refers to the notion that a symbol is not formed because of some Pavlovian conditioning, or biologically reflexive, behavior. While a picture of a flame used to represent the danger of a nearby heat source is a sign, it is not a symbol. Observation of such a sign is a warning that one can be burned by a nearby danger and is meant to conjure up any past memory of the pain of intense heat. This, in turn, leads the observer to avoid the heat source. Because the meaning of such a sign is tied to the reflexive action of pain avoidance, it is not freely created and therefore

not a symbol. On the other hand, a white cross on a red background, such as is used by the American Red Cross, is a symbol. Because there is no such connection between the sign and the thing signified, the organization, it is freely created, and may therefore be a symbol.

Although the idea that symbols are also representative may seem intuitive, but not all signs are clearly representative of a particular thing. For example, a picture can be used to represent something else, such as a picture of a king's golden crown. That is, the picture may be a sign for the golden headwear of a king, or it may be a symbol for the office of a king. It is therefore representative. In this example, the former connection between the picture of a crown and the signified thing, a king, may not be freely created. Repeated observations of kings wearing crowns can condition an individual to connect the sign of the crown to the thing signified, the king. The latter connection between the picture of a crown and the office of a king, however, is not so easily created by simple conditioning. One must understand the abstract concept of the office of a king to make the connection, therefore, such a sign is both representative and freely created.

Bertalanffy's third notion of symbols, that they are transmitted by tradition, is included in his definition to distinguish behavior learned by culture from behavior due to instinct. For example, the angry bark of a dog is a form of communication meant and often understood to be a warning, though it is not a learned behavior but an instinctive one. A dog that barks three times and sits by the door with a leash in its mouth when it needs to go out is exhibiting a learned behavior. However, while this act is a sign of a dog's need to go out, it is not a symbol. Because it is due to the conditioning training by its owner, this sign is not freely created and therefore is not a symbol. The earlier

example of the sign of an ox used to represent a preacher, however, is freely created. The relationship between this particular signifier, the ox sign, and this thing signified, the preacher, is typically learned through the teachings of others rather than through direct experience or observation. In this example, the understanding of the relationship would typically come from the teaching of another preacher, or from reading the teachings of the original writer, Paul of Tarsus.

Bertalanffy's definition clearly allows that a symbol may have a *symbolate*, or thing referred to by the symbol, to be unrelated to the symbol in a direct sense as described first by Augustine. Tindall expresses a general understanding of the difference between a symbol and a sign in that, while both refer to an exact something, the reference is not ambiguous. "The difference seems to be that a sign is an exact reference to something definite and a symbol an exact reference to something indefinite" (Tindall, 1955, p. 6).

As was previously discussed, researchers have recognized the fact that there is not a single, commonly accepted, definition of the symbol. In fact, the Merriam-Webster dictionary contains multiple and often unrelated definitions for many of the terms common in symbol studies, such as sign, signify, symbol, and symbology. However, Von Bertalanffy's definition of 'symbol' is most similar to the second of Merriam-Webster's (2005) five dictionary entries for the word. According to this entry, a symbol is "something that stands for or suggests something else by reason of relationship, association, convention, or accidental resemblance; *especially* : a visible sign of something invisible <the lion is a *symbol* of courage>." While this dictionary definition is similar to Von Bertalanffy's, it does not address each of the three necessary properties

that he says that a sign must have in order to be a symbol. The fifth Merriam-Webster entry defines a symbol as "an act, sound, or object having cultural significance and the capacity to excite or objectify a response." While this does reference the cultural aspect of symbols noted by Bertalanffy, it seems to exclude both written and graphic forms of symbols and provides no reference to symbols being freely created. The third Merriam-Webster entry defines a symbol as "an arbitrary or conventional sign used in writing or printing relating to a particular field to represent operations, quantities, elements, relations, or qualities." This definition also seems to contain a part of Bertalanffy's definition, that a symbol should be freely created, by its use of the term 'arbitrary', but it also does not include a reference to culture or society in the teaching or learning of meaning. The other two definitions in Merriam-Webster seem completely inappropriate to the use of the term in this study.

The first definition in the dictionary defines a symbol as "an authoritative summary of faith or doctrine : Creed," which, while it may present a cultural aspect to the use of the term, is a usage that would be more likely found in the fields of theology, or political ideology than in this type of research effort. The fourth definition, "an object or act representing something in the unconscious mind that has been repressed <phallic *symbols*>," is similar to Freud's use of the symbol in his writings on dream interpretation called the "Freudian Broad" view (Petocz, 2005, p. 24). While this definition does allude to Bertalanffy's free creation of symbols, it clearly lies in the realm of unconscious mental processes rather than known unrepressed connections between symbol and meaning. However, while this definition is not suitable to define symbols for this study, it does provide a hint into what many researchers of symbols in the field of psychology

hold true. The behavior and mental processes of individuals is often subconsciously encoded in their transmission and interpretation of symbols (Tuttle, 2001) as they relate to culture. Like Tuttle, other researchers describe culture as either a mental or a mental and behavioral process (Brumann, 2002, p. 509) that often is best described as man's social use of symbols.

Symbol Usage

How a society uses and interprets symbols is closely related to the social forces at work at any particular time (Whitehead, 1927). The architecture, heraldry, religion, literature, and art of an era is so rich with symbols that historians often find it best to discuss these in terms of the symbol usage of the time. For example, the previously mentioned use of the 'ox' symbol by Augustine demonstrates his familiarity with the Christian Bible of his time. This is significant historically because Augustine was the ruler that ended the official state persecution of the early Christian church and established Christianity as the official religion of Rome (Merdinger, 1985; Sayers, 2000). Similarly, Hurston used the symbolism of the pear tree in *Their Eyes Were Watching God* to develop the main black female character as a woman who should be "loved, respected, and self-sufficient" (Dilbeck, 2008, p. 102). Her novel was published when black women were considered among the lowest of America's social classes. Because the meaning and use of a symbol depends on the socio-political phenomena of the moment, interpreting symbol meanings can provide a window with which to study culture.

Symbols are used to add meaning to something beyond the literal understanding (Emerson, 1904; Lawrence, 1930; Symons, 1919). Using symbols to express oneself is a distinctly human characteristic and, as such, manifests itself into most areas of human

behavior (Hacker, 1965; Petocz, 2005; Todorov, 1982). Therefore, when studying human behavior, it is important that one must keep in mind that symbols often carry meanings that go much further than the literal. This is especially true for studies involving such abstract notions as spirituality, emotions, or aesthetics, where the indirect meanings associated with symbols are often more efficient in conveying a concept or idea than the direct and literal meanings associated with signs. In other words, human expression and the resulting behavior are often influenced, not only by the literal meanings of signs, but by the hidden meanings found in symbols, which should be viewed cultural standpoint.

To illustrate this point, consider the major research works in the area of symbol usage. A study of research in the area of symbols reveals that there are a few key works repeatedly referenced by contemporary researchers. Petocz (2005, p. 10) refers to some of them as the "Bibles" of symbolism and they include the works of Cassirer (1953), Langer (1942), and Bertalanffy (1965). Other research works often referred to include those of Freud (1900), Eco (2000), Saussure (1959), and Peirce (1931-58). A thorough review of these and other works of these symbol researchers reveals that the examples and illustrations they use to describe symbols and their usage, comes mainly from the literature of three domains heavily influenced by culture; psychology, art and literature, and religion. An understanding of how symbols are used in each of these domains should provide a better understanding of how symbols affect human behavior.

Symbol usage in Psychology

Royce points out that the generally accepted definition of psychology is that it is the "science of the behavior of organisms" (Royce, 1965, p. 3). It seems intuitive, then, that a logical place to begin studying how humans behave with regard to symbols is in the

field of psychology. It is unfortunate, however, that there is comparatively little research available from the psychology literature on the subject of symbol usage (Bertalanffy, 1981; Petocz, 2005) in terms of symbol meanings and interpretation. Most of the literature in psychology uses the terms "symbol" and "sign" synonymously, while focusing on the neurological activity of the human brain with regard to symbol usage. Concerned primarily with how the brain works, researchers often utilize individuals with abnormal brain activity as subjects for studies into the formation of symbol meaning, cognition, recognition, memory, and more rather than focusing on how the average individual uses symbols in daily activities. Further, as mentioned earlier, there remains no unity within the research domain of the psychology of the symbol and no general theory of the symbol exists as yet. Nevertheless, there are researchers that feel including symbol usage patterns when studying human behavior is both a fruitful and reasonable undertaking (Badcock, 1980; Ricoeur, 1970). Therefore, it seems prudent that a general discussion of how symbols are used in psychology is in order. However, this discussion will be limited to those efforts that conform to the use of symbols in terms of Bertalanffy's (1947) definition discussed earlier.

Sigmund Freud's work in the late 1800's and early 1900's pioneered research into the psychology of how humans use symbols, focusing mainly on symbol usage in the dreams of patients (Petocz, 2005). By analyzing the meanings of these symbols, Freud believed that he was able to correct errant behavior in individuals caused by repressed memories that manifested themselves in the patient's dreams. Later, his work came to include doctor-patient discussions of symbols and their meanings in which patients would

talk their way through problems. This method of treatment developed into what is now termed *psychoanalysis.*

For example, in his early work Freud believed that symbols took on two main forms. First, symbols can take the form of behaviors that act as substitutes for repressed memories. In one of his cases, a woman's hands twitched when she was faced with the memory of an incestuous relationship that her mind was repressing. The twitching of her hands acted as an outlet for the memory, according to Freud (Freud & Breuer, 1895, p. 173). The symbolic connection between the twitching fingers and the patient's relationship did not become evident until the patient had engaged in lengthy dialogue with Freud.

The second form of symbol that was discussed by Freud is similar to those discussed earlier in which the symbol and the symbolate are connected by an indirect relationship. In his discussions on socialization, Freud uses the terms *id, ego,* and *super-ego* to describe the different states of self-expression. Where the id is the selfish and child-like part of an individual's personality, the super-ego is the part that understands morality. The ego, according to Freud, is the balance between the two. What is key here is that Freud recognized the super-ego as being the result of socialization processes, primarily from parental and cultural influences (Freud, 1921, 1923). While many researchers and practitioners today discount the bulk of Freud's work, the practice of analyzing the social problems of individuals by studying their use of symbols and meanings remains a valuable practice (Hogenson, 2004)**.**

Another researcher in the area of psychoanalysis and symbols was Hermann Rorschach. Famous for his inkblot tests, Rorschach believed that the unconscious mind

worked primarily in symbols and that when viewing images, the mind would recognize images it had associated with troublesome memories. That is, people would look at ink blots and see symbols that related to suppressed thoughts and memories, based on their mental state and cultural background (Allen & Dana, 2004; Rothstein, 1997). Other researchers use symbols in testing methods developed to assist in the categorization of personality traits, such as the KAHN Test of Symbol Arrangement and Criminality (Kipper, 1977) and the various Thematic Apperception Tests (Langan-Fox & Grant, 2006). In tests such as these, individuals with certain psychological traits have been shown to use symbols in similar ways. The purpose of these tests is generally to determine how a subject uses symbols as a method of predicting certain behavior or identifying particular mental conditions.

Another area in which psychology researchers study symbol usage is in that involved with an individual's need to interact in a group setting. Early research efforts in this area showed that humans assign meanings to symbols in order to interpret their concepts of the reality around them. These symbols, as meanings became shared among people, become language, and eventually even guides behavior in group settings (Mead, 1922, 1934). This idea that people interact based on their use of symbols, or the Theory of Symbolic Interactionism, has been the focus of many recent researchers' efforts. In particular, since the advent of computers in most homes and wide scale use of the Internet, researchers are re-evaluating their understanding of group behavior and symbol usage (Lynch & McConatha, 2006, p. 88), to account for human interaction in a virtual reality environment.

One key concept of Symbolic Interactionism is that individuals actually do not interact with each other. Rather, they interact with their perception of each other. These perceptions are held in the brain as patterns of symbols that are constantly interacting. Baudrillard (1981) makes the observation that perceptions of reality are often guided by symbols and images found in the media, which blurs the boundaries between what is real and what is not. The reality of modern television, and now computer-mediated environments, can often interact such that the groundings for beliefs can become unsteady. Her work is key to analytical psychology in terms of what drives human behavior, especially abnormal behavior. It suggests that, when exposed to extreme or abnormal human interaction in virtual realities, an individual's own sense of what can be considered normal may change, resulting in behavioral changes. While the bulk of Social Interaction theory is beyond the scope of this study, some aspects are worth noting, particularly the need of individuals to use symbols for identification with a particular group (McMillan & Chavis, 1986), and the association of symbols with individuals.

Social psychology is another research discipline that often focuses on symbol usage, and deals primarily with how individuals react to changing social conditions. Symbols are one of the tools used to establish group identity, to provide a sense of belonging, to allow recognition of other members, and sometimes more importantly, to allow recognition of non-members (Dunham, 1986). Psychologists and sociologists alike study symbol usage in individuals and groups to better understand group membership (Hoult, 1954; F. J. Johnson, 2007), each group member's sense of self (Jantzen, Ostergaard, & Sucena Vieira, 2006; Kostanski & Sallechia, 2003), and the interaction between group change and the individual (Erickson, 2002; H. M. Johnson, 1979). In the

area of instructional psychology, researchers have shown that a learner's ability to synthesize new information is heavily dependent on their use of the symbols and language found in their native group, or culture (Nowak-Fabrykowski & Shkandrij, 2004). Their work also points out that it is insufficient simply to learn the native language of a particular group in order to integrate. One must also learn the symbols associated with that group for integration to be successful. Ferdman (1990) makes a similar point in terms of being literate and identifying with a particular culture. According to his work, successful integration into a group requires that one be familiar with, not only the language and symbols of a particular culture, but also with the ways in which symbols are used to express the belief system and expected behavior associated with that culture. This type of information, which is often referred to as the *aesthetic memory* of a culture, can be found in a culture's art, music and literature (Graves-Brown & Shennan, 1995; J. W. Woodard, 1936).

Symbols Usage in Literature and the Arts

In literature and the arts, an understanding of the originators' use of symbols adds much to interpreting the hidden meanings of their work in proper context (Beebe, 1960). While there are many symbols found in these works, some symbols occur more often than others, and for different reasons. Symbols that occur repeatedly, in different genres and by different artists or writers, are sometimes referred to as *archetypical* symbols (Chouinard, 1970; Frye, 1963). It is the archetypical symbol that more often appears with lasting meaning in the art and literature associated with a particular culture, and hence lends itself to later examination. However, to examine the meaning associated with a particular symbol, it is first necessary to note the purpose for the symbol's

presence. That is, one must have some idea of the purpose of the symbol before the meaning of the symbol can be understood. While an exhaustive discussion on the many different purposes of symbols in art and literature would be beyond the scope of this study, a brief summary of the more common, along with a few examples, should prove illustrative.

One of the more common ways in which symbols are used in the arts is to portray the ideal, or perfect example, associated with a particular concept. Since ancient times, writers and artists have tried to describe their particular concept of the perfect, with the idea that anything other than that is less than perfect, whether it be with regard to physique, sports performance, societal structure, etc. Philosophers note the strive of humanity to achieve the perfect, refer to the absolute, or obtain the ideal. One of the functions of popular art and literature is to define artificially what cannot be defined by example or experience (Katvan, 2007).

In ancient Greece, Phidias and Polykletos both sculpted their conceptions of the perfect human physique. Later, these sculptures came to symbolize the physiological superiority of Greek ancestry such that they were associated with Greek national identity (Leoussi, 1997). However, the depiction of the perfect body is not limited to the ancient Greeks. Contemporary symbols associated with the perfect male body are typically mesomorphic, or muscular, images that permeate many aspects of modern culture (Stout & Frame, 2004). Nor is the use of symbols to depict perfection limited to conceptions of the human body. Artists and writers must often use symbols for the perfect something, when an actual perfect something does not exist. For example, More's (1518) concept of *Utopia*, or the perfect place to live that is continually sought but never attained, is often

symbolized with a reference to the Biblical Garden of Eden, the perfect place to live that man has been evicted from (H. O. Lee, 2007; Longxi, 2002). In terms of the perfect expression of an abstract concept of beauty or love, Shakespeare's sonnets have become a symbol of the ideal love poetry, even in contemporary culture (Hegarty, 1995).

Another way in which symbols are used in art and literature, similar to the expression of an ideal, is the expression of something that can be experienced but not easily explained. Whether beauty, love, or even the more negative concepts of terror and depression, artists and writers often use symbols in their works to express their own conceptualization of such abstract concepts. For example, the ancient Greek sculpture of Venus has come to be used by writers and artists as a symbol for beauty (Haughton, 2004; Polubojarinova, 2007). Like Robert Burns, the 18th century poet who made use of the rose as a symbol of love in his poem *A Red, Red Rose*, Kloeckner (1966) notes Nathaniel Hawthorne's similar use of the rose in *Rappaccini's Daughter*. In contemporary American culture, men give red roses to women as a symbolic expression of love. However, symbols can also be used to express less favorable concepts as well. Poets and painters alike have used the black rose, rather than the red, to symbolize death or hatred, the absolute absence of life or love (Alford, 1994).

Symbols have also been used as an expression of self. That is, an author or painter might use symbolism to place him or herself in the work being created. For example, Nathaniel Hawthorne and Walt Whitman both used the butterfly to symbolize a desire for beauty, isolation, struggle, continued effort, and indeed the authors themselves (Cuddy, 1977). Other authors have used the symbol of a mirror to represent their own reflections on themselves and reality (Leibowitz, 2003; Lloyd, 1998). Many painters

have included symbolic mirrors in their own self-portaits such as Mari Lyons, Johannes Gumpp, and Diego Velazquez.

Symbols in art and literature can also be powerful tools with which to make a political statement. In Asian countries, artists' depictions of Hindu temples became symbolic of the Hindu culture, a connection which binds Hindus together, even in the United States (Bhardwaj & Rao, 1998). American concepts are often depicted in the contemporary arts with images of the Statue of Liberty, used to symbolize the American self-ideal (Wong, 2004). While these symbols, the temple and the statue, may not have become symbols due to a widespread state-funded effort to make them so, other symbols did. In the 1930's, Hitler's Germany adopted the Hindu symbol of the swastika, which represented eternality and peace. The Nazi party began a systematic effort to destroy the symbols associated with earlier Germany and replace them in popular culture with the swastika and other symbols of Nazi Germany (S. Taylor, 1981; Zimmermann, 2006). While many viewed this is simply state-sponsored propaganda rather than literature or art, it is mentioned here because of the resulting inclusion of these symbols in the literature and art of Nazi Germany during those years.

While state-sponsored symbol creation can be a powerful political tool that influences literature and the arts, the reverse can also be true. Mary Shelley's novel, *Frankenstein: or, The Modern Prometheus*, has received much attention as both a literary work and as a tool of her political expression. Those familiar with the story often mistakenly refer to the monster as "Frankenstein", and use the same term to refer to the evils of science, which critics have suggested was her purpose for the work (Schneider, 1995). Hammond also observes that references to this work can often be associated with

the dangers of "playing God" (Hammond, 2004, p. 181). Similarly, when Alexey Dushkin, a Russian architect and artist, was commissioned to design and build the stations for Moscow's metro subway, he included eighty bronze statues in cramped poses under heavy arches. Officially, these were symbols of the soviet people (O'Mahony, 2003), but years later critics noted that it appeared that the expressions on the faces of the statues may have suggested something less approving of the political machine at the time (Scheib, 2005).

Symbols Usage in Religion

Like Shelley's use of symbolism to express her personal political views, many other writers and artists have created works with personal themes other than political. Many examples are available that illustrate the use of symbols to express themes about beliefs on morality, religion, spirituality, and God. To illustrate exhaustively the use of symbols in religious works, whether they be the commissioned art or architecture of a large religious organization or that of a lone individual, is again, beyond the scope of this study. However, as in the previous section, illustrating the use of symbols in religion can be accomplished by discussing and providing examples of the more common uses.

One of the more obvious functions of symbols in religion is for group identification. Because an individual's beliefs are not outwardly recognizable, religious groups over the years have adopted certain symbols in order to identify their members. While at times this has served to help protect persecuted groups, religious symbols are often used to signify the presence of a particular group in a community. For example, in the days of the persecution of the early Christian church, church members adopted the symbol of a fish, or Ichthys, to help members recognize their fellow believers (Hansen,

2004). Today, the symbol of the Christian Cross, the Hebrew Star of David, and the Islamic Star and Crescent, are often used to provide a public notice of the presence of a nearby group of each religion's believers. Even within a particular religion, individual denominations or sects such as the Charismatic Christians or the Hassidic Jews recognize certain symbols that identify their members. In the case of many of the Charismatic Christians, it may be the hair and style of dress of its female members, or in the case of the Hassidic Jews, particular hair and dress styles for the men. Further, within groups such as these, the absence of key symbols may also serve to identify non-members (Moreno-Navarro, 1986).

In order to maintain group cohesion, symbols are sometimes used to show both the effects of complying with group teachings and with acting counter to them. For example, many religions have teachings about Heaven and Hell. Symbols associated with Heaven, such as angels for example, are sometimes used to remind the observer of the eternal benefit associated with compliance, as in examples by Gustav Dore, Sebastiano Ricci, and the contemporary artist Howard David Johnson. Symbols associated with Hell, devils for example, are also sometimes used to depict the results of disobedience, as in Michelangelo's use of a two-horned being in his *Last Judgment* in the Sistine Chapel, and Gustav Dore's painting of Lucifer as described in Dante's *Inferno*.

Another way that symbols are used in religion is for the teaching of religious myths and legends from sacred texts, or to call attention to a deity or particular individual. This is often the case with church sponsored artistic works. For example, when Michelangelo painted the Sistine Chapel, he used the symbols of celestial cartography to highlight the view of the Roman Catholic Church at that time concerning

God's orderliness and numeric structure while creating mankind (Meegan, 2006). Many other artists have used symbols in their work to call attention to the deeds of individuals that are the subjects of their paintings or sculptures. For example, when martyrs are depicted in paintings or sculptures, they are often shown with palm fronds as symbols of their martyrdom (Merriam, 2005) as in the facade of S. Agata dei Groti by Francesco Ferrari. In some Buddhist cultures in India, artists often depict subjects carrying a vajra, or small scepter, in the right hand to symbolize masculinity, and in the left hand a bell to symbolize femininity (Decleer, 2005; Vessantara, 2001).

While artists and writers often use religious symbolism in their works for many reasons, the use of symbols in religion is not limited to art and literature. At times, they are used for teaching, as when symbols such as a cross or crucifix are used by parochial schools as decorations to transmit the culture associated with a particular religion (Furst & Denig, 2005). Often, these symbols are used to ordain the exterior of church buildings as well. For example, many of the great cathedrals in Europe are adorned with the symbols associated with Christianity, such as crosses, angels, and depictions of Christ. Many of the mosques of Islam are similarly decorated with the symbols associated with the Islamic faith, such as the crescent moon or the minaret.

Some religious symbols may also be behavioral. That is, some actions are seen as having significant symbolic meaning in the practicing of a particular religion. For example, in Malasian Christianity, women cover their heads with a portion of their gown when coming to take communion, or Eucharist, to symbolize their submission as women (Rajah, 2005). Similarly, to symbolize submission in most religious groups, especially submission toward diety, members often bow their heads during prayer. In Christianity,

the act of water baptism is often seen as a symbolic act of cleansing and starting life anew in submission to the will of God (Ratzinger, 2007). This act, as an example, may also be symbolic of group membership and identity, as can a belief in an afterlife (Richardson & Weatherby, 1983).

Archetypal Symbols

Whether by art, literature, religious practice, or contemporary media, some symbols inevitably permeate many aspects of our existence. These symbols and their meanings can become so widely used that they become a lasting part of not only our culture, but our communication systems as well. According to Chouinard (1970, p. 164), these archetypal symbols are "significantly pervasive in traditional literature and/or in the body of work of any author." Mahlberg's research concluded, as did Jung's (1981) years before, that there is something of a collective unconscious memory that allows people to recognize the meanings of archetypal symbols without extensive exposure to their use (Mahlberg, 1987).

A few years later, Rosten, Smith, Houston, and Gonzalez determined that a logical extension of Jung's work, which utilized only word-symbols, was in order. They extended Jung's work in word association to include a "symbol association test" (Rosten, Smith, Huston, & Gonzalez, 1991). While developing an Archetypal Symbol Inventory (ASI) of forty symbols from several volumes of symbol inventories, they specifically removed symbols thought to be influenced by culture. Then, the researchers themselves determined the meanings for each of the symbols prior to testing the strength of association between the symbols and meanings among the test subjects. While their method is very similar to the one used in this study, their exclusion of culturally biased

symbols precludes the use of their ASI for this effort. Rather, to identify archetypal symbols that may be used to determine the influence of symbols learned through cultural influence, numerous searches of Ebscohost, Proquest, the Library of Congress, and other online databases for research on symbolism was conducted. Specifically, literature was sought out that discussed specific symbols in multiple domains, such as literature, the arts, religion, contemporary media, psychology, sociology, etc. The results of these searches revealed many symbols that are often used in multiple domains. Table 1 provides several of the more common symbols, along with references that provide either a discussion of each symbol's use and meaning, or a typical example of how the symbol is used.

Researchers in analytical psychology generally agree that people associate archetypal symbols with meaning at the subconscious level, which has an influence on their cognitive processes and behavior. Although the relationship between archetypes and behavior is often studied in cases where behavior is abnormal, such as when a psychologist is treating a patient, little research from other domains could be found regarding the influence of archetypes on typical human activity. For example, in the area of computer-mediated communication, nothing was found regarding the influence of archetypes on the subconsciously perceived meaning of the message, or of the perceived trustworthiness of the message source.

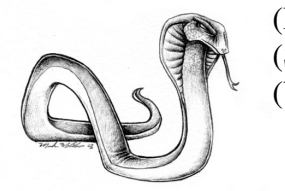
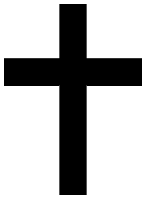
Trust

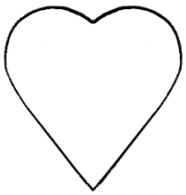
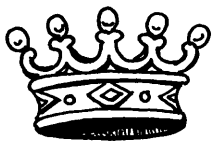
Overview of Trust Studies

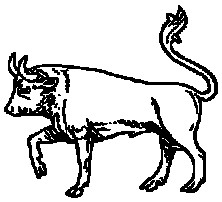
Researchers consider trust as one of the most complicated concepts in the behavioral sciences (Fukuyama & Ikenberry, 1996; Tsfati, 2003). They often note that

Table 1

Common Archetypal Symbols

Image	Literature & Arts	Religion	Other & Contemporary
 Dove & Olive Branch	(Carroll, 2006) (Carey, 1815) (Picasso, 1998)	Genesis 8:11 Song of Solomon 2:14 (Hermann of Helmarshausen & Byzantinizing Master, 1985)	(Rosenthal, 1994) (Rigby, 1998) (De Gruchy, 2007)
 Scales of Justice	(Rubens, 1997) (Mei, 1985) (Robbins, 1915)	Proverbs 11:1 Proverbs 16:11 Koran - The Poets 26.182	(Probst, 1999) (Tideman, 1998) (Crubaugh, 2001)
 Lion	(Durer, 1984) (Warren, 2000) (Lotto, 1985)	Job 10:16 Proverbs 28:15 (Goldsmith & Gould, 1990) (Huneck, 1986)	(O'Loughlin, 1997) (Nepo, 2007) (MacQueen, 2003)
 Serpent	(Boswell, 1975) (Schouten, 1967) (Unknown, 2007)	Numbers 21:9 Revelations 20:2 Koran – The Rangers 37.65 (Flood, 1996, p. 151) (Hood Jr & Kimbrough, 1995)	(Sahi, 1980) (White, 1987)
 Cross	(Orton, 1993) (Freiberg, 1995) (Fumaroli, 1995)	1 Corinthians 1:18 Mark 10:21 Koran – The Women 4.157	(Boys, 1994) (R. K. Smith, 2001) (Fotiade, 1998)

 Pentacle	(Musée des arts décoratifs (France), 1968) (Lavin, 2002)	(Cooper, 1999) (Frost & Frost, 2004) (Lady, 1990) (Banerjee, 2007)	(Hagopian, 2004) (Shesso, 2007) (Boston, 2007)
 Yin and Yang	(Beecham, 2002) (Kai, 2000) (Little & Eichman, 2000)	(Wang, 2005) (Jung-Soon, 1999)	(Harvey, 2006) (Claire, 2006) (Molta, 2006) (Chrambach, 2004)
 Eagle	(Calnimptewa, 1984) (Xu, 1984) (Clayton, 2002) (Jungic, 1997)	Hosea 8:1 Revelations 4:7 (G. Woodard, 2007) (Museo Arqueológico Rafael Larco Herrera. & Berrin, 1997)	(S. R. Pearce, 2008) (Edwards, 2006) (Cunnar, 2003)
 Heart	(Komar, Shideler, & Freedman, 1998) (Mitchell, 1989) (Blair, 2006)	Exodus 25:2 Ephesians 5:19 Koran - The Cow 2.7 (Borella & Champoux, 2001)	(Metcalf, 1996) (Foster, n.d.) (Ehses, 2002) (Kinnunen, 2000)
 Fish / Ichthys	(Tracy, 1985) (Thompson, 1944) (Von Sadovszky, 1995) (Michelangelo, 2006)	Jonah 1:17 Mathew 7:10 Koran - The Rangers 37.142 (S. Gibson, 2000)	(Laurie, 1999) (Young Leslie, 2007) (Schuchardt, 1998)
 Crown	(Manenti, Bollen, & Bachfischer, 2001) (Colley, 1990)	Job 31:36 Proverbs 12:4 (Kayser, Sabar, Fine, & Kramer, 2000)	(Buccellati, Snapp, & Ambrosioni, 1995) (Richard, 2007)

 Skull and Crossbones	(Gow, 1929) (S. Smith, 1996) (Gordon, 1999) (Sierra, 2005) (Mann, 1998)	John 19:17 (Davies, 1997) (Promey, 2005) (Gauch, 1997) (Gorman & DiBlasl, 1981)	(Millegan, 2003) (Dunkin & Hill, 2007) (Kingston, 2007) (Seglin, 2000)
 Apple or Fruit	(Curtis, 1992) (Harrison, 2003) (Treip, 1991) (Stobie, 2008)	Genesis 3:3 (Tulloch, 2004) (Silver, 2001)	(Apples, 1997) (Phil, 2000) (Dvorak, 1995) (Greenough, 1981)
 Bull	(MacGillivray, 2000) (Brereton, 2002) (Picasso, 2005) (Rosetsu, 1989)	1 Enoch 90.37-38 Job 24:3 (Relke, 2007) (Lodrick, 2005) (Janzen, 1990)	(Krupp, 1997) (Tougher, 2004) (Horsley-Meacham, 1991)
 Butterfly	(Alt, 1984) (Brown, 2002) (Musila, 2007) (Cuddy, 1977)	(Durer, 1986) (J. H. Lee, 2007) (Hsueh, 1981)	(Newfield, 1991) (Cameron, 1998) (N. J. Johnson & Giorgis, 2001)
 Dragon	(Chi, 1989) (Scherer, 1998) (Sugg, 2000)	Revelations 20:2 (Mandt, 2000) (Arakelova, 2004) (Neitz, 2000) (Ferreira, 2007)	(Sleeboom, 2002) (Dickinson, 2005) (Ding, 2005) (Dunis, 2007)
 Earth	(Clough, 1964) (Dragland, 2004) (A. Johns, 2005)	Isaiah 40:22 Koran - The Bee 16.65 (Gutierrez, 1994)	(Moyes & Brady, 2005) (Gill, 2002) (Sevier, 2007)

 Compass and Square	(Henderson, 1916) (Kemp, 1990) (Curl, 1993)	Isaiah 44:13 (D. A. Taylor, 2007) (Rich & Merchant, 2003)	(Covernton, 2005) (Tolson, 2005)
 Owl	(Thoreau, 1854) (France, 1984) (Vaisman, 1992) (Picasso, 2002) (Miller, 1988)	Psalms 102:6 (Schele, 1991) (Murphy, 2000)	(Braz, 2001) (Howard & Cerio, 1992) (Sanderson, 1948)
 Ram	(Atac, 2006) (Rudolph & Ostrow, 2001)	Daniel 8:1-20 (Petridis, 2005) (Dreifuss, 1975)	(Perry, 2001) (Audubon, 1987) (Duane, 2005) (Jung, Read, Fordham, & Adler, 1953)
 Devil	(E. Gibson, 1989) (Dante, 1882) (Algardi, 1992) (Boorsch, 1992)	Mathew 16:23 Revelations 12:9 Koran - Ta Ha 20:120 (Collins, 2006) (La Vey, 2005)	(John, 2006) (Demos, 1982) (Woodward & Smith, 1995) (Lawrence Van, 2007)
 Hexagram	(Spicer, 1996) (Pogrebin, 2005) (TenHouten & Wang, 2001)	(Friedemann & Peeler, 1936) (Laurie, 1998) (Ming Dong, 2004)	(Bledsoe, 2004) (Eder, 1987) (Tsimhoni, 2008)

the definitions of trust can vary widely, depending on the context (Goudge & Gilson, 2005), such as when studying the trust of an individual and when studying trust in group settings. For example, the research of Komiak and Benbasat (2006) focused on an

individual's trust toward a computerized recommendation agent and included both an emotional and a cognitive component, but without a clear social component. Discussions of trust in group contexts, however, typically include rhetoric related to social factors as well. Barber (1983, p. 165), for example, defined trust in a group context as "a set of socially learned and socially confirmed expectations that people have of each other, of the organizations and institutions in which they live, and of the natural and moral social orders that set the fundamental understandings for their lives." Rather than consider all possible contexts, definitions and descriptions of trust, this study will be limited to those related trust between individuals or involving information systems.

Definition and Description

Rotter (1967, p. 651) defined trust as "an expectancy held by an individual or a group that the word, promise, or verbal or written statement of another individual or group can be relied upon." In the context of interpersonal trust, his work showed that trust is a learned behavior comprised of three principal components: dependability, predictability, and faith (Rempel & Holmes, 1986; Rempel, Holmes, & Zanna, 1985). The concept of dependability is related to the idea of freedom from error or mistake. If an entity were found to be correct most of the time, perceived dependability would likely be higher than for an entity that proved more fallible. For example, if one individual often made statements of fact that consistently proved to be true and correct, and another individual often made statements of fact that were shown to be incorrect, the first individual would likely be perceived as being more dependable than the second. The risk of making decisions based on the factuality of the information presented by the first

individual would be lower than those based on information from the second individual. The first individual is therefore perceived as being more trustworthy.

While dependability is related to the accuracy of information supplied by an entity, predictability is related to an accurate expectation of results, given a particular set of variables or circumstances. For example, when a driver turns the key in the ignition switch of a car, the car is expected to start. If the car consistently starts, it can be said to be predictable. If the car often does not start, the car is said to be unpredictable because the driver is unable to develop a reasonable expectation of the car's behavior. A car that exhibits the predictable behavior of starting on command is therefore deemed more trustworthy than one that does not.

The faith construct of trust, on the other hand, is not formed based on the actions of the entity toward which trust is directed. Faith is related to the predisposition of an individual to develop trusting a relationship toward that entity in the first place. Consider a woman that was sexually abused by male authority figures in her past, such as a father, a priest, etc. She may be much less predisposed to develop trusting relationships with men of authority than would a woman who had no such experiences (Schwarz & Brand, 1983). In other words, faith is the component of trust related to an individual's development of an opinion, without any objective information, of another's trustworthiness.

Many researchers have also noted that trust is often used as a term to express a certain level of acceptance of risk. For example, Johns (1996, p. 81) defined trust as a "Willingness to place oneself in a relationship that establishes or increases vulnerability with reliance upon someone or something to perform as expected." Likewise, Hupcey *et*

al. (2001, p. 290) included similar rhetoric in their definition of trust. While their definition is limited to trust as it applies to the filling of a need, the phrase "… some assessment of risk…" clearly expresses a notion common among researchers. Trust is often considered a cognitive function related to a specific need (Hupcey, Penrod, & Morse, 2000; Pask, 1995) and the associated risks involved (Mayer, Davis, & Schoorman, 1995). Some researchers also point out that trust is necessary in order to take a risk at all (McAllister, 1995). This is not to say that just because someone chooses to take a risk by relying on the actions of another means that trust is present. On the contrary, taking a risk without trust present may often be the case in extreme instances such as when a patient is faced with certain death or a risky medical procedure. When studying trust in situations such as this, researchers point out that multiple choices must be present for trust to become a factor in decision making (W. B. Pearce, 1974).

Even with multiple choices present, however, some individuals develop trust more quickly than others do. For example, researchers note that trusting is a learned behavior (Erikson, 1963; Rotter, 1967), and therefore differs among individuals. Others note that the speed and level of trust development may be different from person to person because of differing personality traits (Deutsch, 1960; W. B. Pearce, 1974), experience (Mayer et al., 1995), education (Berg, Lundgren, Hermansson, & Wahlberg, 1996; Meize-Grochowski, 1984), or culture (Kivijarvi, Laukkanen, & Cruz, 2007; Vishwanath, 2004). While researchers have provided ample evidence that trust development differs from person to person for a variety of reasons, they also note differences based upon the person or entity being trusted. Shapiro (1987) notes that trust can be based on the roles of individuals being trusted, rather than on the individuals themselves. In many societies,

children are taught that particular roles that an individual may occupy are deemed trustworthy. This is necessary so that children are not afraid to seek help from a police officer, teacher, counselor, parent, pastor, etc. Of course, because young children have not become efficient at developing healthy trusting relationships based on interpersonal interaction, they must depend on these roles to define who can be trusted (Hupcey et al., 2000; Kirschbaum & Knafl, 1996).

Another aspect of how roles can influence interpersonal trust involves the nature of the relationship between the trusting and the trusted parties. If the two parties are romantically involved, the trust that forms between them is different from the trust that forms between a patient and a nurse or doctor (Pask, 1995). In an intimate relationship, trust typically develops in both parties over a period of time and involves a cycle of mutual testing and confirmation of the other's trustworthiness (Zak, Gold, Ryckman, & Lenney, 1998). Also in an intimate relationship, each party has a certain expectancy that the other will see to the other's present and future needs (p. 218). In the case of trust development between a patient and a nurse, however, there is no such expectancy. A nurse typically cannot expect an incapacitated patient to satisfy a present or future need that the nurse might have. The trust that develops between patients and nurses is therefore different than the trust that develops in an intimate relationship (Pask, 1995).

It is worth noting that as relationships change over time between two people, so do the trust levels associated with those relationships. Initially, trust levels are small and individuals engage in trusting behavior in low-risk situations. As the trusted individual exhibits consistent positive behavior in response, trust levels increase (Zak et al., 1998). Once trust levels increase to the point that the trusting individual feels comfortable about

the trustworthiness of the trusted individual, such trust-testing behaviors diminish (Mayer et al., 1995; McAllister, 1995). However, Meize-Grochowski (1984) refers to trust as being fragile, in that an individual's untrustworthy behavior quickly causes trust levels directed toward that individual to drop. Hupcey *et al.* (2001, p. 290) describe several additional boundaries to trust that, when present, cause trust levels to drop or cease entirely. Trust levels may also drop when there is no assessment of risk, the trusting individual has no choice but to take a risk, or the benefits associated with a risk no longer outweigh the potential consequences. Once trust levels drop, many researchers note that trust levels are slow to recover, if they recover at all (Meize-Grochowski, 1984; Rempel & Holmes, 1986; Rempel et al., 1985).

Regardless of the particular rhetoric researchers use to describe and define interpersonal trust, all are similar to that of Rotter's (1967) definition. Definitions and descriptions of trust typically refer to a predictability of behavior, a dependable or consistent pattern of positive behavior or accurate information, an individual's predisposition to form a trusting relationship, and an assessment and choice to accept a certain level of risk. Additionally, trust may include a "dependency on another individual to have a need met," a "limited focus to the area or behavior related to the need," and "testing of the trustworthiness of the individual" (Hupcey et al., 2001, p. 290).

Trust Usage

Many authors note that trust is necessary for a multitude of things, including a properly functioning economy, political system, intimate relationship, judicial system, and more. However, even within the scope of interpersonal trust as just described, uses of trust abound. Within the context of risk aversion between two individuals, trust is

often used as an economical proxy for lengthy and expensive contracts (Keser, C. 2003). When trust does not exist between two parties, risk is often mitigated with detailed contracts that stipulate compulsory reactions in response to any number of possible contingencies. However, the use of trust as a substitute for expensive contracts may not only be more economical, in some situations it may be the only option. Contracts are sometimes not enforceable for legal or environmental reasons. It may also be the case that contracts are not enforceable because the existing contract environment contains no due process of law, as is the case in cyberspace or under certain forms of government such as despotism, totalitarianism, and some absolute monarchies. In situations such as these, trust plays a more critical role in risk mitigation.

Another way that trust is used in risk mitigation is in the area of relationship management. In the course of establishing relationships, such as among soldiers or between husband and wife, it is often the case that sensitive information is shared between individuals. Further, certain negative behavior, such as the revealing of secrets or avoiding obligations, may expose these individuals to an increased risk of physical harm, emotional stress, or moral dilemma. In situations such as these, where an assumed set of behavioral norms must be maintained, trust is often seen as an important requisite in the maintenance of loyalty (Keser, C. 2003).

Trust also permits the delegation of tasks between individuals in an organizational setting (Paparone, 2002), or an assurance that asymmetrical task assignments will be balanced among individuals. When tasks are delegated from a supervisor to a worker or from a parent to a child, the subordinate individual becomes the party responsible for task completion. However, in most cases, the delegating, or superior, party retains

accountability. That is, if the subordinate does not complete the task they were given to do, the superior must face the consequences as though they personally were assigned the task and did not accomplish it.

Even in situations where the two individuals are not in a superior/subordinate relationship, such as between two friends, trust allows tasks to be shared. Consider the situation in which two workers in an accounting department are planning to attend an event after work. Just before quitting time, one of the two workers is given an additional task that must be finished prior to leaving for the day. By working together, the two workers can finish and leave on time. If they do not, then one worker must stay and work well past quitting time and cannot make the event. Trusting the other worker may allow the job to be shared, even though the one to whom the task was given remains accountable for the accuracy and completeness of the assignment.

Trust, at least in terms of decision making and task accomplishment, is also a key factor in the long-term stability of organizations (Cook & Wall, 1980). The trust that forms in subordinates toward their supervisors is associated with subordinate satisfaction levels. Subordinates who trust their supervisors also tend to be more innovative, which in turn contributes to the effectiveness of organizations. Further, the trust that subordinates have toward their superiors often translates into trust toward the organization itself, resulting in loyalty toward the organization and lower turnover rates (H. H. Tan & Tan, 2000, p. 242).

Another way in which trust is used involves monitoring or verifying the behavior of others. When individuals are trusted to engage in positive behavior, or not to engage in negative behavior, verification is not as necessary. For example, when a husband and

wife do not trust each other to refrain from extramarital promiscuous behavior, one party may engage in behavior designed to verify that the other is remaining faithful. That is, a husband may follow his wife discretely to make sure she is not engaging in inappropriate behavior. When trust is not present between individuals in business exchanges, verification activities typically incur additional costs that must be accounted for. The presence of trust, however, reduces or eliminates the need for monitoring and verification activities, which in turn lowers transaction costs (Gossling, 2004; Keser, 2003).

While generally discussed in terms of group dynamics, researchers have shown that trust also allows for self-regulation (Ailsop, 2006; Paparone, 2002). For example, by engaging routinely in trustworthy behavior and refraining from non-trustworthy behavior, both individuals and groups are more likely to be left alone to regulate their own adherence to moral and ethical standards. When trust is not present, however, regulations regarding appropriate behavior are often implemented (Ailsop, 2006; Connolly & Hargreaves Heap, 2007; Goold, 2001).

As relationships form amongst individuals, and sometimes groups, trust becomes a key factor in the ability to capitalize on the resulting social network (Hibbitt, Jones, & Meegan, 2001). Within these structures, a tendency toward the development of a normalized sense of obligation and reciprocity arises. As these structures grow, the number of obligations an individual or organization has also grows, creating an increasing amount of social capital on which other structure entities can draw. The amount of obligation available to network participants is dependent upon "the general trustworthiness of the social environment" (p. 143).

Trust and Computer-Mediated Communications

Researchers in the area of Computer-Mediated Communications also note that trust definitions and descriptions vary widely, depending on the research context, such as when comparing interpersonal trust in an online chat room with trust directed toward a website by a user. For example, as was mentioned before, interpersonal trust is comprised of three basic components. However, between an individual and an e-commerce website, at least ten different factors have been identified that can contribute to trust (Friedman, Kahn, & Howe, 2000), though many of them address technological concerns. Still, many of these factors, including those of a technological nature, are similar to the three factors suggested by Rempel *et al*.

First, the reliability of the technology used on an e-commerce website contributes to trust. Visitors typically regard newer technology as more reliable and, hence, more trustworthy than severely dated technology. This is similar to Rempel *et al.'s* use of the term dependability. Second, it is important that the output of an e-commerce website be similar to the user's expectations, similar to Rempel *et al.'s* idea of predictability. If a user clicks on a button to cause an event, that event should occur. If a different event occurs, perceptions of predictability drop and overall trust levels drop. Finally, certain factors associated with a website, such as reputation, contribute to an individual's willingness to develop a trusting relationship. A good reputation assists in the development of trust without further evidence of trustworthiness. Even with a good reputation, however, some people are quicker than others to form trusting relationships because of differences in their respective preconceived notions. Differences in the rate at

which individuals develop trusting relationships are similar to Rempel *et al.'s* notion of faith.

Bos *et al*. (2002), researched trust as it relates to cooperation in computer-mediated communication and showed that, in some cases, development of trusting relationships may be delayed. In the richer environment of face-to-face communications, trust develops quicker and tends to be stronger than in a text-only online environment (Rocco, 1998). However, by engaging in social activities early in online communication, trust between individuals develops quicker and stronger than between individuals who do not engage in such activities (Zheng, Veinott, Bos, Olson, & Olson, 2002). These phenomena are possibly due to changes in the faith component of trust that results from increased familiarity with the trusted individual.

One aspect of trust in computer-mediated communication environments that is similar to trust found in interpersonal communications involves the concept of swift trust. This type of trust occurs when individuals quickly form relationships in order to accomplish a clearly defined goal in a limited amount of time. In this type of situation, individuals sometimes temporarily put aside their negative suspicions about the dependability of individuals they do not know so that quick progress can be made toward accomplishing a common goal (Coppola, Hiltz, & Rotter, 2004; Grabber, 2001; Meyerson, Weick, & Kramer, 1996; Tovey, Southard, & Bates, 2005). This concept applies to teacher-pupil online interaction as well. In asynchronous online instruction environments, students are typically unable to use non-verbal cues to trustworthiness that are associated with face-to-face communication environments (Hiltz & Turoff, 2002). They must be willing to trust their instructor to provide accurate information in the class

and treat the students fairly, even though they may have no information as to the instructor's trustworthiness. Individuals developing swift trust do so as though the trusted individual has a known history of relatively trustworthy behavior.

Untrustworthy behavior in computer-mediated communication environments, as in traditional interpersonal trust, has a strong negative influence on an individual's willingness to develop trust. Computer-mediated communication environments, however, differ from traditional environments by the presence of an information system to facilitate communications. In the context of individuals trusting an information system, trust levels drop as system performance drops. Specifically, when erroneous information is introduced into automated systems, once-high trust levels go down (Lee & Moray, 1992, 1994) . Once trust levels drop due to errors in the information presented, whether presented by the information system or another individual, they might never fully recover to previous levels (Lerch & Prietula, 1989). Similarly, the less an information system is available, the less a user is willing to trust that system (Bonsall & Parry, 1991; Kantowitz & Hanowski, 1997). In other words, individuals are not willing to develop trust in an information system, or in an individual, that does not provide consistently accurate output when expected.

While information accuracy is important in the development of trusting relationships, it is also important to consider the role that non-verbal behavior plays. Most researchers agree that non-verbal communication is important to the overall communication process. In fact, many researchers believe that non-verbal behavior may even add more to the communication process than verbal behavior (Birdwhistell, 1970; Mehrabian, 1968). Specifically, much of the information concerning emotion, empathy,

meaning, communication cueing, and even honesty, in interpersonal relationships is relayed non-verbally (Bayliss & Tipper, 2005; Hummel, Paas, & Koper, 2006; Knapp & Hall, 2002). When talking, where a communicator looks, or gazes, is important to the flow of information. Studies in animated avatar design, for example, reveal that controlling the amount of time an avatar is gazing at the user has an effect on how that avatar is perceived (Tepper & Haase, 1978; 2001). Changes in non-verbal behavior such as this typically lead to changes in perceptions of trustworthiness even though the non-verbal behavior that led to it is usually subconscious. Although the projection of trustworthiness through proper gesturing, eye contact, and other non-verbal behaviors can be taught (Zimbardo & Leippe, 1991), exhibiting such behavior in computer-mediated communication environments, such as text-only chat rooms, in order to project trustworthiness is typically impossible.

Another aspect involved with projecting trustworthiness is the physical appearance of the individual. This is one reason that network news anchors are careful about their appearance. Their neat dress gives the viewing audience an impression of trustworthiness. Clearly distinguishable uniforms of authority figures (e.g. policemen or doctors) can also lead to perceptions of trustworthiness (Joseph, 1986). Likewise, older people are considered by most societies to be more trustworthy than younger people (Doob, 1983). This idea is similar to trust's faith construct. Many people put faith in symbols associated with authoritative roles, even when the actual trustworthiness of the trusted individual is unknown. This is evident in the American culture when we teach young children to trust police officers, doctors, and teachers. Indirectly, this reaffirms the

belief that the appearance of certain symbols is a reflection of an individual's trustworthiness.

Symbols and Interpersonal Trust in Computer-Mediated Communications

Unlike in face-to-face communication, graphic images are often used in computer-mediated communication to represent an individual directly. A computerized image, whether animated or static, is often referred to as an *avatar*, when used to represent an individual in computer-mediated communication environments. The term comes from a Hindu word originally used to describe a deity that appears in human form in order to interact with humanity. Avatars are used as surrogates, or stand-ins, for their human counterparts in some forms of computer-mediated communication and human-computer interaction (HCI) environments as user interfaces. Avatars are used to provide focal points for the development of pseudo-social interaction environments in which humans interact with the avatar socially, as though they were interacting with the humans that the avatars represent (Isbister et al., 2000).

Some avatars can be simple graphic images, similar to the icons found on a Windows desktop. Others can be complex animated figures that can mimic the movement, speech, and even emotive responses of humans. Clippy, the animated help-file interface included in some early versions of Microsoft Office, was one of the more popular early animated avatars. While Clippy did have animated movements and balloon-text communication abilities, it looked essentially like a simple paper clip. Other avatars have been developed more recently that can mimic the subtle non-verbal behavior of humans with surprising clarity. Facial expressions, gaze control, gesturing, synthesized voice inflections, synthesized emotion, and even synthesized empathy are all

active research areas in which avatar development is proceeding at a fast pace. One result of this focused research activity is that avatars have become commonplace in many user interfaces and computer-mediated communication environments. With the widespread presence of powerful personal computers in many American households, increasingly young children are interacting regularly with the avatars found in many of their educational games. In fact, children may even begin to trust these avatars more than they trust adults because the avatars are among the first personalities that children interface with on a regular basis (Larson, 2006).

Other, more icon-like, images are often used as non-animated, or static, avatars. For example, when visiting some online text-only chat rooms, users are often required to choose a static image or icon as their avatar. The choice of which avatar is used to represent the human visitor is often based on personal preference, mood, etc. Other visitors also choose their own avatars and the resulting group of individuals interact with one another's avatars as though they were interacting face-to-face.

In environments where individuals interact or information is presented for decision making, be it in a recreational, educational, or business setting, a key component of success is believability (Landrum, Cook, Tankersley, & Fitzgerald, 2002), one of the components of trust. This is true, regardless of whether a human or an avatar presents the information. Avatar designers continue to struggle with the problem of creating avatars that can present information in a way that fosters the development of trusting relationships (Nakanishi, Shimizu, & Isbister, 2005b). The root of this problem is in the fact that non-verbal communications may actually contain more information than verbal communications (Birdwhistell, 1970; Mehrabian, 1968). In media-rich communication

environments such as face-to-face, video, and audio, a higher level of trust is possible than when text alone is used (Bos et al., 2002). This suggests that information not found in text-only communication environments, such as email or instant messaging, influences trust levels. That is, both verbal and non-verbal components of the communication environment influence the level of trust that develops. Since non-verbal communications and trust are closely related in human interpersonal communications, it would seem logical that a similar relationship would exist in communication environments that incorporate surrogates for human participants, such as avatars in computer-mediated communication environments. This assumes, of course, that the pseudo-social relationships actually develop between the participants and their avatar surrogates. It has been well-established that, based on a number of factors including culture and experience, some individuals are more likely than others to put aside logic and develop trusting relationships (Moore, Yufang, McGrath, & Powell, 2005; Rotenberg et al., 2005; Rotter, 1967). Similarly, some people may also be more likely than others to regard any particular avatar as trustworthy (Bailenson, Yee, Merget, & Schroeder, 2006). For example, studies have also shown that individuals or groups with similar backgrounds develop stronger trust levels toward others than those that do not (Goleman, 1995). Similar backgrounds allow each party to develop a better understanding of the other that leads to an increased ability to rely on the other for honest and effective communication and to predict their likely behavior. The notion that perceptions of reliability and predictability play a strong part in trust development between individuals also holds true for the social interaction that occurs between humans and avatars as well (Bailenson & Yee, 2005, 2006). Human-like avatars that appear ambiguous with regard to gender are

not trusted as quickly as avatars that are clearly associated with a single gender ("You can't trust gender-bending avatars," 2007).

Similarly, exchanging photographs early in computer-mediated communication communications also leads to more rapid trust development (Olson & Olson, 2003), suggesting that images may provide communicating partners the focal points on which to ground opinions of the other person's general trustworthiness. The images that are exchanged may not even be photographs. They may just be images chosen by the communicators for that one communication session. In fact, a rising ethical concern is that several avatar-based marketing initiatives adapt an avatar's appearance to manipulate perceptions of trustworthiness in order to increase sales. Such adaptations are based on demographic information collected about potential clients from websites and human-to-avatar private instant messaging chat sessions (Kerr & Bornfreund, 2005).

While research literature on avatar use in computer-mediated communication is extensive, literature on the subject of trust involving avatars has experienced rapid growth only in the last few years. Much of this research involves animated avatars that have a humanoid form, even though static avatars are used in many computer-mediated communication environments. Further, much of the literature concerning avatars and trust seems to support the notion that many of the phenomena associated with human interpersonal trust can be projected onto this research domain. This includes the effect of appearance, prejudice, and more. There appears to be considerably less research however, involving human-to-avatar trust in situations where the avatar is not animated, but static. Further, no research literature was found that specifically addressed the

influence that archetypical symbols used as avatars have on trust development in computer-mediated communication environments.

Another phenomena associated with human interpersonal trust that can be projected onto this research domain is that of planned behavior. When trust is not present, individuals are less willing to engage in risky behavior (McLain & Hackman, 1999). For example, in computer-mediated ecommerce environments, trust levels have been shown to strongly influence consumer purchasing behavior (Kim, Ferrin, & Rao, 2008). Consumer decisions have been shown to be influenced by the trust that develops toward online information sources as well as those found in traditional media (Jisu, DeLorme, & Reid, 2005). In virtual online communities, where members typically form social relationships via computer-mediated communication channels, behavior intent is significantly influenced by trust levels among members (Jyh-Jeng & Tsang, 2008). However, no research was found involving the influence of trust levels on behavior intent in situations where a static avatar represents one or more of the communication participants.

Research Hypotheses

As noted earlier in this chapter, culturally recognized symbols permeate many aspects of the human experience. These archetypical symbols are often used to express indirect, and often secondary, meanings in communication. The precise meanings of these archetypal symbols are usually determined by experience and culture, and differ from individual to individual. Further, the subconscious behavior and mental processes of the individuals communicating are often encoded into the transmission and interpretation of these symbols. As was stated before, many researchers have shown that

symbol usage often conveys meaning that goes far beyond what is literally communicated. Further, the hidden meanings found in symbols often have a subconscious influence on the social functioning of individuals such that many researchers study symbol usage as a tool to understand social issues.

Researchers have also shown that an individual's underlying psychological traits have a heavy influence on the use and interpretation of symbols. Several psychometric tests have been developed to predict certain mental conditions or tendencies to certain behavior, based on the way that an individual uses symbols. Further, psychologists and sociologists study the ways in which symbols are used to better understand an individual's sense of self and of group belonging. In short, researchers have shown that the use of symbols is central to the formation and interpretation of meaning.

As was stated before, much of the information concerning emotion, empathy, meaning, communication cueing, and even honesty, in interpersonal relationships is relayed non-verbally, often in the form of symbols. Whether by art, literature, religious practice, or contemporary media, some symbols inevitably permeate many aspects of our existence. These archetypal symbols and their often hidden meanings can become so widely used that they become a lasting part of not only our culture, but our communication systems as well. It logically follows, then, that the subconscious perception of archetypal symbols found in the communication environment will have an influence on perceived meaning. For example, many people put faith in symbols associated with authoritative roles, even when the actual trustworthiness of the trusted individual is unknown, which reaffirms the notion that identification with certain symbols

is a reflection of an individual's trustworthiness, even though explicit communication might not occur.

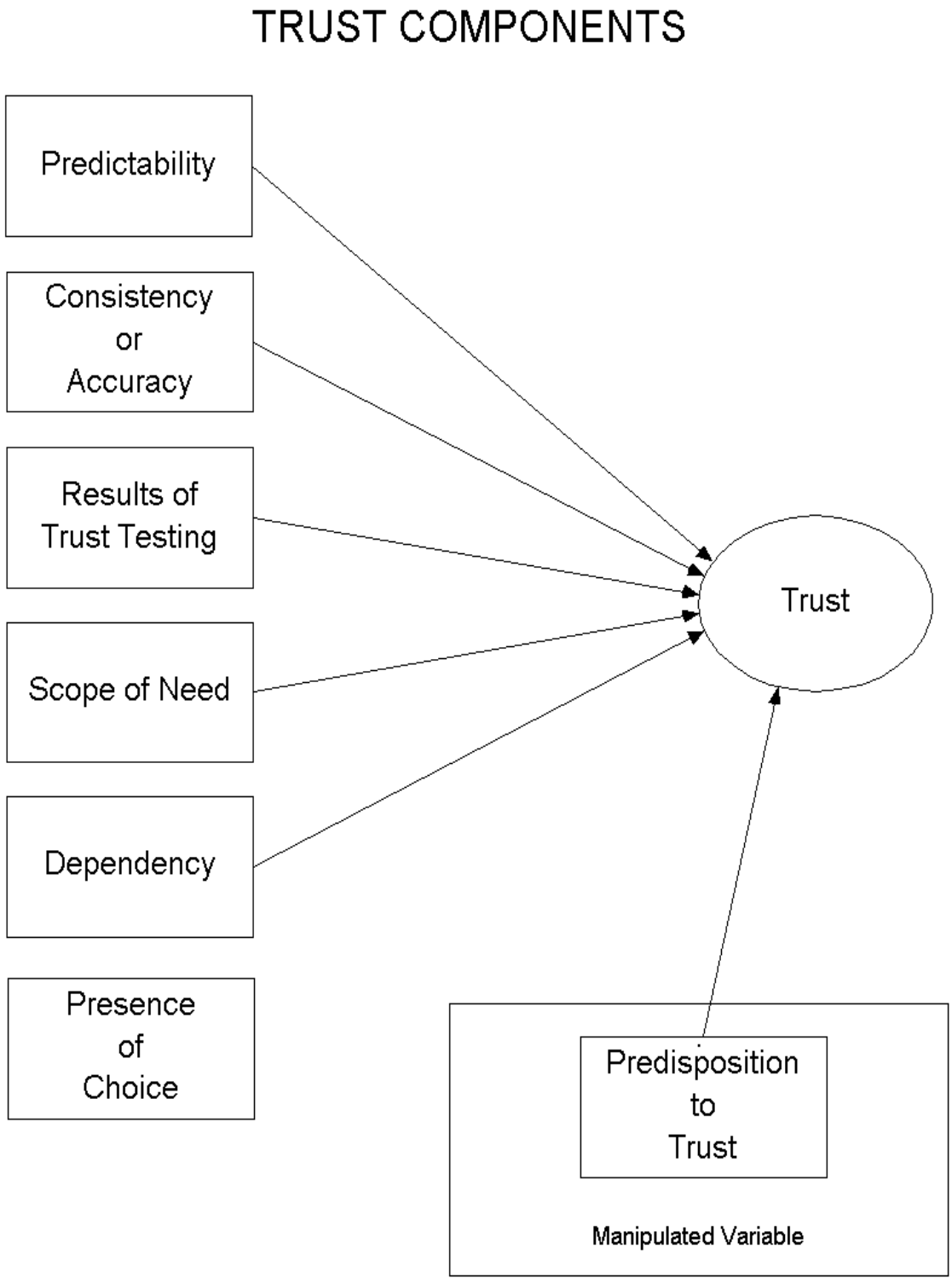
When avatars are used in computer-mediated communication environments, human communicators often react with the avatars socially, as though they were interacting with the humans that the avatars may represent. Further, much of the literature concerning avatars and trust development seems to support the notion that phenomena associated with human interpersonal trust can be applied to human-to-avatar communication as well. This includes the effects of visual appearance, prejudices, and more, which can cause some individuals to be more likely than others to regard any particular entity as trustworthy. Given that an avatar's appearance is known to influence trust development, and symbols often convey hidden meanings to the subconscious, the use of archetypal symbols associated with trustworthiness as avatars should influence trust formation directed toward the avatars and the humans they represent. That is, when these archetypal symbols convey meanings associated with trustworthiness, such as honesty, deception, loyalty, unpredictability, dependability, and lack of sincerity, the levels of trust that develop should change. Because of the relationship that trust levels have been shown to have on behavior intent, individuals with differing levels of trust should also differ in their willingness to act on that trust. This leads us to the following hypotheses:

$H1_a$: The use of archetypal symbols associated with trustworthiness will be associated with trust development, when used as avatars in Computer-Mediated Communication environments.

$H2_a$: The use of archetypal symbols associated with trustworthiness will be associated with trusting behavior, when used as avatars in Computer-Mediated Communication environments.

These hypotheses address only one of the six components of trust discussed in this study, that of predisposition. As was stated before, trust is often described as having at least seven components. Rotter (1967) describes four; predictability, consistency or accuracy, presence of choice, and predisposition. Hupcey et al (2001) describe three; results of trust testing, dependency, and scope of need. Figure 1 provides a model for these seven components. Among these, predisposition is the most closely related to the influence of symbol usage and how it relates to perceptions of trustworthiness. Subtle and often subconscious perceptions of meaning communicated by symbols should have an influence on how willing, or predisposed, an individual is to form trusting relationships. Once formed, trust levels should guide the behavior intent of the individual. The manipulation of trustworthiness-associated symbols as avatars in computer-mediated communication environments, therefore, should influence trust development and lead to changes in trusting behavior intent.

Figure 1. Trust Model: Relationship of Manipulated Variable to Trust Development.



CHAPTER III

METHODOLOGY

Overview

This chapter will present the research methods used to test the two hypotheses presented in Chapter 2: the use of positively perceived archetypal symbols as avatars will lead to higher levels of trust development and trusting behavior intent in computer-mediated communication environments. The methods used in this study can be described as quasi-experimental, and used both qualitative and quantitative methods of data collection and analysis. This effort was divided into three phases, each utilizing a different methodology and instrument. The purpose of Phase 1 was to identify words that are commonly associated with particular archetypical symbols. The research subjects were shown each twelve of the symbols identified in Chapter 2 (See Table 1), and asked to record the words they felt represented any meanings each symbol may have. In Phase 2, the strengths of association between the most commonly presented words and each associated symbol were measured with a similar survey instrument to that used in Phase 1. Three symbols were identified that conveyed polar-opposite secondary meanings with regard to trustworthiness. Two additional symbols were identified that conveyed neutral meanings.

In Phase 3, these symbols were used in three similar text-only printouts of an online chat session. Each research subject completed an instrument designed to measure

predisposition to develop trusting relationships, read one of the three chat session printouts, and then completed instruments designed to measure the amount of trust that developed toward one of the individuals in the chat session and the willingness to act on that trust. The manipulated component is the specific symbol used as an avatar to represent one of the two individuals on the chat session printout. A statistically significant difference will provide sufficient evidence to support the hypotheses in this study. Demographic information was gathered from the research subjects in all three phases.

General Information and Demographics

The participant pool for each survey phase consisted of students enrolled in business courses at a major state-funded university in the Southeastern United States. Recruiting for all phases was conducted via planned visits to classrooms, where students were invited to immediate participation. Those agreeing to participate in each phase were given a pen-and-paper survey instrument to complete, which was given back to the researcher when completed. In all phases, respondents were given informed consent information and reminded that participation was voluntary and anonymous. Participation time for each phase was approximately 15 minutes.

The instruments for all three phases consisted of at least two sections, the first of which was identical among the three phases and designed to gather demographic information in order to describe the respondent pool. Information concerning age, gender, student and work status, and academic major and minor were gathered. Further, because the literature clearly pointed to a cultural aspect of symbol interpretation, two items were included to identify two aspects of each respondent related to culture, namely,

ethnic background and the childhood development environment. Appendix A contains the instruments for all three phases.

Duplication of responses during each of the three phases was controlled by scheduling data gathering sessions in classrooms such that it was not possible for any one student to submit a duplicate response. No personally identifiable information about any student was recorded on the instruments, other than the previously mentioned demographic information.

The remainder of this chapter is divided into three sections, each describing one of the three data gathering phases. Each of these sections is broken into two subsections. The first subsection provides an overview of that phase and the second subsection provides specific details about the methods and procedures used in data gathering.

Phase 1 - General perceptions of symbol meanings

Overview

The methods used in Phase 1 and Phase 2 were similar to the Symbol Association Test methods used by Roster *et al.* (1991) to develop their Archetypal Symbol Inventory (ASI). However, where the ASI specifically excluded archetypal symbols that were thought to be culturally influenced, the research methods used in this study specifically included them. Similar to the method of surveying existing symbol collections for archetypal symbols from which to develop the ASI, the method used in this study involved searching the arts, literature, religion, and psychology literature for archetypal symbols.

Although many more symbols exist, twenty-two common archetypal symbols were identified (See Table 1). Ten of these symbols, however, were associated with

meanings outside the scope of study for this research effort, namely perceptions of trustworthiness, and were not studied further. The remaining twelve symbols were then presented to the research subjects as images, again similar to the works of Roster, *et al.,* who were then asked to associate them with words or phrases, similar to the methods used by Rorschach in his inkblot tests.

As noted by Allen & Dana (2004) and by Rothstein (1977), words used in exercises such as this may be influenced by the subject's mental state, memories, and cultural background. Therefore, each participant was asked to look at each symbol and write down any words or phrases that expressed what each image was thought to symbolize. Each participant was also asked to write what he or she would think of someone that used each image to represent himself or herself? In order to collect sufficient variety of opinion, it was determined that the opinions of least 100 participants would provide sufficient data to complete Phase 1. The words and phrases provided by each respondent, and associated with each symbol, were compiled into a single list for each symbol. Synonyms were identified with a thesaurus and with an axiom dictionary, and synomyms were grouped together. The five most frequently reported words, or word groupings, were recorded for use in Phase 2.

Method Specifics

The respondent pool for Phase 1 consisted of 3,600 students enrolled in the College of Business at a large, state-sponsored university in the Southeast United States. Because the researcher administered the instrument for this phase in a classroom setting, the respondents were chosen based on their class schedule for the Fall, 2008 semester. Twelve simultaneously-meeting class sections were chosen from the College of Business

schedule. Simultaneously-meeting sections were chosen to minimize duplication of responses. Those sections with more than 20 students in any one particular major were excluded so as not to introduce a selection bias due to large concentrations of student majors or minors. Should all participants scheduled for these sections have participated, the number of responses would have been approximately 213. Because only 100 responses were required and to avoid placing an unnecessarily burden on the respondent pool, data gathering was to be terminated early should the response rate be unexpectedly high.

In each session, the researcher was introduced to the class by the instructor, who left the classroom and waited outside to minimize the perception of participation coercion. The researcher then gave an informed consent briefing, emphasizing that participation was both voluntary and anonymous, and then distributed copies of the Phase 1 survey instrument. Students were informed that should they choose not to participate, they should just return the Phase 1 survey instrument without completing it. The students that chose to participate then completed the demographics section of the instrument, which was followed by, and attached to, the word-listing section.

Each page of the word-listing section had a single symbol at the top and two subjective response items with large blank areas in which to write their responses. There were twelve symbols in this section of the Phase 1 instrument, each on a separate page. When finished, the respondents returned the completed instruments to the researcher. Once all instruments were returned, the researcher thanked the students, left the classroom, and the instructor returned. Data gathering in Phase 1 was terminated after 139 subject responses were gathered.

Phase 2 – Strength of Symbol Meanings

Overview

To minimize confusion due to multiple meanings, a thesaurus was used to identify three synonyms for each word theme resulting from the analysis of Phase 1 responses. These three-word combinations were then used in the survey items in Phase 2. The purpose of Phase 2 was to determine if each three-word combination was accurately represented by its respective symbol. That is, because the accuracy of the researcher's interpretation and grouping of the words provided on the Phase 1 instrument, along with the subsequent identification of three-word combinations, was a purely subjective process and needed to be verified. To this end, the instrument used in Phase 2 was patterned after the instrument used in Phase 1, differing only in that the two subjective response areas below each symbol were replaced with five, seven-point Likert-scale items. Each item contained one three-word combination. Then, rather than relying on additional researchers' subjective opinions of the accurracy of the first researcher's efforts in eliminating and combining responses in Phase 1, a more objective empirical method was chosen.

In Phase 2, the subjects were asked to provide their opinions as to how well each three-word group accurately expressed the symbolic meaning found in the symbol given. This was to determine the strength of association between each of the three-word combinations and associated symbols. Therefore, the items in Phase 2 were actually measuring a construct related to the perceived accuracy of the researcher's interpretation. Accurate interpretation would therefore result in items that were highly scored, each item may have a completely different meaning. Any mis-interpretation on the part of the

researcher would likely result in an item being scored low. Therefore, it was determined that if the confidence interval of the mean score for each item included the neutral response, "4", then the item was mis-interpreted and was not considered sufficiently accurate. If it did not include the neutral response, then the item was considered sufficiently accurate for further consideration.

Method Specifics

The actual survey method used in Phase 2 was identical to that used in Phase 1, except for the second section of the instrument itself. The respondent pool for Phase 2 consisted of approximately 3,600 students enrolled in the College of Business at a large, state-sponsored university in the Southeast United States. Because the researcher administered the instrument for this phase in a classroom setting, the respondents were chosen based on their class schedule for the Fall, 2008 semester. Twelve simultaneously-meeting class sections were again chosen from the College of Business schedule, though on different classes were chosen than those used in Phase 1 so as to reduce the number of respondents participating in both phases. Simultaneously-meeting sections were again chosen to minimize duplication of responses. Those sections with more than 20 students in any one particular major were excluded so as not to introduce a selection bias due to large concentrations of student majors or minors. Should all participants scheduled for these sections have participated, the number of responses would have been in excess of 210. Because only 100 responses were required and to avoid placing an unnecessary burden on the respondent pool, data gathering was to be terminated early should the response rate be unexpectedly high.

In each session, the researcher was introduced to the class by the instructor, who left the classroom and waited outside to minimize the perception of participation coercion. The researcher then gave an informed consent briefing, emphasizing that participation was both voluntary and anonymous, and then distributed copies of the Phase 2 survey instrument. Students were informed that should they choose not to participate, they should just return the instrument without completing it. The students that chose to participate then completed the demographics section of the instrument, which was followed by, and attached to, the word-group association section.

Each page of the word-group association section had a single symbol at the top, above five Likert-scale items. Each of these items included one of the three-word groups developed from the Phase 1 results and a seven-point Likert-scale with which to indicate their response. In several cases, there were less than five, three-word groups from Phase 1 to use on the instrument in Phase 2. In those cases, the researcher created one or more three-word groups to add to those resulting from Phase 1, and then added those to the Phase 2 instrument. There were two primary reasons for this. First, to verify that the scoring method used in analyzing the Phase 2 data properly identified three-word groups that were not typically associated with a particular symbol. Second, to determine if a particular symbol was commonly associated with one or more of the components of trust.

There were twelve symbols in this section of the Phase 2 instrument, each on a separate page, and each with five three-word groups. When finished, the respondents returned the completed instruments to the researcher. Once all instruments were returned, the researcher thanked the students, left the classroom, and the instructor

returned. Data gathering in Phase 2 was terminated after 140 subject responses were gathered.

Phase 3 – Strength of Trust in Context

Overview

Phase 3 was a quasi-experiment involving three groups of respondents. Each group was randomly given one of three nearly identical printouts of an online chat session. After the respondents read the printouts, the trust that each respondent developed was measured. In order to assign each subject randomly to a test group, 150 copies of each of the three different instruments were prepared and, using Microsoft Excel to generate a random number, placed in random order in a single stack. Each subject was then given a survey instrument from the top of the stack, which effectively assigned each subject randomly to one of the three survey groups.

As in Phase 1 and Phase 2, one section of the Phase 3 instrument gathered demographic information from each respondent. The respondents were also given a printout of a chat session in which two college students discussed a fictitious scenario that posed an ethical dilemma. This scenario was one in which both students had a need, but choosing to trust the other to meet that need involved a measure of risk, ethical question, dependency, and more. This scenario was written so as to leave the research subject with little concrete information with which to form an opinion of the trustworthiness of the two students in the scenario. Rather, information about how the two students addressed the trust components of predictability, dependability, results of prior trust testing, scope of need, dependency, and presence of choice were either not clearly provided or were in conflict with other factors. Furthermore, the ethical dilemma

chosen involved a situation where no clear policy or rule existed and the risks were small. The purpose of this was to provide as little information as possible from the text of the scenario as to the trustworthiness of the two students in order to highlight the effect that the remaining factor, predisposition to trust, had on the development of trust toward one of the students in the scenario.

As was noted in the literature review, this particular factor can differ greatly between individuals. Therefore, prior to conducting an experiment in which interpersonal trust toward one of the students would be measured, it was necessary to account for the variation between respondents that existed beforehand related to their predisposition to form trusting relationships. This was accomplished by administering Rotter's (1967) Interpersonal Trust Scale (ITS), which was designed to measure an individual's predisposition to form interpersonal trusting relationships, prior to the test subjects reading the chat scenario. This instrument is widely used in trust research, but due to the lengthy period since it was developed, the rhetoric required slight modification to improve its readability by the respondent pool. The need to reword this instrument when considering student respondent pools has also been noted by other researchers such as Hunt, Kohn, and Mallozzi (1983). Previous research with this instrument has consistently demonstrated reliability in excess of .75 (Montada, Filipp, & Lerner, 1992; Rotter, 1967; Stein & et al., 1974). Comprised of 40 Likert-scale items, half inverted and with some filler items, it is designed to produce a single index number, representing the subject's predisposition to form trusting interpersonal relationships. The instrument scales were inverted to achieve similarity with the other instruments used in this research phase.

After completing the ITS, respondents were asked to read a chat session printout, in which each of the two fictitious students was represented by an avatar. The only difference between each of the three versions of the printout was the symbol used as an avatar to identify the fictitious student initiating the online chat session.

T-tests with confidence intervals were used on the results of the data gathered in Phase 2 in order to help identify symbols for use as avatars in Phase 3. Symbols where the confidence interval of the meaning-to-symbol association included neutral were discarded, leaving only those in which there was a strong symbol-to-meaning association. Based on the results of the remaining symbols, along with the mean and standard deviation of each symbol's associated responses and the three-word groups themselves, four symbols were identified to be used in Phase 3. Because many of the three-word groups used on the Phase 2 instrument were synonymous with positive character traits such as perfection, honesty, godliness, etc., or negative character traits such as unreliable, sinful, dangerous, sinister, etc., identification of symbols associated with both trustworthiness and untrustworthiness was straight-forward. However, to reduce any bias on the part of the researcher in the selection of the symbols to be used, a senior experienced faculty researcher was asked to, and did, review and confirm the selections. The same method of selection was again used to identify two symbols associated with relatively neutral concepts such as unrestrained, independent, calm, or pretty.

Once these four symbols were chosen, a symbol associated with trustworthiness traits was used as an avatar to represent fictitious student #1. On another version, a symbol associated with untrustworthiness traits was used to represent fictitious student #1. A third version utilized one of the two neutral symbols as an avatar representing

fictitious student #1. In all three versions, the second neutral symbol was used as the avatar to represent the fictitious student #2.

After reading the printout, each subject was asked to complete an instrument to determine if the respondent would perform a trusting action. This instrument was comprised of only two items, each measuring the willingness of the respondent to perform one of two trusting actions. Both items were written in a seven-point Likert Scale format. Following this, the respondents completed an instrument designed to measure the interpersonal trust developed toward fictitious student #1 in the chat session, the student who's avatar was manipulated between the three experiment groups. The Rempel and Holmes (1986) Trust Scale (RHTS), a 17-item instrument designed specifically for measuring interpersonal trust directed toward a particular individual by another, was chosen.

The RTHS has been widely used in behavioral studies involving interpersonal trust and has consistently demonstrated a reliability of .80 or higher (Gaines et al., 1997; Rempel et al., 1985; Zaheer, McEvily, & Perrone, 1998). Only minor wording changes were necessary to align the instrument items to this particular scenario and to fictitious student #1. This 17-item instrument can either be used to measure the three primary constructs of dependability, predictability, and faith separately, or, to measure interpersonal trust in general by summing all item responses together.

The survey instruments for Phase 3 were arranged in the following order: An informed consent memo from the researcher, the 40-item ITS, the 7-item demographics instrument, one of three randomly chosen chat session printouts, the 2-item intent to act instrument, and finally the 17-item RHTS. All instruments were stapled together to form

a single 10-page instrument. A pilot study was conducted using 13 subjects from the participant pool to verify that the research design and measurement scales were sufficiently robust and appropriate. Minor layout changes were made to the instrument, and data gathering continued as planned.

Method Specifics

The method used in Phase 3 was similar to those used in Phase 1 and Phase 2, though there were a few differences. The respondent pool for Phase 3 also consisted of 3,600 students enrolled in the College of Business at a large, state-sponsored university in the Southeast United States. Because the researcher administered the instrument for this phase in a classroom setting, the respondents were chosen based on their class schedule for the Fall, 2008 semester. Six simultaneously-meeting class sections were again chosen from the College of Business schedule, though selected in such as way as to minimize duplication of responses. Should all participants scheduled for these sections have participated, the number of responses would have been in excess of 500. However, due to another on-campus event, student attendance in these sections was lower than expected. Only 281 students were present for this phase of the research.

In each session, the instructor introduced the researcher to the class, who then gave an informed consent briefing, emphasizing that participation was both voluntary and anonymous. The researcher then distributed copies of the Phase 3 survey instrument. Students were informed that if they choose not to participate, they were simply to return the Phase 3 survey instrument without completing it. The students that chose to participate should then complete the Phase 3 instrument and return it to the researcher.

Participation was 100%. When finished, the respondents returned the completed Phase 3 instrument to the researcher, who gave each respondent one half of a numbered raffle ticket and placed the other half in an open bucket. Once all instruments were returned, the researcher asked an observer to draw a raffle ticket from the bucket. The number was called out and an iPod Shuffle was immediately given to the respondent that held the other half of that ticket. The researcher then thanked the students and left the classroom. This concluded the data gathering portion of this study.

CHAPTER IV

RESULTS AND ANALYSIS

Phase 1 – General Perceptions of Symbol Meanings

The information from Phase 1 was not quantitatively analyzed. Rather, the data gathered from Phase 1 was compiled for each symbol and sorted. Using a thesaurus and an axiom dictionary, synonyms were grouped together into response themes. The resulting list of themes was sorted again and then the total number of responses for each theme was recorded and sorted.

Phase 2 – Strength of Symbol Meanings

It was determined that if the confidence interval of the mean score for each item on the Phase 2 instrument included the neutral response, "4", then the item was mis-interpreted and that particular three-word group was not considered sufficiently accurate for further consideration. If it did not include the neutral response, then the item was considered sufficiently accurate for further consideration.

A thorough analysis of the responses in Phase 2 was conducted. Means, standard deviations, and 95% confidence intervals for the means was calculated and recorded. These can be found in Appendix D, Table D1. By analyzing this information, along with the symbols themselves and the meanings of the strongly associated three-word groups, four symbols were identified for use in Phase 3. These symbols included a dove, which was strongly associated with trustworthy traits, and a serpent, which was strongly

associated with untrustworthy traits. Additionally, a butterfly symbol and a lion symbol were identified for use as neutral symbols because they were identified with traits that had nothing to do with trustworthiness.

Phase 3 – Strength of Trust in Context

Once the responses were gathered from Phase 3, they were screened for completeness and abnormalities. Of the 356 instruments returned to the researcher, 16 were identified that were either incomplete or improperly filled out. These responses were removed, leaving 340 responses available for further study. Calculations were performed on both the Rotter and the Rempel instruments in the traditional manner by removing filler items, inverting the scales of the reverse-scored items, and summing the items together to get a single score for each instrument. The Rotter instrument score was recorded as "Predisposition" and the Rempel score as "Trust". Another calculated variable called "Action" was calculated by totaling the responses from the two action questions immediately following the chat-session printout. Descriptive statistics for these variables can be found in Table 2. Correlations between these variables can be found in Table 3. Though it was expected that the correlation between between Predisposition and Trust would be significant, it was not ($r = .002$, $p = .975$), suggesting that Predisposition may not be a suitable covariate for Trust in an ANCOVA.

The reliability of both the Rotter and the Rempel instruments were also calculated. Though the reliability of the Rempel instrument was found to be sufficient (Cronbach $\alpha = .771$), that of the Rotter instrument was somewhat lower than desired (Cronbach $\alpha = .571$).

Table 2 – Descriptive Statistics for Phase 3 Scale Data

	Minimum	Maximum	Mean	Std. Deviation
Predisposition	27	82	53.54	8.859
Action	2	14	6.56	3.165
Trust	17	101	48.63	16.230

Table 3 – Pearson Correlations Between Phase 3 Scale Variables

	Predisposition	Trust	Action
Predisposition	1.000	.002	-.171*
Trust	.002	1.000	.615*
Action	-.171*	.615*	1.000

* Significant at the .01 level (2-tailed)

Analysis Related to Hypothesis H1, Trust

ANOVA was performed to determine if any of the demographic variables were significant predictors for the Trust scores. Only gender was found to have a significant relationship with Trust scores and was therefore included in further analysis. The other demographic variables were not considered in further analysis with regard to hypothesis H1. Descriptive statistics for the subgroups created by Gender and Symbol can be found in Table 4. Sample normality for the Trust variable was confirmed by a Kolmogorov-Smirnov (KS) test (KS Z = 1.094, p = .182).

ANOVA was then performed with Gender as a fixed factor, Symbol as a random factor, and Trust as the dependent variable. A Levene's Test of Equality of Error Variances reveals no evidence that the error variance of the dependent variable, Trust,

Table 4 – Gender and Symbol Subgroup Descriptive Statistics for Trust ANOVA

Gender	Symbol	Mean	Std. Deviation	N
Female	Butterfly	40.31	13.284	49
	Dove	51.96	15.695	47
	Serpent	42.24	12.444	49
	Total	44.74	14.661	145
Male	Butterfly	54.20	15.307	60
	Dove	56.03	16.406	68
	Serpent	44.55	16.326	67
	Total	51.52	16.763	195
Total	Butterfly	47.95	15.957	109
	Dove	54.37	16.175	115
	Serpent	43.58	14.796	116
	Total	48.63	16.230	340

was not equal across the groups ($F_{5, 334} = 1.792$, $p = .114$). Both Gender ($F_{1, 338} = 15.707$, $p < .001$) and Symbol ($F_{2, 337} = 14.173$, $p < .001$) were found to be significant predictors for Trust (see table 5 for complete ANOVA table). Because Symbol was found to be a significant predictor of Trust, sufficient evidence was present to suggest that symbol usage was significantly related to trust development. Hypothesis $H1_a$ was therefore supported. Further, Gender was also found to be significant ($p < .001$). The total effect size for a model containing Symbol, Gender, and intercept components explains 11.7% of the total variance of Trust ($\eta^2 = .117$).

Analysis Related to Hypothesis H2, Action

ANOVA was performed to determine if any of the demographic variables were significant predictors for the Action scores. Only gender was found to have a significant relationship with Action scores and was therefore included in further analysis. The other

Table 5 – Hypothesis H1 ANOVA Table

Dependent Variable: Trust

Source		Type III SS	df	MS	F	Sig.	Partial η^2
Hypothesis		770663.606	1	770663.606	236.462	.004	.992
Error		6538.236	2.006	3259.141			
Gender	Hypothesis	3684.460	1	3684.460	15.707	.000	.045
	Error	78817.273	336	234.575			
Symbol	Hypothesis	6649.414	2	3324.707	14.173	.000	.078
	Error	78817.273	336	234.575			

demographic variables were excluded from further analysis with regard to hypothesis H2. Additionally, Predisposition was found that related to Action and was included in further analysis as a covariate. However, a KS test performed on the Action variable revealed a lack of normality (KS Z = 2.380, $p < .001$). An inspection of a histogram showing each of the three groups reveals that the group associated with the serpent symbol appears heavily skewed toward the low end of the scale, which was expected (see figure 2). The lack of normality in the Action variable was therefore determined to be acceptable and analysis continued. However, when performing an ANCOVA on all three symbol groups, a Levene's Test of Equality of Error Variances provided evidence that the error variance of the dependent variable, Action, was not equal across the groups ($F_{5, 334} = 2.424$, $p = .035$). It was determined that the group associated with the butterfly symbol may be the cause and was removed. Once these responses were removed, Gender was again confirmed as the only significant demographic predictor of Action ($p = .031$). Descriptive statistics for the subgroups created by Gender and Symbol, with the Buttefly responses excluded, can be found in Table 6.

Figure 2 – Comparison of Symbol Histograms

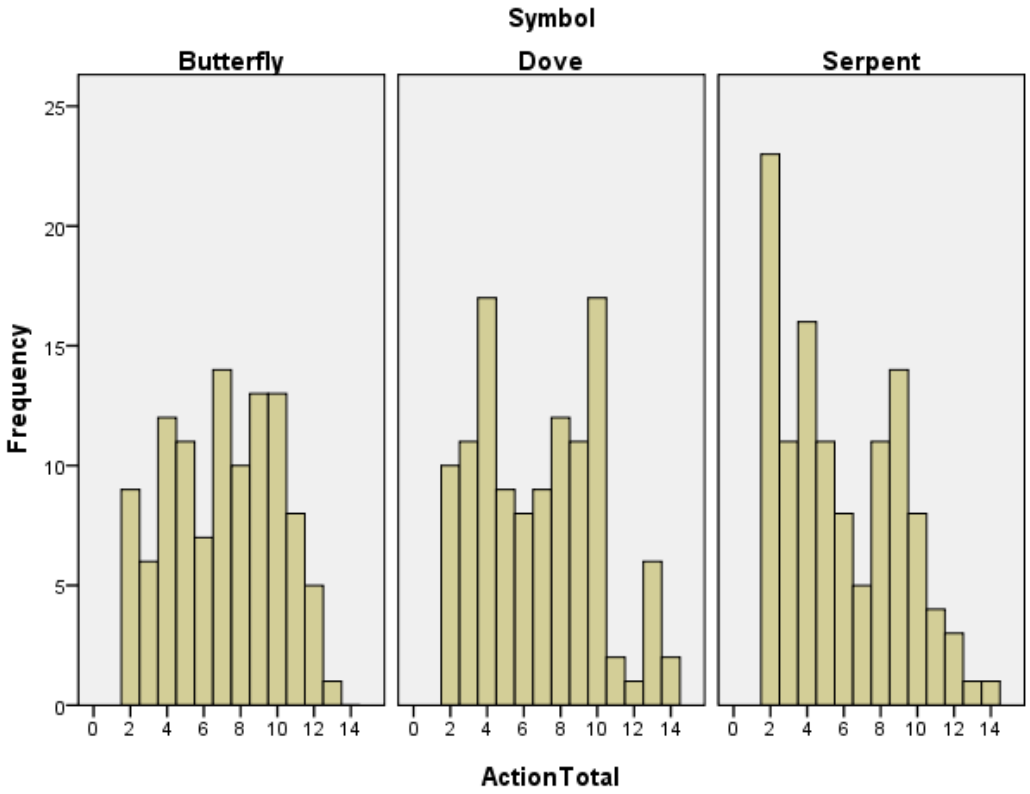


Table 6 – Gender and Symbol Subgroup Descriptive Statistics for Action ANCOVA

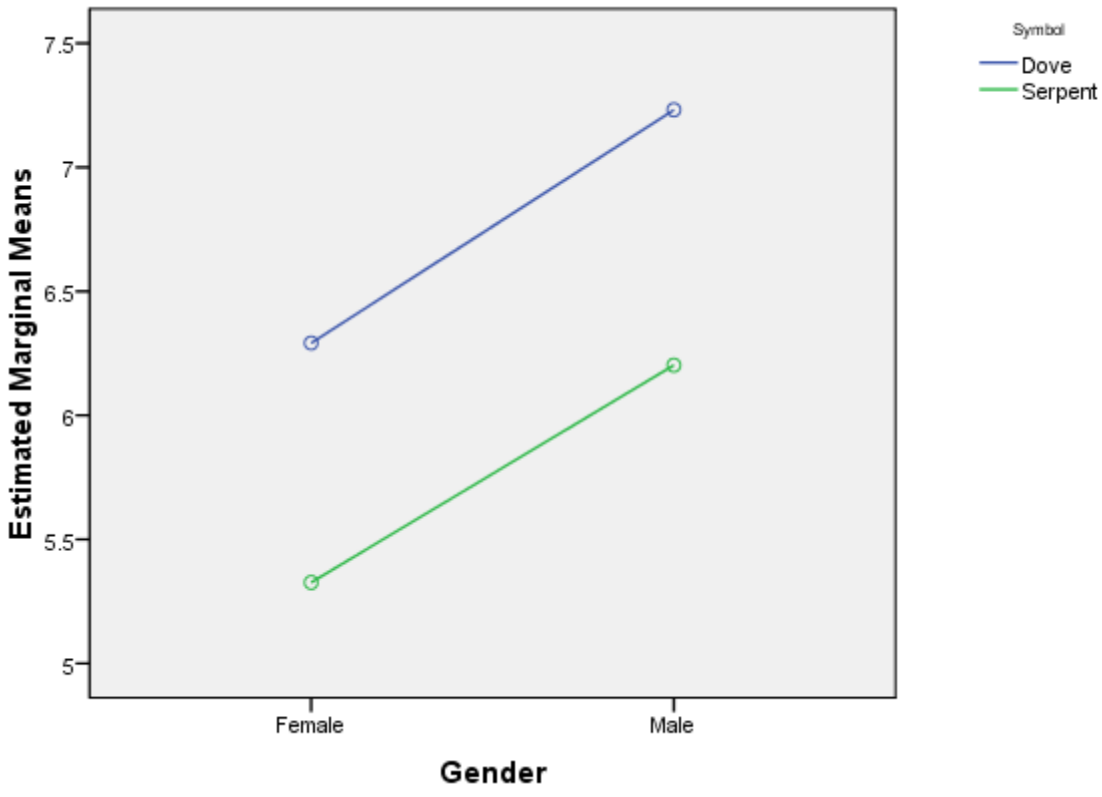
Gender	Symbol	Mean	Std. Deviation	N
Female	Dove	6.26	3.103	47
	Serpent	5.55	2.685	49
	Total	5.90	2.904	96
Male	Dove	7.18	3.305	68
	Serpent	6.12	3.501	67
	Total	6.65	3.432	135
Total	Dove	6.80	3.242	115
	Serpent	5.88	3.182	116
	Total	6.34	3.238	231

After performing another ANCOVA, a Levene's Test of Equality of Error Variances revealed no evidence that the error variance of the dependent variable was not

equal among the remaining groups ($F_{3, 227} = 1.716$, $p = .165$). The responses associated with the butterfly symbol were therefore excluded from further study associated with hypothesis H2.

ANCOVA was again performed with Gender and Symbol as fixed factors, Predisposition held as a covariate, and Action as the dependent variable. As was mentioned before, a Levene's Test of Equality of Error Variances, revealed no evidence that the error variance of the dependent variable was not equal among the remaining groups ($F_{3, 227} = 1.716$, $p = .165$). An assumption of parallel group regression slopes was confirmed by observing the slopes on an X-Y plot (see Figure 3).

Figure 3. Estimated Marginal Means Plot for Action Variable



Both Gender ($F_{1, 338} = 4.717$, p =.031) and Symbol ($F_{2, 337} = 5.970$, p = .015) were found to be significant predictors for Action (see table 7 for ANOVA table). Predisposition was found to be significantly related to Action as well ($F_{1, 338} = 13.58$, p < .001). Because Symbol was found to be a significant predictor of Action, sufficient evidence was present to suggest that symbol usage was significantly related to behavior intent. Hypothesis $H2_a$ is therefore supported.

Additional Analysis

Because both Gender and Symbol were found to be significantly related to both Trust and Action dependent variables, interaction effects were investigated. In the case of Trust, the interaction between Gender and Symbol was found to be significant ($F_{5, 334} = 10.986$, p < .001). A model containing only an intercept and Gender and Symbol components explains 11.7% of the variance of Trust ($\eta^2 = .117$). Adding a Gender-Symbol interaction component results in a model that explains a more favorable 14.1% ($\eta^2 = .141$).

Similarly, the interaction of Gender and Symbol was also significantly related to Action ($F_{3, 336} = 7.679$, p < .001) A model with Gender, Symbol, Predisposition, and intercept components explains 11% of the variance ($\eta^2 = .110$) in Action. Adding a Gender-Symbol interaction component results in a model that explains a more favorable 13% of the variance in Action ($\eta^2 = .130$).

For comparison purposes, the 95% confidence intervals for these models were calculated and can be found in Table 8 and Table 9. Additionally, to verify what had been identified in the literature regarding the relationship between trust development and willingness to engage in trusting behavior, Trust was regressed against Action and found

to be significant ($F_{1, 339} = 205.275$, $p < .001$), explaining 37.6% of the variance of Action (Adjusted $R^2 = .376$). No additional analyses were performed and no anomalies noted, other than those previously mentioned.

Table 7 – Hypothesis H2 ANCOVA Table

Source		Type III SS	df	MS	F	Sig.	Partial η^2
Hypothesis		705.695	1	705.695	64.582	.000	.584
Error		503.091	46.041	10.927			
Symbol	Hypothesis	57.867	1	57.867	5.970	.015	.026
	Error	2200.115	227	9.692			
Gender	Hypothesis	45.722	1	45.722	4.717	.031	.020
	Error	2200.115	227	9.692			
Predisposition	Hypothesis	131.615	1	131.615	13.580	.000	.056
	Error	2200.115	227	9.692			

Table 8 – 95% Confidence Intervals for Group Means of Trust Groups

				95% Confidence Interval	
Gender	Symbol	Mean	Std. Error	Lower Bound	Upper Bound
Female	Butterfly	40.306	2.165	36.048	44.564
	Dove	51.957	2.210	47.610	56.305
	Serpent	42.245	2.165	37.987	46.503
Male	Butterfly	54.200	1.956	50.352	58.048
	Dove	56.029	1.837	52.415	59.644
	Serpent	44.552	1.851	40.911	48.194

Table 9 – 95% Confidence Intervals for Group Means of Action Groups

				95% Confidence Interval	
Gender	Symbol	Mean	Std. Error	Lower Bound	Upper Bound
Female	Dove	6.292[a]	.455	5.395	7.189
	Serpent	5.326[a]	.450	4.440	6.213
Male	Dove	7.232[a]	.379	6.486	7.978
	Serpent	6.202[a]	.382	5.450	6.955

a. Predisposition evaluated at 53.69

CHAPTER V

DISCUSSION AND CONCLUSIONS

Summary

In this research study, culturally-recognized symbols used as avatars were manipulated to influence perceptions of trustworthiness and behavior. A logical presentation of the extant literature from several different, but related, disciplines was given. The use of symbols in psychology, religion, art and literature, and other areas was discussed, as well as in the area of computer-mediated communications and trust studies. By studying the extant literature in these areas, numerous symbols were identified that are commonly found throughout many cultures. Two hypotheses were developed relating to the effect of using culturally-recognized symbols and trust in computer-mediated communication environments.

To test these hypotheses, a method was devised that was comprised of three distinct phases. In Phase one, the symbols identified earlier were presented to respondents in order to identify keywords or phrases commonly associated with each symbol. In Phase two, word combinations were created from the results of Phase one and presented, with each respective symbol, to respondents. This was designed in such a way as to confirm the association between the meanings and the symbols so that symbols could be selected for Phase three. In Phase three, respondents completed an instrument that measures predisposition to trust, read the text of one of three different chat sessions,

and then completed instruments related to willingness to perform trusting acts and general trust levels that developed.

Once this data was gathered, an investigation was conducted to determine if sufficient evidence existed to support the hypotheses. An ANOVA concluded that there was sufficient evidence in support of hypothesis $H1_a$, the use of archetypal symbols associated with trustworthiness will be associated with trust development, when used as avatars in Computer-Mediated Communication environments. Further, evidence was discovered that trust development was also significantly related to gender. An interaction effect between the gender and the specific symbol used suggests that male and female respondents reacted to each symbol differently with regard to trust development. These factors explained 14.1% of the variance found in the Trust scale measurements for this sample.

Another investigation using ANCOVA concluded that there was also sufficient evidence in support of hypothesis $H2_a$, the use of archetypal symbols associated with trustworthiness will be associated with trusting behavior, when used as avatars in Computer-Mediated Communication environments. As was the case when investigating trust development, evidence was discovered that willingness to engage in trusting behavior was also significantly related to a respondent's gender. An interaction effect between the gender and the specific symbol used suggests that male and female respondents reacted to each symbol differently with regard to willingness to engage in trusting behavior. In fact, the reaction was so varied to the butterfly symbol that the data for this group could not be used in an ANCOVA investigation. These factors explained 13% of the variance found in the Action variable measurements for this sample.

Additional investigations also echoed the findings of other researchers in that trust development is significantly related to the respondents' willingness to engage in trusting behavior in computer-mediated communication environments.

It was unexpected, however, that predisposition to form trusting relationships was not significantly related to actual trust development. This may have been due to many factors, including the rewording of Rotter's original instrument using contemporary rhetoric, or its application to this particular respondent group. Regardless of the reason, the lack of a suitable covariate during analysis would likely have been detrimental to this study, were it not for the large sample size. Additionally, the appearance of a significant interaction between respondent gender and the actual symbol used was unexpected. Though this was not anticipated for *a priori*, a *post hoc* investigation revealed sufficient literature to suggest that males and females process symbol meanings differently (Gecas & Libby, 1976; Lewis, 1998; Waltner, 1986). The results of such research efforts can easily be applied to the domain of computer-mediated communications, and this research study does provide considerable support to that inference.

Contributions & Implications

The most obvious contribution of this research study is that it provides evidence that culturally transmitted symbol meanings are significantly related to trust development and behavioral intent in computer-mediated communication environments. This is important, given the recent increased deployment of numerous systems to support many aspects of corporate operations, including knowledge management, customer service, sales and marketing, corporate training, and more. Skilled avatar choice in order to influence trust development and trusting behavior, and hence knowledge transfer,

customer satisfaction, sales revenue, training effectiveness, and more, becomes a critical competency with regard to deployment of these systems. Further, a thorough understanding of the cultural nature of these phenomena allows a more accurate customization of these systems for use by particular demographic and cultural groups.

Another contribution made by this study is that it provides a basic framework for future studies of archetypal symbols. That is, the three-phased research method used in this study was shown to be a successful method to identify both archetypal symbols and their meanings. In fact, the processes used in Phase 1 and Phase 2 of this research work would be valuable in creating a catalogue, and perhaps a taxonomy, of archetypal symbols for future reference.

Limitations

Though the research method proved useful, this study was severely limited by the nature of the respondent pool. The typical respondent was a young Caucasian undergraduate student in the southeastern United States. A more diverse respondent pool may have provided much more insight into the cultural aspects of the phenomena under study. Further, the youthfulness of the respondent pool may also have been a factor, given that culturally transmitted meanings typically occurs over an individual's entire lifetime. It is likely that older respondents would interpret symbols differently than younger respondents, due to their increased number of years in the learning environment of their culture.

Another aspect related to the respondent pool that severely limited this study involves the nature of the two instrument items used to measure intent to engage in trusting behavior. The trusting behavior in question dealt with the ethical dilemma of

selling notes from a prior semester's class with a fellow student. Though this ethical dilemma was thought to be one in which the typical respondent would not find to be a particularly important one, this was found later not to be the case. After the research was concluded, numerous respondents were asked what they thought the focus of the survey was. Most of them replied that they believed the research dealt with ethical behavior involving an issue of high importance, namely, helping a friend to cheat on an exam. The strength of their view that this was about cheating was not expected and may have been part of the cause of the skewness found in the Action variable in the Phase 3 analysis. Additional research in this area would likely benefit from a more varied and robust set of situations, particularly if it were tailored to the respondent group being studied. Though a pilot study was conducted prior to the full study, the fact that this issue was not raised was likely due to the difference between the respondent group in the pilot study and the respondent group in the main study. The pilot study respondents consisted almost exclusively of current Ph.D. students, and the primary respondent group consisted of exclusively undergraduate students.

Another factor noted by the researcher, albeit anecdotal, was that many of the male respondents, particularly in the butterfly symbol group, took noticeably longer to complete their survey instruments than the other respondent groups. Though this is strictly anecdotal, it should be noted that it was sufficient to cause the researcher initially to think that a randomization mistake had been made, even though it had not. This was also noted on two different days of data gathering and among more than one group of students. Though nothing was noted of a gender-chronology effect in the literature review before data gathering commenced, additional study may be warranted.

Because this research method involved a chat session printout, as opposed to a live chat session involving the research subject, the effects noted herein may have been muted somewhat. That is, had the research design been such that a live, one-on-one chat session could have been used instead of having the respondents read a chat-session printout, a more robust experiment environment may have been possible. Participants in chat sessions typically do not have the avatars used to represent themselves chosen for them. Typically, participants choose their own avatars as a form of self-expression. Because this was not the case in this study, it is plausible that the respondents may not have viewed the avatars used in the study as expressions of self by the fictitious students in the chat-session printouts. While this research effort was meant to show that a relationship exists between archetypal symbol usage and trust development and behavior intent, future research efforts in this area may be better suited to more realistic experiment environments.

Additionally, the rephrasing of both the Rotter and the Rempel instruments may have had an adverse effect on their reliability and validity for this study. These modified instruments, especially Rotter's, may not be usable for future research with similar respondent groups. The identification of a more suitable covariate to trust development than Rotter's instrument would likely allow for more power, which could allow the detection of other demographic effects not noted in this study. For example, rather than categorizing respondents' ages, the use of a scale variable for age may have provided a suitable covariate for both hypotheses.

Future Research

The most obvious direction of future research is an extension of this quasi-experiment into a true experimental environment that incorporates multiple live subjects in a live online chat environment. The simulation of a real-world chat environment with a large and demographically and culturally diverse respondent group would likely yield much more information regarding the use of culturally transmitted symbols as avatars and trust phenomena. Future research should also be expanded to include non-academic settings such as social networking sites, corporate knowledge-sharing systems, and more.

As was mentioned before, the method and analyses used in Phase 1 and Phase 2 of this study proved valuable to future studies. Using this technique, additional studies are warranted that expand the catalogue of known archetypal symbols and the meanings attributed to them seeded by this study. Cultural differences among the meanings should also be recorded for use in future studies as well. The development of a taxonomy of the cultural forces that shape archetypal symbol meanings would likely prove beneficial to future research efforts in this area as well.

Another area for future research in terms of cataloging involves commonly used avatars gleaned from existing online chat systems. This approach may allow the discovery of additional factors that influence trust related to avatar use, in addition to the use of archetypal symbols, such as the use of symbols of authority, symbols of cultural groups, symbols related to particular demographic groups, etc.

Another area for additional research, though not directly related to the subject of this dissertation, is related to the revision of the instruments used. Though Rotter's instrument was not usable as a covariate to the results of Rempel's instrument, it was

suitable for use as a covariate to the Action variable. However, the rephrasing of Rotter's instrument needs more attention. While other researchers have noted the need for more contemporary wording, a more robust redesign of this instrument than what was done in this study is in order. This redesign should follow the same basic principles used by Rotter in 1967, but in a more contemporary environment. The needs for this redesign are based on several factors. First, the rhetoric used in several places in Rotter's instrument is third-person passive, a style not as often used today as it was when the instrument was originally developed. In several places, the meaning of individual items may be ambiguous to contemporary readers.

Second, the instrument makes political references that may be severely dated, especially given the changes to the political landscape over the last four decades. When the instrument was originally written, the United States was heavily involved in Vietnam, and selective service was still a reality. Though the United States is still active in world politics, and is again involved in military action in other countries, the typical young college student is likely more removed from its immediate effects.

Lastly, Rotter's instrument uses five-point Likert-scale items, which may limit variance in small-*n* studies. Further, the center point, "3", indicates "Agree and Disagree" rather than "Neutral," which can be confusing. The use of seven-point Likert-scale items, with "4" indicating "Neutral" may be more clearly understood and may also allow for increased variance in small-*n* studies.

Conclusion

As avatar use in corporate environments becomes more commonplace, a more complete understanding of the relationships between symbol, trust development, and

behavior intent will be invaluable to those whose success is measured by how well these systems influence the people that frequent them. This study provides one of the first glimpses into these phenomena, and provides support for more detailed studies on the influence of archetypal symbol usage on the psyche of the avatar user.

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APPENDIX A

PHASE 1 INSTRUMENT

Survey, Phase 1

DEMOGRAPHICS

Please record the following information about yourself.

1. What is your age?

   ____ 17 or younger

   ____18 – 19

   ____ 20 – 21

   ____ 22 – 25

   ____ 26 – 32

   ____ 33 or older

2. What is your gender?

   ____ Male

   ____ Female

3. How would you classify yourself?

   ____ Arab

   ____ Asian / Pacific Islander

   ____ Black

   ____ Caucasian / White

   ____ Hispanic

   ____ Indigenous / Aboriginal

   ____ Latino

   ____ Multiracial

   ____ Would rather not say / Other

4. Major: _____
   (enter N/A if not applicable)

5. Minor: _____
   (enter N/A if not applicable)

6. Which of the following best describes the area in which you grew up?

   ____ Urban

   ____ Suburban

   ____ Rural

   ____ International

   ____ Military

7. Which of the following best describes you?

   ____ Part-time student without a job

   ____ Part-time student with a job

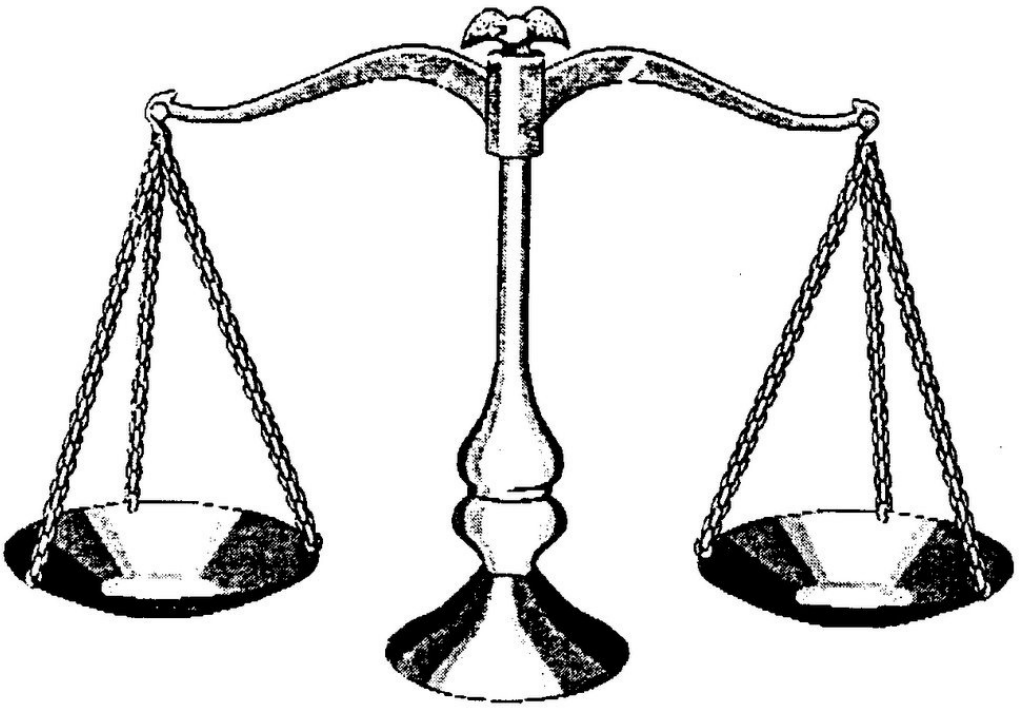
   ____ Full-time student without a job

   ____ Full-time student with a job

"Dove with olive branch"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?



"Balance Scales"

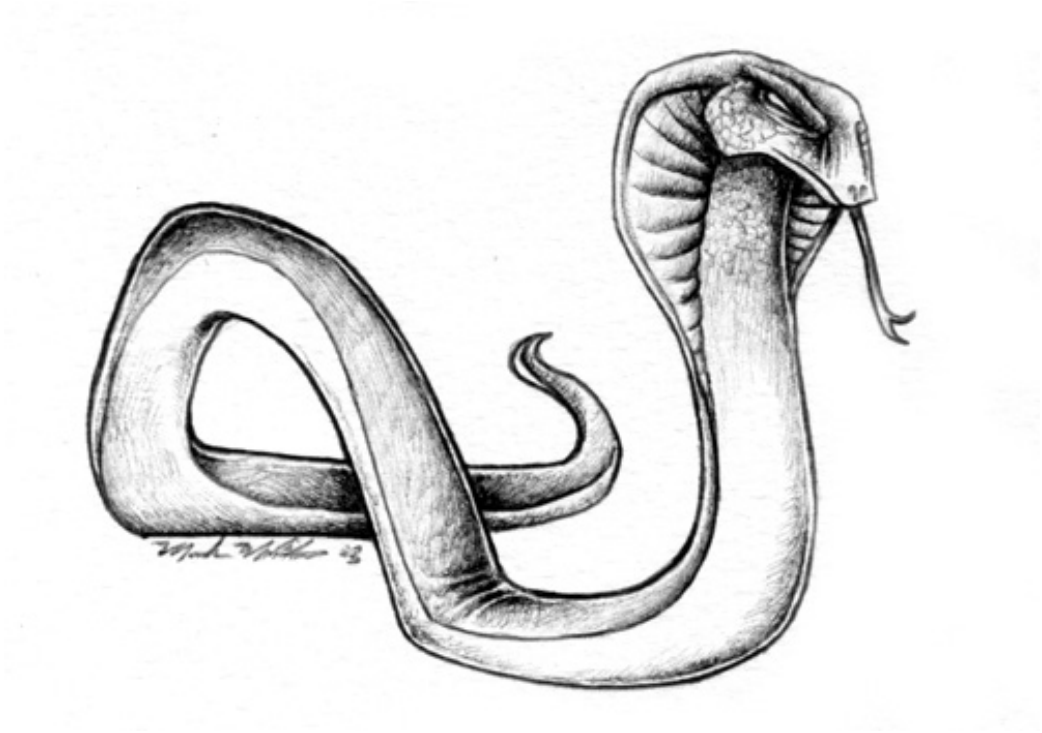
Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

"Lion"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

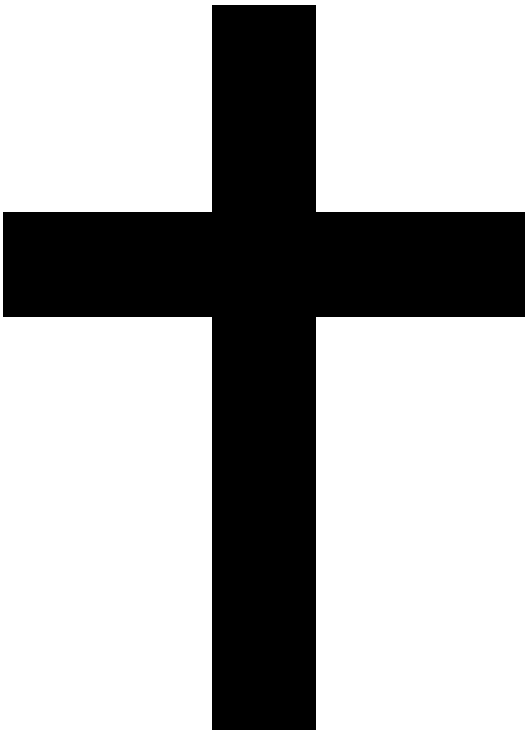


"Serpent"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

Survey, Phase 1



"Cross"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

"Pentacle"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

"Yin and Yang"

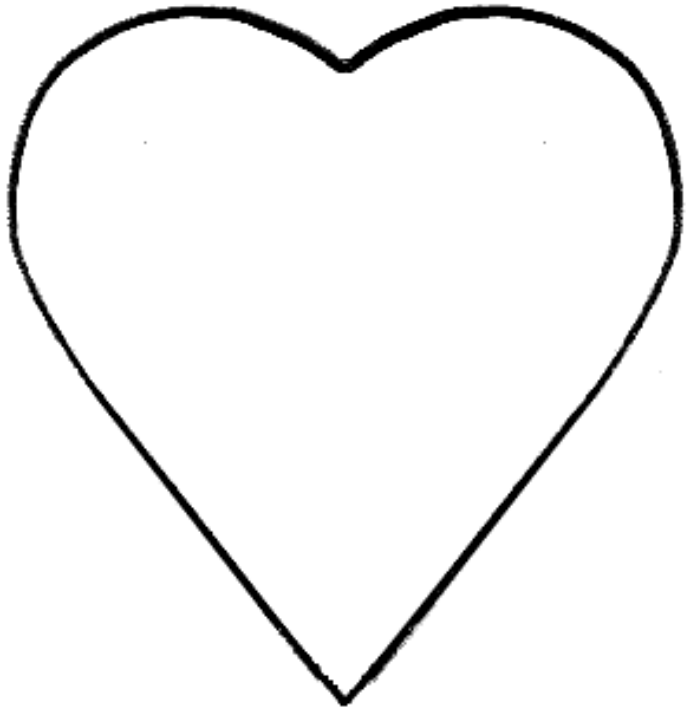
Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

"Eagle"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

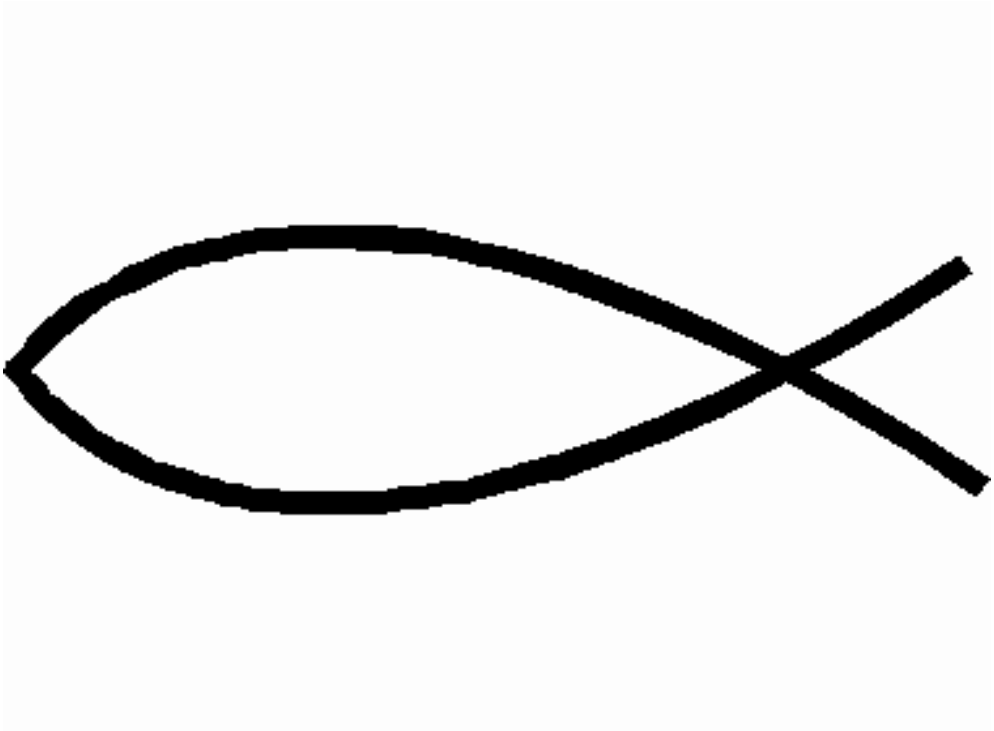
In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?



"Heart"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

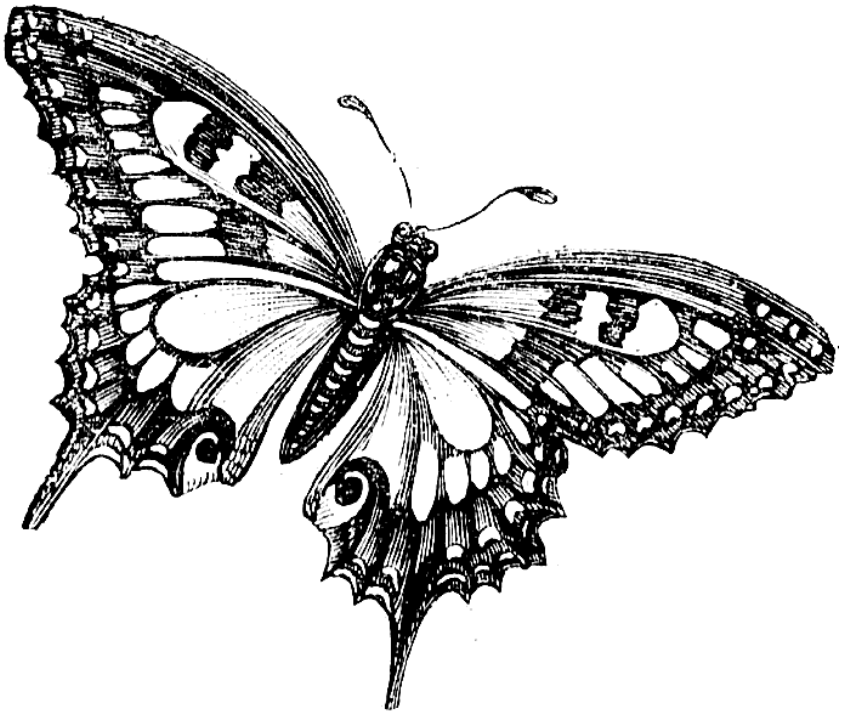
In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?



"Fish"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

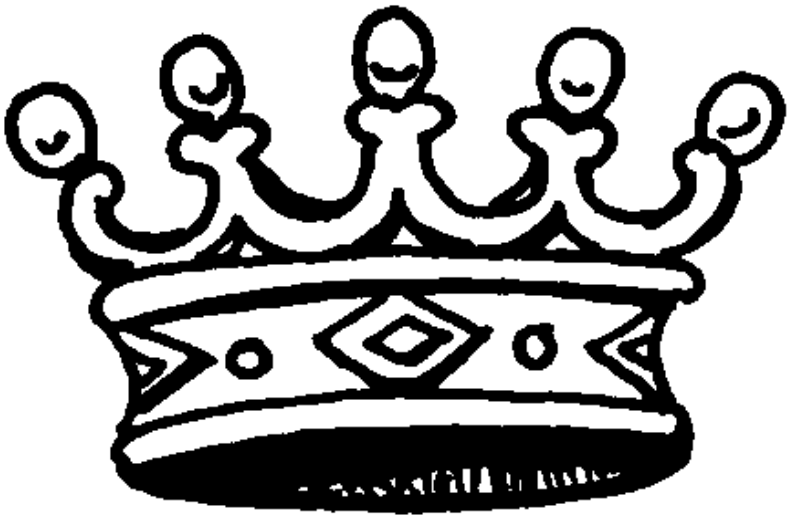
In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?



"Butterfly"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?



"Crown"

Carefully consider the image above. In the area below, write down any words or phrases that you feel express what this image symbolizes.

In the area below, write what you would think of someone that used this image as a symbol to represent himself or herself?

APPENDIX B

PHASE 2 INSTRUMENT

Survey, Phase 2

DEMOGRAPHICS

Please record the following information about yourself.What is your age?

____ 17 or younger

____18 – 19

____ 20 – 21

____ 22 – 25

____ 26 – 32

____ 33 or older

1. What is your gender?

____ Male

____ Female

2. How would you classify yourself?

____ Arab

____ Asian / Pacific Islander

____ Black

____ Caucasian / White

____ Hispanic

____ Indigenous / Aboriginal

____ Latino

____ Multiracial

____ Would rather not say / Other

3. Major: _____
(enter N/A if not applicable)

4. Minor: _____
(enter N/A if not applicable)

5. Which of the following best describes the area in which you grew up?

____ Urban

____ Suburban

____ Rural

____ International

____ Military

6. Which of the following best describes you?

____ Part-time student without a job

____ Part-time student with a job

____ Full-time student without a job

____ Full-time student with a job

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “peaceful, tranquil, or serene”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “loving, affectionate, or devoted”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “godly, pious, or religious”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents “pure, clean, or correct”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “free-spirited, unpredictable, or changeable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “just, fair, or right”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “balanced, equal, or symmetric”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “thoughtful, considerate, or attentive”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents “law abiding, obedient, or reliable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “rational, predictable, or reasonable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “strength, power, or might”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “ruler, leader, or authority”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “bravery, courage, or selflessness”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

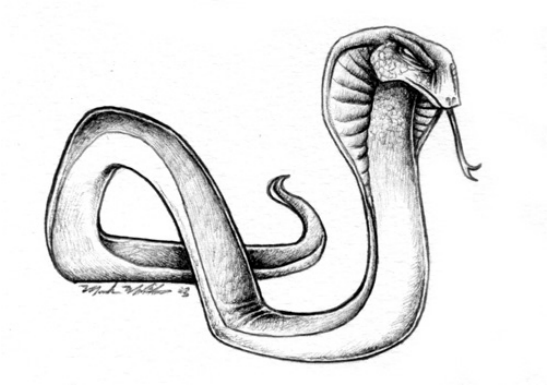
4. This symbol represents “absolute, perfect, or genuine”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “constant, stable, or unchanging”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2



Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “untrustworthy, undependable, or unreliable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “sinful, immoral, or unethical”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “dangerous, hazardous, or unsafe”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

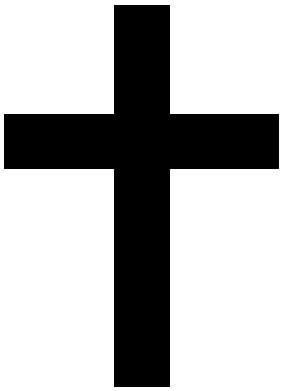
4. This symbol represents “satanic, demonic, or sinister”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “deceitful, sneaky, or unpredictable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2



Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents "Christian, disciple, or believer"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents "God, Christ, or Jesus"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents "religious, devout, or pious"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents "consistent, dependable, or faithful"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents "benevolent, compassionate, or kind"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “evil, satanic, or bad”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “Jewish, Hebrew, or Judaic”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “cultish, pagan, or wiccan”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents “confused, unpredictable, or uncertain”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “erroneous, wrong, or false”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “harmony, peace, or tranquility”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “opposite, contrary, or reverse”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “unity, equality, or balance”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents “unpredictable, two-faced, or fickle”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “undependable, unreliable, or untrustworthy”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “strong, powerful, or forceful”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “patriotic, American, or nationalistic”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “free, unrestrained, or at liberty”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

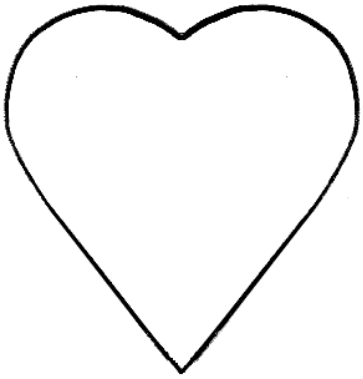
4. This symbol represents “intelligent, correct, or wise”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “trustworthy, dependable, or reliable”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2



Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “loving, romantic, or passionate”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “caring, affectionate, or feeling”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “kind, gentle, or nice”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

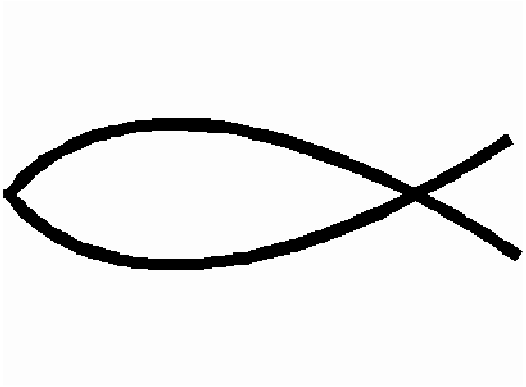
4. This symbol represents “happy, joyful, or gleeful”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “faithful, devoted, or stead-fast”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2



Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents "Jesus, Christ, or Christian"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents "church, clergy, or denomination"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents "faithful, pious, or godly"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents "caring, kind, or benevolent"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents "consistent, predictable, or steadfast"

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2

Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “free, independent, or unrestrained“

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “beautiful, pretty, or colorful”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “carefree, unconcerned, or irresponsible”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

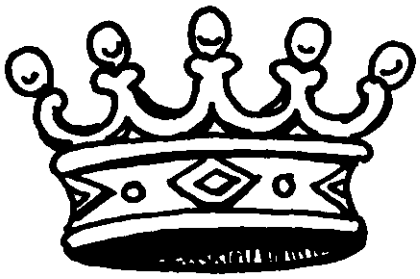
4. This symbol represents “calm, peaceful, or tranquil”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “graceful, elegant, or refined”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Survey, Phase 2



Carefully consider the image above and circle the response that best reflects how much you agree with each statement below.

1. This symbol represents “royalty, regal, or kingly”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. This symbol represents “authority, government, or management”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

3. This symbol represents “conceited, pompous, or prideful”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4. This symbol represents “power, force, or influence”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

5. This symbol represents “best, superior, or excellence”

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

APPENDIX C

PHASE 3 INSTRUMENT

NOTE: Rotter's ITS scale (1967) cannot be published and is therefore excluded from this section. Rather, an email detailing permission from Dr. Rotter to use his instrument is included in its place.

Rodger Morrison

Subject: FW: Permission to use ITS scale

From: Coldwell, Eleanor [mailto:eleanor.coldwell@uconn.edu
]
Sent: Wednesday, August 20, 2008 11:25 AM
To: rmorrison@troy.edu
Subject: RE: Permission to use ITS scale

Hi Rodger,
Since you have agreed to all the conditions below, Dr. Rotter will gladly let you use his ITS scale. Just one more: if you have no experience with personality scales, please consult with someone who has.

Thanks for making it easy for us by agreeing ahead of time.

Good Luck with your study,
Lindy

Eleanor (Lindy) Coldwell, Ph.D.
Academic Advisor, UConn
Psych Dept (100 BOUSFIELD) 486-2183 (during semesters)
CLAS Academic Services Center (ASC) 486-2822 (between semesters & during summers)

From: Rodger Morrison [mailto:rmorrison@troy.edu]
Sent: Sunday, August 17, 2008 2:16 PM
To: Coldwell, Eleanor
Subject: Permission to use ITS scale

Dr. Coldwell,

Greetings. I am a Ph.D. student at Auburn University and am on the faculty of Troy University. I would like permission to use Dr. Rotter's Interpersonal Trust Scale (ITS) in my dissertation. I understand that the scale is not publicly available, therefore, please note the following:

1. I will only use the ITS for research purposes only.

2. I will not publish the ITS in any form, electronic or otherwise, nor will it appear in my dissertation.

3. I will use the ITS in hard copy only. All copies of the ITS will be returned to me and either kept in a secure location or destroyed.

Thank you for your most kind attention.

Very respectfully,

Rodger Morrison

Ph.D. Student, Auburn University

Instructor of MIS, Troy University

Figure 2. Permission to use Dr. Rotter's ITS Scale

Survey, Phase 3

DEMOGRAPHICS

Please record the following information about yourself.

1. What is your age?

   ____ 17 or younger

   ____18 – 19

   ____ 20 – 21

   ____ 22 – 25

   ____ 26 – 32

   ____ 33 or older

2. What is your gender?

   ____ Male

   ____ Female

3. How would you classify yourself?

   ____ Arab

   ____ Asian / Pacific Islander

   ____ Black

   ____ Caucasian / White

   ____ Hispanic

   ____ Indigenous / Aboriginal

   ____ Latino

   ____ Multiracial

   ____ Would rather not say / Other

4. Major: _____
   (enter N/A if not applicable)

5. Minor: _____
   (enter N/A if not applicable)

6. Which of the following best describes the area in which you grew up?

   ____ Urban

   ____ Suburban

   ____ Rural

   ____ International

   ____ Military

7. Which of the following best describes you?

   ____ Part-time student without a job

   ____ Part-time student with a job

   ____ Full-time student without a job

   ____ Full-time student with a job

Please read the following chat session carefully and then answer the questions at the end.

	Morgan, you there?
	Who wants to know?
	It's me, Chris from down the hall. You got a minute?
	Hi Chris. Long time, no see. What's up?
	Not much. Your roommate said I might find you online here, so I thought I would say hello. Sorry to hear about your accident. You OK?
	Yeah. I'm fine but the car is totalled. When my parents find out, they'll be really mad.
	You haven't told them yet? Why not? I thought your parents were pretty cool.
	They are, but not about this. It took everything I had to pay the reckless driving ticket. $368!!!
	Ouch.
	Yeah. Don't tell anyone. My roommate talks too much and I don't want my parents to find out.
	No prob. I won't say anything.
	Thanks. So, what's up?
	Well,.. I really need your help! I'm not doing so good in my ECON class.
	You need my help? You must be desparate!
	No, seriously! I'm really having trouble in ECON. I just don't get it. We have an exam tomorrow and I'm clueless. If I fail this class, I might lose my financial aid. Can you help?

	Me?! Help you in ECON? HA!! Now I KNOW you're in trouble. I didn't do so hot in it either. Professor lectured on one thing and tested on another!
	That's what worries me! I hear his exams are hard!
	They are. What exactly is it you want me to do? I know you don't want me to help you study for it. I have plans tonight and they definitely don't include studying!
	No, no! Nothing like that. It's just that I have the same professor that you had last semester and I need to know what to study.
	How do you know who I had last semester?
	Your roommate told me. I hear you had a lot of trouble with the exams.
	Ugh! I didn't think the semester would ever end. It's still a blur.
	Listen, from what I understand he tends to use the same exam over and over. If I could find a copy of his exams from last semester, that would be a HUGE help. Do you still have yours?
	I think I still have them somewhere. I don't know if I want to loan them out, though. I don't think the professor would appreciate it.
	Come on!! He'll never know. I won't tell anyone, not even my roommate. I promise! Please!!
	You promise? I don't even know you that well! How do I know you won't be stupid and loan them to someone else? Or worse yet, what if the instructor found out? He'd kill me!
	But he can't do anything about it either. There's no official policy on letting other students borrow your notes from your classes, is there? It's not cheating because he let you keep your exams. I bet he didn't tell you not to share them with anyone, did he?
	No, I guess not.
	Ok then. If anyone asks, I am just asking to borrow your notes so that I can study.
	OK, but I am not going to let someone borrow my originals. I might let someone borrow a copy, but what's in it for me?

	What do you mean?
	You want me to take the risk and you get the grade? I don't think so! They've been really cracking down on cheating and stuff. If you expect me to stick my neck out, I'd better get something for my trouble.
	What do you want?
	Money would be good. Like I said, the ticket took everything I had.
	How about $100? Your roommate told me you were broke already and had no spending cash.
	$100 for an old Economics exam? That's a lot more than it's worth, but you're right. I'm broke (I'm gonna kill my roommate for talking about my business) and I can't ask my parents for more money. They'll get ticked when I tell them where my money went. Why so much?
	'cuz I need it like, in the next few minutes. I want to get started studying.
	What's the rush? It's not even lunch yet and your exam is not 'til tomorrow.
	I need all the time I can get. Besides, I need to get some sleep too. I was up partying last night and am really beat.
	Maybe that's why you are having such trouble. Quit screwing around and start studying.
	Yeah, yeah, yeah. You sound like my parents. So, you gonna help me out?
	Ok, fine. I'll do it on one condition. You don't tell anyone. If you do, I'll say you stole it.
	Got it. $100 and I keep my mouth shut. Meet me by the drink machines in the Student Union in 15 min. I'm wearing a gray t-shirt, shorts, and sandals.
	OK. Bring cash.

Please turn the page and complete the attached survey.

Please complete the following questions (circle your answer):

1. Would you sell your exam to Chris?

Definitely Not		Probably Not	Not Sure	Probably Yes		Definitely Yes
1	2	3	4	5	6	7

2. Would you trust Chris to keep quiet about the exam and your ticket?

Definitely Not		Probably Not	Not Sure	Probably Yes		Definitely Yes
1	2	3	4	5	6	7

Please complete the survey on the next page.

Instructions: Using the 7 point scale shown below, indicate the extent to which you agree or disagree with each statement as it relates to your thoughts about the instructor in the chat session transcript that you just read. Place your rating in the box to the right of each statement.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7

1	Chris seems to be trustworthy. I am willing to let Chris be involved in my affairs, even if they are sensitive or important.	① ② ③ ④ ⑤ ⑥ ⑦
2	Even when I don't know how Chris will react, I feel comfortable telling things about myself, even those things of which I am ashamed.	① ② ③ ④ ⑤ ⑥ ⑦
3	Though times may change and the future is uncertain, I feel Chris will always be ready and willing to offer me strength and support.	① ② ③ ④ ⑤ ⑥ ⑦
4	I am not certain that Chris won't do something that I dislike or will embarrass me.	① ② ③ ④ ⑤ ⑥ ⑦
5	Chris is unpredictable. I don't know how Chris will act from one day to the next.	① ② ③ ④ ⑤ ⑥ ⑦
6	I feel very uncomfortable when Chris has to make decisions that will affect me personally.	① ② ③ ④ ⑤ ⑥ ⑦
7	I have found that Chris is unusually dependable, especially when it comes to things that are important to me.	① ② ③ ④ ⑤ ⑥ ⑦
8	Chris behaves in a very consistent manner.	① ② ③ ④ ⑤ ⑥ ⑦
9	When making an important decision in a situation never encountered before, I feel that Chris will be concerned about my welfare.	① ② ③ ④ ⑤ ⑥ ⑦
10	Even if I have no reason to expect it, I feel certain that Chris will share important things with me.	① ② ③ ④ ⑤ ⑥ ⑦
11	I can rely on Chris to react in a positive way when I expose my weaknesses.	① ② ③ ④ ⑤ ⑥ ⑦
12	When I share my problems, I know that Chris will respond in a caring way even before I say anything.	① ② ③ ④ ⑤ ⑥ ⑦
13	I am certain that Chris would not be dishonest with me, even if the opportunity arose and there was no chance that I would find out about it.	① ② ③ ④ ⑤ ⑥ ⑦
14	I might sometimes avoid Chris because Chris is unpredictable and I fear saying or doing something which might create conflict.	① ② ③ ④ ⑤ ⑥ ⑦
15	I can rely on Chris to keep promises made to me.	① ② ③ ④ ⑤ ⑥ ⑦
16	When I am with Chris, I feel secure in facing unknown new situations.	① ② ③ ④ ⑤ ⑥ ⑦
17	Even when Chris gives explanations that sound rather unlikely, I am confident that I am being told the truth.	① ② ③ ④ ⑤ ⑥ ⑦

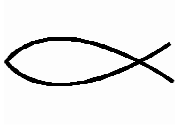
This concludes the survey. Please return this package to the researcher.

APPENDIX D

RESULTS SUMMARY

Table D1 - Phase 2 Analysis Summary

Symbol	Word Group	Mean	Std Dev	95% C.I. of the Mean	
	peaceful, tranquil, or serene	6.37	0.90	6.22	6.52
	loving, affectionate, or devoted	5.61	1.39	5.38	5.84
	godly, pious, or religious	5.31	1.65	5.03	5.58
	pure, clean, or correct	5.13	1.46	4.89	5.37
	*free-spirited, unpredictable, or changeable	3.91	1.77	3.62	4.21
	just, fair, or right	5.98	1.39	5.75	6.21
	balanced, equal, or symmetric	6.32	0.95	6.16	6.48
	thoughtful, considerate, or attentive	3.39	1.57	3.12	3.65
	law abiding, obedient, or reliable	4.76	1.71	4.47	5.04
	*rational, predictable, or reasonable	4.09	1.69	3.81	4.37
	strength, power, or might	6.31	1.06	6.13	6.48
	ruler, leader, or authority	6.14	1.10	5.95	6.32
	bravery, courage, or selflessness	5.97	1.16	5.78	6.16
	*absolute, perfect, or genuine	3.56	1.64	3.29	3.84
	*constant, stable, or unchanging	3.61	1.66	3.33	3.88
	untrustworthy, undependable, or unreliable	5.49	1.59	5.22	5.75
	sinful, immoral, or unethical	5.72	1.50	5.47	5.97
	dangerous, hazardous, or unsafe	6.11	1.33	5.89	6.33
	satanic, demonic, or sinister	5.49	1.66	5.21	5.76
	deceitful, sneaky, or unpredictable	5.76	1.46	5.52	6.01
	Christian, disciple, or believer	6.51	1.06	6.33	6.68
	God, Christ, or Jesus	6.51	1.05	6.33	6.68
	religious, devout, or pious	6.21	1.28	6.00	6.43
	consistent, dependable, or faithful	5.71	1.64	5.44	5.99
	benevolent, compassionate, or kind	5.58	1.66	5.30	5.85
	evil, satanic, or bad	4.81	1.87	4.50	5.12
	Jewish, Hebrew, or Judaic	5.14	1.56	4.88	5.39
	cultish, pagan, or wiccan	4.58	1.68	4.30	4.86
	confused, unpredictable, or uncertain	3.72	1.48	3.47	3.97
	*erroneous, wrong, or false	3.68	1.65	3.40	3.95
	harmony, peace, or tranquility	5.50	1.42	5.26	5.73
	opposite, contrary, or reverse	4.81	1.57	4.55	5.07
	unity, equality, or balance	5.38	1.40	5.15	5.61
	unpredictable, two-faced, or fickle	3.57	1.55	3.31	3.83
	undependable, unreliable, or untrustworthy	2.97	1.30	2.76	3.19
	strong, powerful, or forceful	5.89	1.26	5.68	6.09
	patriotic, American, or nationalistic	6.44	0.86	6.30	6.59
	free, unrestrained, or at liberty	5.98	1.19	5.78	6.18
	intelligent, correct, or wise	4.89	1.55	4.63	5.14
	trustworthy, dependable, or reliable	4.77	1.63	4.50	5.04
	loving, romantic, or passionate	6.54	0.76	6.41	6.66
	caring, affectionate, or feeling	6.34	0.90	6.19	6.49
	kind, gentle, or nice	5.66	1.40	5.43	5.89
	happy, joyful, or gleeful	5.42	1.47	5.18	5.67
	*faithful, devoted, or steadfast	4.97	1.73	4.69	5.26

	Jesus, Christ, or Christian	5.83	1.59	5.56	6.09
	church, clergy, or denomination	5.44	1.58	5.18	5.70
	faithful, pious, or godly	5.27	1.69	4.99	5.55
	caring, kind, or benevolent	4.76	1.62	4.49	5.03
	*consistent, predictable, or steadfast	4.45	1.60	4.18	4.71
	free, independent, or unrestrained	5.63	1.30	5.41	5.84
	beautiful, pretty, or colorful	6.19	0.94	6.04	6.35
	carefree, unconcerned, or irresponsible	4.37	1.64	4.10	4.65
	calm, peaceful, or tranquil	5.37	1.33	5.15	5.59
	graceful, elegant, or refined	5.30	1.44	5.06	5.54
	royalty, regal, or kingly	6.59	0.62	6.49	6.70
	authority, government, or management	5.86	1.39	5.63	6.10
	conceited, pompous, or prideful	4.64	1.62	4.37	4.91
	power, force, or influence	5.66	1.47	5.42	5.91
	best, superior, or excellence	5.43	1.54	5.18	5.69

* Added by researcher