DEFINING FEAR AND AGGRESSION: TYPOLOGICAL EMOTIVE RESPONSES TO PERCEPTIONS OF TEXTUAL SYMBOLS

by

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ABSTRACT

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Millennial technology has shed new light on early biological theories of crime. Recent evidence supports a new paradigm in criminological research designed to embrace an integration of neuro-scientific, psychological, and sociological theories in order to understand the multi-dimensional characteristics of causality involved in criminal behavior. The current study explores the value of an integrated approach to define typological fear and aggression emotive responses utilizing symbolic interaction as the mechanism by which the various disciplines interact. Through perceptions of emotionally charged textual symbols, typological representations of fear and aggression, and a 3-Part electronic survey instrument, the study reveals support for an integrated

approach, variations in perceptions between non-white and white respondents, as well as possibilities that some respondents may not recognize emotional trigger symbols.

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CHAPTER 1

INTRODUCTION

Many and various disciplines attempt to explain why social humans engage in criminal activities. Among the disciplines, many scholars are recognized for their contributions to the body of knowledge compiled to explain the root of criminal behavior. After thousands of years of inquiry, many questions have, indeed, been answered. One question, however, remains at the heart of every inquiry of the present time. That question whose answer eludes modern researchers is asked in as many different ways as there are research studies to ask it. Why, they ask, do some people commit crime while others do not? Why is no one theoretical framework effective at explaining criminal behavior in all its forms and intensities? Is there no singular manner in which to arrange the many acts of criminal behavior in order to best understand its source? Is there no focus, broad or narrow, to define the predictive circumstance of the criminal offender?

In the broadest sense, it is the work of social scientists to look for the answer to such questions through the study of social behavior. Among social scientists, it is criminologists who focus on the causes of criminal acts. Often, in criminological studies, criminal behaviors are linked to emotional responses. In the case of socio-criminological research, the most common emotions referenced in studies of criminal behavior are fear and aggression, which are often conceptualized as perceptions of risk or perceptions of safety using a likert-type scale as the means of measurement.

Millennial technology, however, has provided criminological researchers a portal to new discovery. Through Twenty-First Century methods of communication, criminologists can interface with research in the fields of neuro-science, psychology, and genetics, prisms of criminal behavior previously isolated among disciplines. In addition, technological advances make it possible for each of the various disciplines to explore new avenues toward answering their own pervasive inquiries, many of which integrate in some form with fear of crime or aggressive criminal acts. In addition, technology has provided researchers with the capability to recognize that emotive responses may not be condensed into simplified concepts; the complexities of emotive responses may actually be separate and distinct responses, each an outward demonstration of neural processes singularly peculiar to its type.

In the current study, the researcher recognized the need to approach fear and aggression from a perspective based on the integration of theories among a variety of disciplines, incorporating various studies of causation to criminal behavior, and identifying both emotive typologies and their symbolic triggers. This is important because if the prevailing notions of free will and rational choice for criminal behavior may be at risk, no one theory or discipline alone can provide enough knowledge to substantiate the argument.

The purpose of this study was to explore relationships, if any, between fear, aggression, and crime through typological emotive responses to textual symbols among a North Texas metropolitan college campus population in the fall of 2009.

It was the goal of this study to consider information from a variety of disciplines in order to determine the value of an integrated approach to criminal behavior. Because of the broad nature of the topic, the researcher focused on the relationship between fear and aggression, and symbolic triggers to criminal behavior, controlling for race/ethnicity. Since definitive values of terms and concepts may vary, crime, fear, and aggression were defined separately as were the disciplinary context in which they are discussed. Both fear and aggression were considered from the criminological perspective of neuro-genetic, neuro-physiological, neuro-psychological, and psycho-social research. Symbolic interaction provided the mechanism by which the disciplines interact.

Implications for the criminal justice system with regard to an integrated theoretical approach to criminal behavior have emerged in the past decade as a result of technological advancements in biological research instrumentation and mechanical devices. Millennial technology has provided a new and improved prism through which to view diverse relationships between that which is inherent and that which is learned. Perspectives drawn through the multi-lens prism could alter the way free will and rational choice ideology defines current practices across the American justice system in much the same way that the evolution of deoxyribonucleic acid (DNA) testing has altered the way evidence defines actual innocence.

It is the hope of the researcher that the findings of this study may serve as a catalyst for further academic research related to interaction between biological (inherent) characteristics and sociological (environmental or ecological) triggers; indeed, characteristics and triggers that when aligned may result in a variety of distinguishable

aggressive behaviors covariant with similarly distinguishable patterns of fear. The intention of this researcher is to encourage a multidimensional approach to assembling Mills' (2000) assortment of small pieces to more clearly understand the root characteristics of criminal behavior.

In the following chapters, 2 through 5, the researcher will explain the structure of the study, the methodology, and the conclusion. In Chapter 2, the researcher began with standard definitions of terms common to assessments of criminal behavior in order to establish a baseline reference for interpretation of literature, through which the researcher explored studies conducted among various disciplines, and the means by which findings support theoretical conclusions. The researcher provided a detailed account of research methodology for the current study in Chapter 3, including construction of a 3-part electronic survey instrument and rationale for electronic distribution, in addition to selection of sampling frame and subjects. In Chapter 4, the researcher reflected the data through tables, matrices, and figures, and in Chapter 5 the researcher interpreted the tables and illustrations then concluded with implications and limitations of those findings, as well as opportunities to expand on current research through future studies.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction to the Literature

In the current chapter, the researcher introduces literature defining concepts of crime, fear, and aggression, as well as the manner in which those concepts are applied in the construction of symbolic interaction, beginning with a historical and intellectual background. The researcher follows with the ways fear and aggression are negotiated through typologies, causal arguments across disciplines, and a summary of academic research studies. Before concluding review of the academic literature for Chapter 2, the researcher discusses implications of integrated study at some length in order to illustrate its potential for impact on the way researchers approach the study of crime in the future, as well as on the way criminal behavior is perceived among the public, and processed through the justice system.

It is most often the practice of researchers to break off small pieces of an issue and attempt to analyze its character as a representation of its larger whole. Once several such pieces have been characterized, they ought to fit neatly back together and form an informative picture of the problem, its character and its root.

According to Mills (2000), it is unlikely that the pieces will fit, not because the information is incomplete, but because the value of that information is based on the

limitations of the variables ascribed to it that affect interpretation of the research outcome. This is a type of error in analyses that Mills (2000) considers to be pervasive throughout studies conducted among the social sciences and could be compounded across disciplines when language and instrumentation are discipline specific. Mills (2000) also recommends caution against observations too broad to isolate significant characteristics, warning that such generalities offer little more than conjecture.

In order to achieve some intellectual advantage in research, F (1990) supports a *systems* approach. Systems theory involves a systematic integration of theory within the discipline and across a variety of disciplines in order to reach a broad understanding of the target issue without sacrificing focus. According to Jeffery (1990), the answers social scientists pursue do not exist exclusively in the societal context and should not be restricted by purely sociological assessment, but should rather reach out to embrace interdisciplinary variation. The challenge that exists in the interdisciplinary approach to the integration of theory is that a complex variation of discipline specific terms and procedures require interpretation across disciplines, and like any other form of communication, much can be lost in the translation. Therefore, concepts, once generally defined, must be systematically adapted within the context of symbolic interaction, rather than re-defined to suit disciplinary limitations.

2.2 Current Standard Definitions

2.2.1 Crime

In modern western cultures, it is commonly accepted that *crime* is clearly defined in text through policy. It is a social construct defined by the nature, circumstance and

intent of an action held by public consensus to be contrary to normative values of an established society, or so repugnant to normative behavior as to require punitive measures as a means of deterrence (Ferrell, 1999). Interpretations of crime are fixed, the characteristics established. That is not to say research outcomes are in agreement about why people commit crimes, or whether anyone in particular agrees that an act should or should not be a crime, only that the public knows how a crime is defined in modern American society.

2.2.2 Fear

Fear is defined as unpleasant, an emotional reaction caused by the threat of danger, pain or harm or the perception that something unwelcome is about to happen (Soanes, 2003). The dictionary definition of fear defines the emotion by a short list of causative variables. One would believe, then, that the way we recognize fear is by threat of danger, pain or harm; fear cannot occur without at least one causative variable. Other than qualifying fear as an undesirable emotion, delineated by causation, we are left where we started with no way to understand what it is we are experiencing when we emote fear.

2.2.3 Aggression

Broadly, *aggression* is characterized as the initiation of some threat of harm (Blank, 2005). Often interpreted as a manifestation of feelings of anger or rage, aggression among individuals may be directed intimately toward persons or property, or socially toward groups, properties, institutions or polities. Based on a broad definition, aggression as threat of harm should be inextricably linked with fear.

2.2.4 Fear of Crime

Since crime is an act against a person, property, or public held by society to be a threat of harm to normative values, crimes may be characterized by aggression whether or not the act is overtly violent. Property crimes, white collar crimes and crimes against the public good are examples of crimes that may be aggressive in terms of threat of adverse consequence. Violent crime, however, is always perceived as aggression that will inflict some deep personal or public wound. If fear and aggression are inextricably linked, it could be logically assumed that *fear of crime* should be experienced on a scale representative of degree of violence (pain),proximity to threat (danger), and perception of risk (harm).

2.3 History and Intellectual Background

2.3.1 Symbolic Communication

Anthropological studies provide evidence that primitive humans were limited in means of communication (Maybin, 1994). Simple utterances and gestures were sufficient among members of small autonomous communities whose lives were structured around experiential (Surette, 2007) realities. As those communities grew, so did the need for more developed means to share information. As populations expanded, early humans began to shape a system of symbols.

By the time of the ancient philosophers, symbolism had become deeply engrained in the various cultures as means to interpret, standardize, and convey norms and values. Meaning ascribed to symbols developed as an art form among scholars and scribes of many cultures, each symbol representative of some part of a sound, or an entire concept,

as required by the lingual interests of the time. The expansion of communication through the use of symbols allowed those of greater experience (and thereby assumed to have greater wisdom) to disseminate that experiential reality to those of lesser wisdom and enlighten them through symbolic (Surette, 2007) reality, a kind of reality one could come to accept without the benefit of actual experience.

Later, Feudal societies lived in environments where symbolic reality grew pervasive throughout every aspect of personal and social life; symbolic power, symbolic control, symbolic ideologies, symbolic institutions, all at the pleasure of the feudal ruler. More recently, the Enlightenment redefined symbolism and the contribution of symbols to experiential reality. New symbols emerged that would add or change the meanings of daily social interaction. Structured symbols blossomed, driving intellectualism and industrialization through the twentieth century.

2.3.2 Symbolic Messages

Modern humans facilitate progress through communication in many and various forms. Each manner of communication represents a group of symbols used to convey a message (Belk, Bahn & Mayer, 1982; Clark, 1986). Societies use those symbols to reason, send messages, and to receive and interpret messages. At the most basic level, symbolism is identifiable through motion, color and language (Belk et al., 1982; Clark, 1986; Isenberg et al., 1999; Leonard et al., 2000). With respect to groups, societies affix symbolic meanings to objects, shapes and situations that mold social perspectives (Belk et al., 1982; Clark, 1986).

As modern social beings, enlightened humans depend on interaction with one

another and with groups in order to define perceptions. George Herbert Mead (1863-1931) emphasized the subjective meaning of human behavior in the social process based on the study of human interaction as a pattern of symbolic definitions of events and participants in those events. All means of social interaction are defined by symbols, including communication, perception, action or reaction, events, objects, and even self as object symbolic of place or purpose. Constructs based upon symbols are, however, negotiable and therefore in constant flux (Blumer, 1969). This is important to criminological research because it is within this negotiable reality that meaning is attached to symbols that represent emotional responses related to crime.

2.3.2.1 Media

It is from social constructs, then, that societies learn to identify symbolic patterns of behavior that induce neuro-physiological responses. For this reason, criminologists have spent great energy on examining the ways in which social perceptions of crime are affected by media symbols. Media is capable of direct delivery of distinct symbols as well as an infinite number of combinations thereof to the mass population quickly and efficiently (Clark, 1986). Media may also be organized to manipulate symbols in order to bring about a desired response from its audience (Belk et al., 1982; Clark, 1986; Ferrell, 1999). Symbols of authority, courage, convention, convenience, success, and virtue compete with those of power, cowardice, deviance, hardship, failure and vice.

According to Denton (2004), it is important to clearly understand the influence of symbolic triggers on responses associated with media consumption, fear, and violent aggression because manipulation of symbols may interfere with the natural evolution of

society. Studies support fear and aggression conditioning through repeated exposure to experiential or symbolic triggers such as those situated in broadcast media, film, and the internet (Ferrill, 1999; Goleman, 1995; Kemper, 1987). Fear and aggression as tools of the media, whether used to sell skin treatments, increase ratings, or top the box office, impact social behavior (Denton, 2004; Ray & Wilkie, 1970).

Audio-visual communications influence public perception, whether segmented or *en masse* through contrived symbolic representations, and impact individuals in a similarly artificial manner (Denton, 2004). Vakratsas and Ambler (1999) demonstrate that the marketplace of American Capitalist commerce depends on advertising models designed to deliver symbolic representations that deliberately elicit immediate neuro-physical response, and repetitive delivery of the representation to insure desired cognitive/affective responses over time. Ray and Wilkie (1970) notably criticized early media for neglecting fear appeal in mass marketing. Although effects of that impact may be common among individuals, they may be difficult to assess because of unique distinctions in cognitive, affective, or neuro-physiological characteristics (Goleman, 1995; Raine, 2002).

Media manipulation often occurs as a matrix of symbols involving choreographed motion, concise or poignant language, and color, situationally coordinated to affect a desired mood (Clark, 1986; Ferrell, 1999). Tight weaving of widely accepted symbolic representations can make the message seem as tangible as a fine cloak; one that media providers hope the media consumer will wrap tightly around their mind and take with them as a reminder of their media experience.

In the media connection with the public, it is re-cognition of the reminder symbolism that is important to cognitive response. If the media consumer can be repeatedly exposed to similar representations, they can be conditioned (Belk et al., 1982; Ray &Wilkie, 1970; Vakratsas & Ambler, 1999). Ultimately, social humans, through exposure to symbols, can be conditioned to anticipate or to experience neuro-physiological response on cue (Ferrell, 1999).

2.3.3 Symbolic Cues

The symbolic reminder (the cue or the trigger) may be something as simple as a word, a color, a scent or even a thought that elicits re-cognition of a symbol. For example, a simple pattern we have come to identify as a swastika elicits strong anxiety response that may trigger a physiological fear response in some people (Northwestern Law, 1978). Prior to its relationship to reported heinous acts committed at the hands of the Nazi party in twentieth century Germany, it was widely held as a Mesopotamian symbol of fecundity (Loewenstein, 1941). Today, the symbolic representation of that pattern, its representative language, the yellow color associated with it, or a thought of reference to it, is so repugnant in America that the symbol has become subject to formal legislation restricting its use and linking it directly to fear-inducing hate crime (Northwestern Law, 1978). The same may be said for the confederate flag, a noose, firearm, unaccompanied chemical substance, unattended package, or an odor that provokes thoughts of danger (Bower, 2000).

2.3.3.1 Words as Symbols

Language, whether in and of itself, or representative of symbolic objects, deeds, or acts, can trigger cognitive response (Isenberg et al., 1999; Maybin, 1994). Whether it is manipulated in such a manner as to impose threat of eminent danger, casually expressed in words that cue negative effect anxiety, or arranged to antagonize violent aggression, linguistic expressions create a volatile environment for emotive interaction (Isenberg et al., 1999). Perhaps it is because of the contextual dimension of linguistic communication that seemingly benign verbiage may elicit a variety of interpretations, each relative to a conditioned relationship with any associated attributes of word construction or expression (Isenberg et al., 1999). Word choices, groupings, and punctuation define the context of that which is communicated through text or oration (Isenberg et al., 1999; Maybin, 1994).

Oral communication possesses a unique advantage to further contextualize verbiage through the application of tone, volume and inflexion (Isenberg et al., 1999). While a simple "good evening" may be perceived to imply different and personal ideas among a social audience, the same phrase laced with well composed tones, inflections and volume could be perceived as quite sinister, and therefore a threat (Isenberg et al., 1999), especially if it functions as a re-cognition, a reminder of a previous threat (Davis et al., 1997; Gabriel & Greve, 2005).

The sense of threat, whether manifested in a tense and apprehensive negative effect anxiety response, or a cognitive fear response, may resurface again at a later time whenever the subject encounters that symbolic word combination whether or not it is

expressed in the same context (Travis, 2004). The more often the subject encounters the symbolism, the more likely the subject is to experience cognitive response. (Davis et al., 1997).

2.3.3.2 Situations as Symbols

A combination of symbolic features that, when blended, culminate in a separate and distinct symbol—such as a situation--can excite cognitive response whether or symbols are identified individually or collectively (Cohen & Felson, 1979; Holahan, 1986). Consider that darkness is often interpreted as a means of concealment. Add to that limited escapability from a confined area. Install the subject alone and unarmed. Perhaps the described situation is one of a dark deserted alley at night, the subject walking alone. At face value, in text, the scenario may stir the beginnings of neuro-physiological response as re-cognition ignites. Those three components are studied often and with great interest among social scientists examining fear of crime. They are the basis of Cohen and Felson's (1979) Routine Activity Theory.

According to routine activity theory (Cohen & Felson, 1979), three conditions must be present for a crime to occur: a likely offender, a suitable target and the absence of a capable guardian. Symbolically, then, darkness enables an offender, limited escapability increases the suitability of the victim, and alone and unarmed, no suitable guardian is present to offer protection (Cohen & Felson, 1979). In that context, response has been conditioned situationally as an experience of tension and apprehension at the prospect of walking alone at night through a dark alley. If Tom, the cat, jumps without warning from behind a discarded box, autonomic fear response will not fail. Blood

pressure will rise, heartbeat will increase, and the amygdala will send the message to hydrate the smooth muscles for flight or fight (Goleman, 1995). If the situation described includes visual symbols and if the situation was to be further complicated by sounds demonstrating unfamiliar or unpleasant characteristics--or odors--the neuro-physiological component of the response could increase to an intensity that may cause illness or death (Bower, 2000; Seppa, 2005).

Further concern lies in the relationship between neuro-physiological response and crime beyond the event, or when conditioning stops. Research findings indicate that symbolic reminders will continue to provoke responses (Davis et al., 1997). Studies show, however, that responses can be extinguished in many cases, by repeated exposure to the perceived stimuli or equivalent symbols under highly structured circumstances where new stimuli cannot be introduced to interfere with the reconditioning process (Davis et al., 1997). Studies offer little reason to believe that there is significant variation between actual participant neuro-physiological responses, first hand observation of a response- provoking event, or virtual events, whether or not they are perceived to be real. What do matter are symbolic impact, situational perception, and conditioning (Cohen & Felson, 1979; Davis et al., 1997; Pavlov, 1941; Travis, 2004).

2.3.4 Evolution of Negotiable Representations Ascribed to Criminal Behavior

Concerns with emotions as the root causes of criminal behavior began early in symbolic communication. Symbolic communication provided a portal for the pursuit of structured inquiry, a means to question meta-ethics and threats to social cohesion that

would come to traverse a range of behaviors associated with evils that plagued social interaction.

In the past, however, studies were inhibited by the absence of adequate means to identify evidence that may support or refute early beliefs because of the inability to identify unknown physical properties and variables. Some evidence exists that Philosophers predating Aristotle contemplated the emotions of humankind, their seat in the souls of man, and the mind that governed choices between good and evil as well as the consequence of wicked acts. Aristotle, influenced by his mentors and in turn influencing his students, is credited with attention to physiognomy, or judging the character of people by facial characteristics. In *Prior Analytics* (350 B.C.E) Aristotle discusses the various behaviors of men as "natural" (innate) and observable in one's appearance, and the responses to those behaviors as also "natural". Since the time of Aristotle, physiognomy suffered cycles of interest and disinterest depending on social values and climates across time and location.

Similarly, curiosity about the relationship between criminal behavior and fear is apparent among philosophers and scholars long before sociology or criminology enjoyed autonomy in their respective disciplines. Linguistic interpretations as early as the thirteenth century suggest that philosophical examination of the relationship between fear and danger yielded evidence strong enough to identify the fear response to danger as one intrinsic to the nature of social humans, and therefore qualify it as an emotion. Prior to that time, Germanic and Old English fear was communicated as little more than an

adjective in conjunction with damage or disaster (American Heritage Dictionary of the English Language, 2000).

In more recent history Sir Thomas Brown wrote a then unpublished work, *Religio Medici* (1642). In *Religio Medici*, Brown attested to his belief in a natural character, one that could be read by the inscription on one's face that extended to all animals, plants and vegetables, and even to nations. He likened that character to a signature of a supreme author.

Charles Darwin, best known for his controversial assertions that mankind is a product of natural selection, an evolution of species rather than a mystical creation by an elusive supreme being, published *The Expression of the Emotions in Man and Animals* (1872). In *Emotions*, Darwin explained that emotional expressions are innate, even universal among humans, and are shared among other animals as well.

Influenced by Darwin's work, Cesare Lombroso studied social Darwinism. He also studied eugenics and psychiatry. Lombroso, known as the father of positivist criminology and founder of the Italian school of criminology, was a medical doctor (Pick, 1986). He was best known in nineteenth century Europe—and later throughout western culture—for his conclusions that a man is born criminal, and that criminals are a product of biological defect that assigns an atavistic nature, an atavist being a throwback to primitive, uncivilized, or violent animalistic ancestry (Pick, 1986).

According to Lombroso (1876), the same defect that causes criminal behavior also causes physical characteristics that make the criminal easily identifiable. Lombroso's nineteenth century theory that criminality among men was determined by inherent

biological traits faded as psycho-social, environmental, and ecological theories emerged. Revivals of Lombroso's theory of the relationship between physical characteristics and criminal behavior were sporadic.

One such body of work seeking to link physical characteristics with behavior was that of Sheldon (1940), who proposed somatotyping the human body. Sheldon (1940) defined three somatotypes as mesomorph, endomorph, and ectomorph, among whom the mesomorph is characteristically more aggressive. Another was evidence published supporting a relationship between the XYY mitochondrial chromosome anomaly in males and aggressive behavior (Neilsen, 1970) which was received with great enthusiasm and shortly proven to be deeply flawed (Baron, 2001).

In modern western civilizations, the study of the relationship between fear and the prospect of victimization has evolved among the many contemporary disciplines. Now, in the new era of advanced technology, biological theories handed down over the centuries have transformed into those from which biological phenomenon can be conceptualized, concepts can be defined, and propositions can be tested (Raine, 2002).

Hard science, natural science and social science disciplines have made contributions to scholarly collections. Researchers are no longer limited to measuring facial features to assess the relationship between bio-physiological characteristics and violent aggression. In modern science, researchers can actually look inside the bodies and minds of individuals in order to observe neuro-physiological patterns--even root neuro-genetic markers--that define what has been previously symbolized as simply *emotion* (Raine, 2002; Anderson & Phelps, 2000).

Yet, from medical science to social studies, familiar patterns continue to emerge under analyses; similar social groups exhibit fear of danger at similar rates, and perceive risk in much the same manner (Hollway & Jefferson, 1997; Wilcox, Jordan & Pritchard, 2007). These findings should be encouraging, except some phenomena involved in this agreement still prove perplexing. Findings in socio-criminological studies suggest an exaggerated perception of risk (high levels of fear) among some groups, and low levels of fear among those groups most at risk (Hollway & Jefferson, 1997; Wilcox et al., 2007). In short, fear of victimization is often inconsistent with both perceived and actual risk (Hollway & Jefferson, 1997; Wilcox et al., 2007).

2.4 Negotiating Fear and Aggression through Typologies

2.4.1 Typology of Fear

Fear as an emotional precursor or response to danger has only been referenced in modern language since the 1200s (American Heritage Dictionary of the English Language, 2000). Since fear has been relegated to the status of emotion, its perception is accepted as universal and as such subject to interpretation (Gabriel & Greve, 2003).

Scholars attempt to characterize fear, attaching contextual variables in order to situate some causal relationship or temporal correlation between fear and more concrete social behaviors (Kemper, 1987; Stober, Tepperwein & Staak, 2000). While contextual variables utilized to characterize fear allow researchers a means to examine effects of criminal behavior, studies remain inconclusive when it comes to the nature of the fear-crime relationship in explanations about why findings repeatedly indicate that fear of

victimization is inconsistent with perceived or actual risk (Gabriel & Greve, 2003; Tewksbury & Mustaine, 2003; Wilcox et al., 2007).

In attempts to establish a more concrete identification of fear in the context of the fear-risk relationship, research is also concerned with the ways in which fear is expressed (Ben Zur, 2002; Kemper, 1987; Reiss, 1991). Expression of fear may be inhibited among some groups as a result of narrow application of definitive variables, broad representation of situational cues, or idiosyncratic interpretation of responses (Fisher, B., 1995; Kemper, 1987; Wilcox et al., 2007).

Some research argues that fear is closely related and even synonymous with aggression as the fight component of the flight or fight tendency (Ax, 1953; Ben Zur, 1991; Boissy, 1995). Studies coin "flight or fight" to explain active expressions of physiological aspects of the cognitive fear response (Goleman, 1995; Boissy, 1995). Liu (2004) agrees but cautions that such aggression must be differentiated as *defense* or *affect* aggression, and not confused with *predatory* or *instrumental* aggression discussed later.

2.4.1.1 Autonomic Fear Response

For a more tangible description of fear, we can look at the findings of biological research. The study of fear in experimental psychology tells us that fear is a physiological response to some learned threat (Bower, 2000; Seppa, 2005). Once an individual recognizes a symbol, a signal travels through the brain, from the eye through the thalamus to the visual cortex in its usual process. Perception of danger attached to that symbol, however, adds a shortcut. The thalamus sends the threat signal simultaneously to the visual cortex and the amygdala. At that point, the amygdala excites hormones to

instruct the brain to activate “flight or fight” hydration. The heart rate and blood pressure increase to facilitate the flow of blood from the abdomen to the extremities, and the smooth muscles are hydrated in preparation for quick action. (Goleman, 1995).

Research findings suggest that this autonomic fear response can have far reaching influence on the way criminologists examine fear of crime (Goleman, 1995; Kemper, 1987). The challenge that exists is that it is not necessary for the subject to perceive danger as eminent. In some cases visualization may elicit the same autonomic response even if it is only a memory associated with danger (Goleman, 1995).

Autonomic response to fear occurs before reasoning begins or after it ends (Goleman, 1995). Once the subject engages reason, fear becomes subjective. Reason allows for assessment of risk, and rational choice as inferred by the flight or fight options. It is reasoning through the assessment of risk that provides for the choice to escape (flight), or mount a physical defense against danger (fight). Although the subject may experience a sense of unpleasant tension and apprehension, those feelings are more representative of anxiety as a function of reasoning (Goleman, 1995; Reiss, 1991). This may explain why Kleck & Gertz (1995) find an elevated incidence of defensive gun use in both violent and threatening victimization. In addition, Kleck and Gertz’s (1995) data supports assertions by Wilcox et al.(2007) that more offenders are likely to be shot by their victims than victims shot by offenders.

Further evidence of a physiological component of fear, is the ability of science to inhibit or extinguish fear through the manipulation of hormone excretions, blocking the pathways of enzymes and amino acids, or altering the neural pathways associated with

fear response (Boissy & Bouissou, 1994; Davis et al., 1997; Ressler et al., 2004). This research has become so widely accepted that such treatment can often be applied pharmaceutically. Pharmaceutical manipulation, combined with psycho-therapeutic treatment has emerged as a viable method for controlling fear-related disorders (Ressler et al., 2004).

2.4.1.2 Cognitive Fear Response

Many researchers find that fear responses are learned or conditioned. Using the similar basic principles as those used in Pavlov's Dog (Pavlov, 1941; Ivan Pavlov, 2008), scientists condition animals to activate the cognitive fear response on cue (Davis et al., 1997; Reiss, 1991; Weiss, McEwen, Silva & Kalkut, 1969). An accidental finding is that the conditioning also suggests that there is a distinction between feelings of tension and apprehension more definitive of negative effect anxiety and less representative of the autonomic fear response (David et al., 1997; Weiss et al., 1969).

2.4.1.3 Anxiety

Some research describes anxiety as fear, but caution is recommended in presuming the two are interchangeable (Kemper, 1987; Stober & Muijs, 2001). Anxiety characterized as fear of danger is the sense of unpleasant tension and apprehension about impending threat, real or not, that may or may not trigger an autonomic fear response (Goleman, 1995; Stober & Muijs, 2001), yet a state of tension or apprehension without autonomic fear response hints that reason is present with or without rational judgment before or after physiological fear (Goleman, 1995; Kemper, 1987; Stober & Muijs, 2001). Because the physiological process indicates a temporal factor, negative effect anxiety

(that which is characterized by reasoned tension or apprehension) is arguably more closely related to neuroticism than fear response (Ben Zur, 2002; Stober et al., 2000).

Since fear is initiated by perception of danger, and since it can be triggered by reminders, some argue that anxiety can be described as fear of being afraid or fear of encountering fear reminders (Leonard et al., 2000). It is in this dimension, the dimension of symbolic cues, which fear of crime may be most pervasive (Stober et al., 2000; Stober & Muijs, 2001).

Just as scientists are able to condition fear response in animals, they are able to distinguish between that response and the experience of anxiety before or after the physiological reaction (Davis et al., 1997). Tension and apprehension in anticipation of fear producing treatment was apparent in conditioning phases and residual in extinguishing phases. Further, successful pharmaceutical intervention depends on the ability to distinguish between physiological and psychological fear-anxiety responses (Ressler et al., 2004).

2.4.2 Typology of Aggression

Aggression is as complex as fear. While the term conjures ideas of anger, threat of harm or invasive action, aggressive behavior can be positive and productive in the social environment as a means to insure expansion, achievement, and status. Aggression related to criminal behavior, however innovative the substance of the criminal act, is distinguished from positive aggression as well as among types of aggression based on physiological processes.

2.4.2.1 Covert Aggression

Covert aggression, commonly mis-interpreted as passive aggressive behavior, is the type of aggression demonstrated in acts of interpersonal manipulation and emotional abuse (Zhu, 2004). Covert aggression may be demonstrated among individuals who have physiological markers for hostile aggression or instrumental aggression, but have been successfully conditioned to refrain from overt acts of physical violence (Vaillancourt, Brendgen, Boivin, & Tremblay, 2003).

Passive aggressive behaviors are a type of covert aggression that is demonstrated through obstructive or destructive behavior that results from deliberate neglect, interference, or passive refusal to cooperate. The earmark of passive aggressive behavior is that on the face of the situation the individual demonstrates agreement and good will, while neglecting to take action to prevent harmful consequences or actively insure an expected positive outcome (Zhu, 2004).

2.4.2.2 Reactive Aggression

Reactive aggression, also referenced as affect aggression or defensive aggression, is aggressive behavior ignited as a product of the flight or fight mechanism activated during autonomic fear response (Blank, 2005, Liu, 2004). Although it appears to be a reasoned response, it is within the same definition perplexing because of its integral relationship with the autonomic fear response. As a product of fear, reactive aggression involves reasoning based upon a limited number of options for self preservation, namely proximity and means for successful escape from harm (Liu, 2004). When preceded by autonomic fear response, the heart rate and muscle hydration activated by infusions of

adrenalin and noradrenalin (also known as epinephrine and nor epinephrine) are in proportion to perception of danger. That infusion signals the degree of urgency, the mandate for immediacy and the frame of time allowed for ponder. The options, however, are fixed as fight or flight and although it may occur with lightning speed, the decision is based upon a survey of the circumstances in a state of heightened anxiety (Goleman, 1995). Residual anxiety is determined by the speed with which serotonin floods the brain with a calming effect. Restricted, slow, or reduced infusion of serotonin may allow for prolonged symptoms of residual anxiety, and repeated occurrences may lead to negative affect anxiety and spontaneous aggression (Liu, 2004).

2.4.2.3 Hostile Aggression

Hostile aggression is also referenced as a type of reactive aggression, but rather than engaged as a response to fear, is rather considered to be a reaction to anger or rage, and is identifiable by particular characteristics in the grey matter of the prefrontal cortex region of the brain, as well as the grey matter of the neural limbic system (Raine, 2000). It is within the context of hostile aggression that anger and violent behavior are regularly associated and therapeutic apparatus is employed to treat anger as a pre-emptive measure against violent aggressive behavior. Hostile aggression is characterized as *hot-blooded* violent aggression often associated with crimes of passion and vengeance (Liu, 2004).

2.4.2.4 Instrumental Aggression

Cold-blooded violent aggression, coined as predatory or premeditated aggression, is violent aggressive behavior that is neither a product of the fear response nor a reaction to anger (Blank, 2005; Liu, 2004). Instrumental aggression is characterized by coherent,

calculated, planned, and systematically executed acts of violent aggression generally believed to be uninhibited by fear or anxiety. It is within this type of aggression that many serial killers, paid executioners, and syndicated crime agents are classified. It is this type of aggressive behavior that is characterized by studies conducted at the genetic level of mitochondrial DNA involving monoamine oxydase (MAO) imbalances and trace copper (Raine, 2002; Stalenheim, 2003).

2.5 Causal Arguments

Bio-criminological theorists argue the root of the crime problem. That is not meant to promote biological theories to the exclusion of all others, only to identify the human biological nature of our species prerequisite to social behavior. It is important, however, to differentiate that which is biological from that which is psychological or sociological. For the limited scope of this review, biological refers to human behavior as instinctive or autonomic processes and an integral physiological part of the greater terrestrial environment, psychology to that which is cognitive or affective (learned or conditioned processes), and sociology to the many and various components of human social interaction.

2.5.1 Millennial Validation of Early Ideology

Aristotle (350 B.C.E), Brown (1642), Darwin (1872), Lombroso (1876), Sheldon (1940), Neilsen (1970), among a list of others have been as close as they could get to revealing evidence of the cause of violent aggression with the tools available to them in their time. Physiognomy has been supported by modern research that links hormones to bone and musculature development; the same enzymes and amino acids that modulate

testosterone, estrogen and progesterone have been credited with influence on the development of skeletal and musculature structures—Sheldon's (1940) somatotypology--and neurally transmitted information that impacts glandular function including the pituitary gland, thyroid gland and adrenal glands (Stalenheim, 2003; Volavka, 1999). Similarly, those enzymes, amino acids and hormones are found to be active in both fear and aggression, although they may travel varied pathways and may be subject to interaction with alternative translators along the way, experiencing changes in properties (Eriksson, Berggren, Fahlke, Engel & Balldin, 2005; Volavka, 1999).

In recent decades, millennial technological advancement has ushered in a new range of possibilities for bio-criminological research. CT, PET, and MRI remain important tools for learning about neural processes that influence behavior, yet increasingly more information is gleaned from new research in nuclear medicine, nanotechnology and genetic mapping. Because of millennial technology, criminologists are finding new interest in biological theories of crime and deviance (Ellis & Walsh in Cullen &Agnew, 2006). Through recent studies, research has revealed a wealth of information hearkening back to ideas pursued by Lombroso and the Italian School of Criminology over a hundred years ago (Ellis & Walsh in Cullen &Agnew, 2006).

Correlations between physical characteristics and hormones, hormones and aggressive behavior, and reduction in violent aggressive behavior as a result of hormone therapy drive research toward more substantial indices of interactive physiological relationships (Vold, Bernard, & Snipes, 2002). Consequently, strong evidence of interaction between the hypothalamus, the pituitary and the thyroid that account for

characteristic features and behaviors consistent with those identified by both Lombroso and Sheldon such as bone structure, facial features, and mesomorphic somatotype (In Vold, Bernard and Snipes, 2002).

Such evidence still only hints at the substance of aggressive behavior, and provides only little more than early twentieth century interpretations provided then. It is, however, the ability to look inside the body, inside the brain, and into the genetic materials that identify individuals, that allows researchers to begin to reveal the possibilities of neuro-genetic causes for emotion.

It is an understanding of the way these components work together or fail to co-operate that provides evidence to link amino acids, enzymes, neurotransmitters and hormones to violent aggression and the fear response it inspires. It is understandings of the ways in which sub nuclear excesses and deficiencies influence neural transmissions and the impact of neuro-biological dysfunction on cognitive and affective behavior as well as the ways in which psycho-social influences are received that allow researchers to define limitations of bio-criminology.

Biological theorists argue that aggressive behavior in humans is rooted in some component of the physical body. Although bio-criminological research seems to begin or end with neurological processes, many studies focus on research that provides information about the ways in which many different physiological functions contribute to interpretation of symbolic triggers and expression of fear and aggression. Some modern theories support nutritional deficits and some trace metal imbalance (Kollerstrom, 2006; Walsh, Isaacson, Rehman & Hall, 1996), while others offer hormonal instability (Brooks-

Gunn, Graber , & Paikoff , 1994), inhibitions or lack of inhibition to neural pathways, restriction or hyperactivity among neural transmitters, delayed synapse, or reduced grey matter and low activity in the various lobes of the human brain (Raine, 2002). Still others propose genetic differences that influence the normal process of inciting, interpreting, managing and releasing aggression through over or under modulated release of amino acids and enzymes, failure to inhibit or excite neurotransmitters, or failure to excite neural receptors (Volavka, 1999).

Although some evidence has been supported to the contrary (Paus, 2005), most biological theorists tend to agree that regardless of the base origin, disposition toward violent, aggressive, or even thrill-seeking acts can occur in response to dysfunction at a variety of neuro-physiological intersections (Raine, 2002). Similarly, biological theorists also support psycho-social theories of crime as well as sociological perspectives. In many cases, neuro-researchers agree that biological traits leading to crime require the symbolic *trigger* that is most often conditioned and activated in the social environment (Raine, 2002).

Some confusion occurs, however, between the various disciplines that seek to define the reasons people commit crime. After a detailed review of available literature, it appears that each discipline performs a significant function. Geneticists investigate the causes of behavior at the most intimate level of human physiology, the genes that cooperate to make us what we are. Neuroscience seems to take a more pragmatic approach, looking for variables specific to distinct regions of brain and spinal function, values specific to those variables, and peculiar interaction of those variables to the degree

prescribed by their respective values. Neuropsychology assesses the impact of neurological functions on cognitive development, cognitive inhibition, and the relationship between cognitive expression and that of the autonomic nervous system, while neuro-philosophical research looks at the consciousness or reasoning functions of the subject, alternative research, and the prospects for future hypotheses and their consequences.

Sociology observes in aggregate; whether the view is from micro or macro level perspectives, the aggregate-conscious variables almost always include age, gender, education, race, and socioeconomic status, the demographic benchmarks of social sciences. Socio-criminology, the social science specific to the study of crime and criminal behavior, takes much from its sociological parent. While socio-criminologists recognize the necessity of investigating individual motivations to criminal behavior, focus remains on the aggregate, demographic variables, and conceptualization of crime that weighs heavily on fear of victimization. Socio-criminologists have been reticent to embrace modern biological theory, integrate biological variables with sociological ones, or adopt the language of bio-criminological research (Raine, 2002).

2.6 Summary of Research

2.6.1 Social Science Studies

Social science research designs vary. Among those reviewed, most were cross sectional. Surveys or questionnaires were most often included in studies at various intervals, while secondary source analyses, personal interviews and environmental proximity observations were often reported in triangulated studies

2.6.1.1 Distinguishing Emotional Taxonomies

Kemper (1987) conducted studies based on secondary source analyses. The purpose was to determine how many underlying autonomic possibilities exist, and the number of differentiations linked to them. Kemper created a relative association between primary and secondary emotional responses based on a desire to develop a syncretic solution to constructionalist and positivist approaches.

2.6.1.2 Distinguishing Fear and Aggression Typologies

Ben Zur (2002) conducted a one shot case study (nonexperimental, no control group and no pre or post test) among a convenience sample of 572 Hebrew speaking college students. The survey was administered in two parts consisting of a personality inventory and a behavior pattern questionnaire designed to measure any relationship between Type A Behavior Personalities (DV) and anxiety, anger and fear (IVs). They were administered in the Hebrew language native to the college either in groups or individually. Students were compensated.

2.6.1.3 Perceptions of Symbolic Guardianship

Tewksbury and Mustaine (2003) conducted a one shot case study among a convenience sample of 1513 college students across nine college campuses in eight states. The purpose was to explore fear of crime through the capable guardian condition of routine activities theory. Questionnaires comprised of 95 items were administered among intro-level sociology and criminal justice classes representing contemporary college students as defined by demographic variables. The questionnaire was designed to measure the possession and carrying of self-protective measures. The level of measure

was dichotomous. Internal threat may be present in the manner in which capable guardianship measured as dichotomous.

Tewksbury and Mustaine (2003) found that students were more fearful and likely to possess and carry self-protective devices in the course of their daily routine activities than they were to carry the devices on weekends while participating in more high risk activities or traveling to more high risk locations.

2.6.1.4 Correlation between Actual Victimization and Fear of Crime

Wilcox et al. (2007) sampled only women. 1010 female students were surveyed by telephone. Trained interviewers used computer assisted telephone survey procedures which included a skip pattern to prevent participants from receiving any questions that did not apply, based on their answers. A random sample was generated from a university-provided list of telephone numbers belonging to female students. The purpose of the study was to determine whether there was a correlation between actual victimization (IV) and fear of crime (DV).

Several screening questions included query about previous victimization. Fear of crime was operationalized as a series of questions asking about various levels of worry over specific crimes. Its unclear how Wilcox et al. (2007) arrived at a sample size of 1010 from a list of 7,875. Since the sample is large, it may be highly representative of the female population on that campus.

Wilcox et al. found that a high rate of fear of victimization among women on college campuses may be due to a fear of rape, their perceptions drawn from an elevated incidence of unreported sexual assault among their peers.

2.6.2 Neuro-psychological and Psycho-social Studies

Long and tedious scientific terminology is referenced to describe the research designs employed in neuro-psychological and psycho-social studies. Detailed explanations of medical technique and instrumentation are beyond the scope of this review. Suffice to say that experiments indigenous to those respective fields are a combination of cross sectional and longitudinal studies. They are true experiments in that the designs are based on random selection, involve treatment groups and control groups, administer pre tests and post tests, and control for spurious effects. They report the methodology with hard science precision and clearly define limitations. One such limitation is that in some studies, experiments are limited to animals other than humans (Boissy & Bouissou, 1994; Davis et al., 1997; Weiss et al., 1969). Research findings based on outcomes from studies utilizing rats and cows are generalized to possibilities for application to humans. Most used some form of diagnostic apparatus as well as a variety of measurement instruments including magnetic resonance imaging (Isenberg et al., 1999), and D.A.V.I.D. (Leonard et al., 2000).

2.6.2.1 Heavy Metals and Trace Metal Imbalances

Between 1987 and 2004, Ward conducted a series of studies examining trace metal excess and deficiencies in incarcerated criminals and ADHD children in the United Kingdom (UK). In 2006, Kollerstrom wrote a summary review of Ward's work. According to Kollerstrom, Ward's findings came from 68 incarcerated youth between the ages of 16 and 19 years of age, 28 of whom committed crimes that involved violence. A control group was used, consisting of a group matched for age, sex and geographical

location. In this study, Ward observed eleven metals per sample. Ward found striking evidence that trace metal imbalances were significant among the samples. Although Ward recognized the high levels of aluminum and lead in conjunction with low levels of chromium, selenium and zinc, his charts also indicate an imbalance between copper and zinc.

In Ward's study of ADHD children, he found similar yet more clearly defined results. The samples taken from the children supported the earlier findings with the caveat that the excess of aluminum and lead was higher among the criminals (Kollerstrom, 2006). Kollerstrom (2006) also reports on a follow-up study conducted by an ex-police officer in 2002. Kollerstrom (2006) points out that in this replication some variation in the findings emphasized the synergy between the elements.

Results of Ward's findings supported dietary adjustment for incarcerated criminals in the UK. When that adjustment was implemented, a significant decrease in antisocial behavior resulted (Kollerstrom, 2006).

In 1994, Walsh et al. (1997) conducted an experiment on 153 young males to see if there was a correlation between high copper/zinc ratios and violent aggressive behavior. 135 of the subjects were between the ages of three and twenty years old and selected from a group who were first time appointments at a behavior treatment center. A control group consisted of 18 of the 153 male youths. The 18 youths had no history of aggressive behavior. Findings supported the hypothesis that assaultive young males have elevated copper/zinc ratios compared to non-aggressive youth. In their conclusion, Walsh, et al.(1997) noted that in four separate outcomes studies indicated that nutrient

rich treatment to normalize copper/zinc in assaultive young males significantly improved behavior, not unlike the experience of Ward's group.

2.6.2.2 Hormones

At about the same time, Brooks-Gunn, Graber and Paikoff (1994) tested interactions between biological and psychological development using seven models. The purpose was to determine whether support could be found for the hypothesis that links existed between hormones and negative affect. Brooks-Gunn et al. (1994) found that there was support, noting that hormone changes during puberty are related to development of aggressive behavior in preadolescent and adolescent females. This finding offered some direction for findings of other studies that proposed a late-onset aggression in females when compared to earlier onset of aggression found in males. In addition, results indicated that aggression and depression varied depending on the type of hormone involved.

2.6.2.3 Prefrontal Grey Matter

Raine et al. (2000) assessed prefrontal white and grey matter in the prefrontal cortex of the brains of 21 community volunteers with Antisocial Personality Disorder using structural magnetic resonance imaging. In addition, 2 control groups using 34 healthy subjects were used as well as a substance-dependent group of 26 subjects and 21 psychiatric controls. Heart rate and skin conductivity was also measured (autonomic activity) during the administration of the stressor (participants gave a videotaped speech on their faults). Results showed an 11% reduction in prefrontal grey matter among the APD group and reduced autonomic activity during the stressor. Findings of this test are

believed to provide the first evidence for structural brain deficit among APD groups Raine et al. (2000).

2.6.3 Genetic Studies

Genetic studies favor support for the origin of both the instrumental aggression and fear behaviors at the short rod of the X chromosome, the genetic origin of monoamine oxydase or MAO (Eriksson et al., 2005). While researchers of the 1960s thought they found the answer to violent criminal behavior among males in what they would come to call XYY syndrome (Baron, 2001), they were only a rod away from the discovery of the MAO effect.

2.6.3.1 Monoamine Oxydase (MAO)

Most recently, two subtypes of Monoamine oxydase (MAO) have been recognized; MAO-A and MAO-B (Raine, 2002). While studies support a relationship between low levels of MAO-A and aggressive behavior in humans (Alia-Klein et al., 2008; Eriksson et al., 2005; Raine, 2002; Volavka, 1999), studies also support a relationship between MAO-B and fear (iThyroid, 2009; Raine, 2002). The hypothesis is that low levels of MAO-A present together with low levels of MAO-B produces high aggression and low fear, which results in elevated probability of violent criminal activity (iThyroid, 2009; Raine, 2002). Further, MAO-A shares a commonality with low grey matter in the frontal lobe in that untreated the violent aggression will continue regardless of conditioning, and is hypothesized to predict recidivism among violent offenders (Raine, Lencz, Bihrle, LaCasse & Colletti, 2000).

Finally, in terms of trace metals, nutrition and thyroid function, it is unclear whether MAO is a balancing agent for a variety of trace metals—specifically copper—or whether the trace metals are instrumental to MAOs, yet evidence supports that a balance is necessary to transition hormones that integrate copper and iron and to insure against excessive levels of manganese (iThyroid, 2009; Raine, 2002, Stalenheim, 2003). Excesses of manganese, copper and iron imbalances, as well as an imbalance of copper and zinc have shown a positive relationship to aggressive behavior (Kollerstrom, 2006; Raine, 2002; Walsh, Isaacson, Rehman and Hall, 1997)

The thyroid relationship occurs when low levels of copper increase hyperthyroidism. Increasing copper levels decrease symptoms of hyperthyroidism because it is essential for production of MAOs. MAOs deactivate the thyroid hormones regulating thyroid activity. (Upadhyaya, Agrawal, Dubey & Udupa, 1992).

2.6.3.2 Hippocampus Pituitary Thyroid (HPT) Axis

Following up a forensic psychiatric sub-population six to eight years after forensic psychiatric evaluation, Stalenheim (2003) investigated values of triiodothyronine (T3), free thyroxin (FT4), and platelet monoamine oxydase (MAO) activity in criminal recidivists, violent recidivists and normal controls. Findings confirmed relationships of T3 levels and platelet MAO activity with personality traits in criminal recidivists and suggested that the validity of biological markers of psychopathy is stable over time. Results of Stalenheim's (2003) follow-up investigation are important for a variety of reasons extending beyond MAO activity as a predictor of violent behavior. It serves two important purposes. First, the results of this study provide evidence in favor of an HPT

(Hippocampus-Pituitary-Thyroid) axis involvement in criminal behavior. Such evidence links the *thrill-seeking* or risk-taking component required to explain MAO involvement in non-violent criminal behavior (Stalenheim, 2003). Second, a link is established between MAO activity and thyroid hormones, which opens a portal to question whether increased heart rate and skin conductivity are actually autonomic responses, or whether they are engaged as a byproduct of hyper or hypo thyroid activity associated with transitional enzymes and amino acids (Raine, 2002; Stalenheim, 2003).

2.6.3.3 Critique of MAO Involvement

Reports of landmark findings from high tech experimentation involving brain-behavior hypotheses has met with some criticism of the context in which neuro-scientific studies define aggression. Paus (2005) conducted an overview of basic principles guiding brain-behavior and relationships and the ways in which they are applied to studies of human aggression. According to Paus (2005), studies focus on aggressive behavior in the context of overt antisocial actions rather than the context of reconciliation and conflict resolution. He further recommends more study focused on the relationship between gene encoding of MAO-A and maltreatment at home among young individuals who demonstrate antisocial behavior. Paus (2005) offers that future studies may trend in favor of investigation of reconciliation and conflict resolution deficits rather than aggression excesses.

2.6.4 Relationship between MAO Genotype and Environmental Stressors

Alia-Klein, et al. (2008) conducted a study of healthy non-smoking males using Positron Emission Tomography (PET) in order to expand on previous studies showing

evidence that links MAO-A genotype with violent behavior through interaction with severe environmental stressors during childhood. Alia-Klein, et al. (2008) hypothesized that it is the product of MAO-A in the brain of the healthy adult male that is associated with trait aggression rather than the gene per se. Results supported the hypothesis, validating that MAO-A is a neuro-chemical substrate of abhorrent aggression.

2.6.5 Processes and Effects

A variety of other studies show the ways in which components from each of these summarized investigations are related. For example, trace metals such as copper and zinc are instrumental in the transition of enzymes and amino acids to hormones (Kollerstrom, 2006; Stalenheim, 2003). Studies indicate that MAOs share a relationship with trace copper (Raine, 2002; Upadhyaya et al., 1992). Whether copper is essential to the production of MAOs or whether MAOs subsume copper is unclear. Nevertheless, copper somehow functions with MAOs. Similarly, trace copper and zinc are instrumental in converting the T hormones to niacin and then to serotonin (iThyroid, 2009; Stalinheim, 2003). Holistic remedies for hypo and hyper thyroidism recommend dietary adjustments to balance trace copper and to balance niacin in order to increase or decrease thyroid hormones and balance thyroid function (iThyroid, 2009; Stalinheim, 2003).

Seratonin is required to calm fight or flight responses as well as mediate aggressive tendencies (Eriksson et al., 2005; Goleman, 1995; Stalenheim, 2003). Low copper levels inhibit the production of serotonin. Evidence supports a causal link between low copper/zinc ratios and athsma as well (iThyroid, 2009). Copper rich foods may be recommended for athsma sufferers including lobster, peanuts, beans and chocolate

(iThyroid, 2009). Finally, heavy and trace metal imbalances that impact MAOs may affect inflammation of the colon, certain cysts and tumors (Feldman, 1985; Feldman, Ferrell & Wells, 1979; iThyroid, 2009) as well as general intolerance, irritability, and depression(Kollerstrom, 2006). Links between reduction in activity of grey matter brain tissue and MAOs have not yet been clearly established, however hypotheses include the possibility that reduced grey matter in the various areas of the brain may be more related to an inability to mediate or reconcile aggressive behavior than it is to incite it (Paus, 1995; Volavka, 1999). Further, recognition of fear/aggression non-verbal signals is shown to be processed in the amygdala (Anderson & Phelps, 2000; Goleman, 1995); therefore, grey matter reduction in the limbic region relative to activity in the amygdala may have negative affect on fear/aggression triggers (Raine et al., 2000; Volavka, 1999).

2.7 Limitations

One peculiarity occurs in fear of crime studies conducted by social scientists, especially with regard to establishing a relationship between fear and symbolic triggers. That is, in order to establish a temporal relationship between residual effects of cognitive fear response and excitement of that response triggered by reminders, or the time order in which negative effect anxiety and cognitive fear response are related, the social scientist must rely on some degree of retrospective analysis.

The socio-criminological researcher is not likely to test blood specimen, examine neural activity through magnetic resonance, or conduct hormonal infusion to the human brain. Nor is that researcher necessarily inclined to embark on an expensive and complex longitudinal study to map and track fear indicators which can be provided by more aptly

endowed medical research. Therefore, survey instruments, interview dialogue, and secondary source information often relies heavily on respondent's memory of actual victimization or interaction with symbolic cues in order to establish a base line for fear triggers.

2.7.1 Weaknesses

A few weaknesses of the biological studies presented include the relative absence of studies with racial comparisons, female subjects, studies involving subsets of the population other than those with recognizable antisocial personality disorders, and comparisons across geographical locations and socio-economic strata. It is important to understand whether a biological trait basis for criminal behavior is more or less common among any particular group, whether it is peculiar to environmental or ecological conditions, and whether symbolic triggers are universal in nature or culturally specific.

In addition, many studies deploying new-age technology like PET, MRI, blood platelet analysis, and neuro-genetic determination are conducted by medical researchers. In most cases, criminologists are social scientists or natural scientists who have little experience in the hard science world of medicine. Current evidence of biological causality infers a demand for criminologists to adapt. It is unlikely that socio-criminology will transform into a hard science any time soon, but immediate steps toward integrating medical terminology, interpreting hard science measurements, and reviewing neuro-philosophical propositions have become essential to understanding biological characteristics of criminal behavior.

That is not to say that causes of crime are purported to be exclusive to biological factors. Indeed, supporters of biological trait theory support integration of theories. Cognitive or social learning theories, social structure theories, environmental theories, as well a variety of theories from among diverse disciplines are also supported by bio-theory research. It is important to know how biological factors are nurtured or suppressed, how they are managed or channeled in some, and how they are accepted or rejected in the social community. Discipline specific studies among biological researchers may tend to discount those factors.

2.8 Implications

2.8.1 Research

The unique nature of this study could have far reaching implications for the way fear of crime is examined by social scientists in the future (Kemper, 1987). Symbolic triggers for fear, anxiety, worry and concern are highly subjective. Once symbolic patterns are identified and understood as an integrated process--one that is simultaneously biological, psychological and sociological—and distinctions between the characteristics of fear, anxiety, worry, and concern are shown to be responses autonomic to each, criminological research will realize a new paradigm. Future studies could revisit the relationship between fear and aggression, reassess the influence of passive symbolism in restricted environments, or explore mass fear conditioning among children, through a multifaceted lens focused on symbolic fear triggers.

2.8.2 Practice

Although millennial biological theories of crime may provide many of the answers criminologists seek, they also present some of the gravest challenges. First, strong temptation to assume prematurely that individuals will behave in some stereotypically criminal manner based on inherent traits must be overcome. If criminality is inherent to some humans, how will society deal with offenders? Will criminality become something to fix, segregate, sterilize, or exterminate? Will all those who are so marked be singled out? It is human history to do all of those things when society perceives threat.

For that reason it is important to emphasize that biological theories can only be an explanation of a root cause of criminal behavior. Whether that root develops is subject to a variety of other factors including ecological, psychological, and sociological influences.

2.8.3 Consequences

A consequence of disconnect between disciplines may be that few are assembling the pieces that comprise the big picture. Socio-criminologists are left asking why some members of high risk demographic groups commit crime when others of the same group don't, while biological science proposes to answer that question without benefit of sociological indicators.

It is, perhaps, an oversight among social scientists to assume that because fear and aggression are presumed to be intrinsic to human behavior that they are limited to delineation, and that social science is pretty much stuck with that (Kemper, 1987). Neurological and psychological research unravels dimensions of fear and aggression that

are concise, and to which attributes can be fixed across diverse fields of study (Davis, Walker & Lee, 1997; Holihan, 1986; Leonard, Telch & Owen, 2000; Ressler et al., 2004). It is unnecessary for social scientists to continue to fumble with an unwieldy mechanism repeatedly subject to threat by idiosyncratic variability (Kemper, 1987; Gabriel & Greve, 2003; Isenberg et al., 1999). According to Raine and Sanmartin (2001), aggression cannot be understood without considering biological forces. It is necessary to examine a variety of biological, psychological, and sociological influences in order to understand the violent offender.

Consequences of failing to recognize interaction between symbolic references and biological traits as a cause of crime are apparent in the current American criminal justice system. High rates of incarceration without relative decrease in crime, high rates of recidivism, increasing rates of antisocial personality disorder in children, and decreased impact of socio-structural influence on criminal behavior all attest to the inadequacy of a system based on outdated capitalist-industrialist principles of free will, rational choice and costs/benefits analysis.

2.8.4 Policy

Modern biological theories threaten the status quo of the current criminal justice system (Raine, 2002). Biological implications to criminal activity have long been met with opposition among conservatives who favor a punitive crime control model over a more compassionate due process model. According to Raine (2002), biological theories challenge free will and rational choice ideologies carried over from classical criminology and de-bunk neo-classical costs/benefits analysis ideology. When an offending

population is neither possessed of free will nor capable of rational choice and that same offending population is not capable of reasoning a cost/benefit analysis of deviant acts, the offenders that comprise that population cannot be held accountable under the laws that prevail in the United States today. Without the ability to exercise free will or rational choice, and without understanding of consequences, inability to consciously behave according to social norms interrupts responsibility for crimes.

Biological theory forces the criminal justice system to look more closely at the more compassionate due process or rehabilitative model of correcting our offenders. Treatment, aggression management, skills based programming, social support and medical or nutritional therapy may be renewed on the horizon. Yet, that is not the only option. Another option is to impose even harsher punishment. If it is the greater social perception that punishment will not serve general or specific deterrence, then Americans may opt to permanently segregate, incapacitate or exterminate genetically (deficient) offenders (Rafter, 2008; Raine, 2002). Finally, a third option exists. Court mandated genetic intervention for at risk individuals, at birth or prenatally, could be considered as could sterilization (Rafter, 2008). Certainly these are not the only options that exist, but they serve as a broad overview of possibilities worthy of attention.

Therefore, danger exists in evidence of biological causality. First and foremost is the danger that crime control mentality will advocate for segregation, sterilization, incapacitation, or extermination of those demonstrating a genetic or biological predisposition to crime. Next, the same mentality may mandate the testing and subsequent labeling of the genetic anomaly as a defect (Rafter, 2008; Raine 2002). What

will be society's response if MAO studies reveal that law enforcement crime- fighter-types or lifetime soldier heroes are aggressive thrill-seekers who may be predisposed to property crimes or violent aggression?

Finally, those labeled as genetically defective may be marginalized or ostracized within their communities. Equal dangers may exist in rehabilitative mentality. In attempts to treat, reform, or cure biological (defects) harm may be imposed through the prescription of experimental pharmaceuticals, inadequately supervised programming, cost reducing alternatives to best practices, and unreasonable expectations for individual improvement and reduction in crime rates (Rafter, 2008; Raine, 2002) .

Much of the evidence is not conclusive, however, and for that reason extreme or abrupt policy changes should be carefully weighed against all research including both support and opposition to the validity and reliability of the findings. In truth, most biological researchers caution against generalizing study findings to other sub-populations or the population at large until a series of follow-up or replication studies have been completed.

2.8.5 Therapeutic Programming

Although the investigations cited in this review are only a sample of those recently published hinting evidence of a causal link between human biological factors and criminal behavior, they serve to represent a trend toward renewed interest in biological trait theory. There is little doubt that this revival has been spurred by millennial technological advances in science and medicine. Moreover, new-age technology has also enabled researchers to develop, apply, and track treatment. When

treatment results are favorable, support for research evidence is reinforced. Support for biological causes of criminal behavior is reinforced through dietary adjustments implementing micronutrients that include trace minerals and essential metals as well as dietary and environmental controls that reduce heavy metals such as lead, aluminum, and cadmium. Results of dietary adjustments and environmental controls support research data.

Pharmaceutical interventions have proved successful in reducing aggressive behaviors with MAO inhibitors, beta blockers, anti-psychotics, benzodiazepines and hormone accelerators. This success also validates that research is making progress. Other indicators in pharmaceutical innovation alert research to possible errors or gaps. Side effects of pharmaceutical therapies may indicate that further studies should be conducted. While the primary objective to reduce antisocial behavior might be accomplished, side effects indicate that some treatment may be no more compatible with the biological composition of the human body than was the problem it attempted to resolve.

Immediate action in the form of therapeutic programming for violent offenders that includes a combination of biological testing and neuro-biological supervision by a reputable credentialed specialist, validated pharmaceutical conditioning, dietary adjustment, and psycho-social structured interaction may be promoted based on the current body of research supporting biological causes of antisocial behavior.

2.9 Conclusion

In conclusion, an integrated approach that includes sociological perceptions of symbolic interaction, psychological principles of cognitive responses, and precepts of

neuro-genetic influences may answer the question: What is the difference between the person who commits crime and the one who does not, that transcends all demographic variables and integrates with all the various social theories of causation?

Research studies examining fear of crime have consistently failed to reveal a significant positive relationship between perceived risk of victimization and fear of crime among some high risk demographic groups. Conversely, other demographic groups show an exaggerated relationship. Although the findings are consistent among many studies, research has not yet revealed the reasons for such outcomes. This is problematic because unofficial inquiries tend to suggest that a significant positive relationship does exist across most demographic groups at a similar rate.

Through integrating theoretical framework of medical science, psychology, and sociology in order to achieve a more informed foundation for research, the opportunity exists to coax out a new paradigm for the study of the relationship between fear, aggression, and criminal behavior.

The hypotheses that emerge after a review of the literature are as follow:

1. An instrument constructed from among a variety of concepts representing the broad range of disciplines which investigate emotive responses in human behavior, specifically fear and aggression, should serve to add new insight into perceptions of emotional triggers.
2. Given a choice of typologically defined options, respondents will most frequently select options other than “fear” or “hostility”.

3. Perceptions of emotionally charged symbols will not vary among race/ethnicity groups.

In Chapter 3, the researcher will explain the process by which the hypotheses were tested. The research design will be discussed as will the methodology and limitations. In Chapter 4, the researcher will present an analysis of the data from the study, and in Chapter 5 the researcher interprets the illustrations, concluding with implications and limitations of those findings, as well as opportunities to expand on current research through future studies

CHAPTER 3

METHODOLOGY

3.1 Institutional Review Board (IRB)

The protocol required before the survey "Typological Emotive Responses to Textual Symbols" could be distributed was submitted to the UT Arlington Institutional Review Board, Office of Research Compliance on October 6, 2009. After minor revisions, the protocol was approved on October 28, 2009 through email correspondence. The researcher was cautioned, however, to wait for the final approval letter, which was presented to the researcher on November 9, 2009.

In the protocol, the current researcher, Donna Salazar, was recorded as the student researcher. Alejandro del Carmen, Ph.D. was recorded as the faculty advisor to the current research.

3.2 Design

The design for this study was a one shot case study design. The case study design was selected because the intention of the research is to examine the specific units, fear and aggression, within an integrated framework constructed from neuro-psychological, psycho-social and criminological variables. One Shot was selected because no control group is included.

The dependent variables were measured based on analysis of responses provided by all participants. The study is ideographic in that was conducted in an attempt to apply

many different independent variables in order to observe any relationship that may occur between perceptions of fear, aggression and social symbols.

The purpose of using these methods was to examine correlations, if any, in responses to fear or aggression when the dependent variables--fear and aggression-- are conceptualized in typologies rather than degrees, and independent variables are operationalized as symbolically criminogenic triggers delivered in virtual format.

3.3 Method

The method consisted of a triangulation including preliminary field interviews, secondary source review, and a self administered paper questionnaire.

3.3.1 Conceptualization of Dependent and Independent Variables

Initiation of the first phase of this study, conceptualization of symbolic triggers, was dependent upon identifying fear and aggression trigger symbols among various groups. This was achieved by simply asking individuals structured open-ended questions in an informal manner in casual field interviews. Simple questions like "what object do you most identify with fear" or "what color most reminds you of violence" provided a comprehensive list of contextual symbols to further examine in the next step.

Field interviews were conducted as a quota sample split into five separate and distinct locations reflecting characteristics of five stratified socio-economic demographic data sub sets. Selected locations included homeless, urban, suburban, rural, and collegiate lifestyles. Representative participants were selected in equal numbers of no less than 20 per area, according to the ways in which they represent the characteristics of the larger population with respect to the demographic variables established for this study.

Each participant remains anonymous, and each response is recorded in a dedicated field observation journal.

3.3.2 Validating Conceptualizations

Secondary source reviews were the next step of the first phase in order to evaluate strength, weakness and pervasiveness of symbols most commonly associated with eliciting negative effect anxiety or cognitive fear response. Sources included findings from scholarly studies, print media news publications, as well as broadcast news, television news magazines, movies, video games and internet web based media.

In consideration of the large circulation of vast quantities of available media, for the purpose of this study samples were limited to the most popular in each category except scholarly studies. News publications from each of print, broadcast, and web-based sub-categories available in the Dallas -- Fort Worth Metroplex were selected. They were reviewed for a period of seven consecutive publications, maintaining a log of the number of times each symbol occurred in headline, sub-title, or front page articles. Official crime reports involving that symbol were also included in the review. Video games and movies were selected based on popularity by circulation, and only the cover was assessed for content. Scholarly studies were utilized to develop typologies of fear and aggression as well as symbolic values

3.3.3 Dependent and Independent Variables

The frequency with which the symbol was present in conjunction with crime, the position of the symbol and the context in which it appeared were compared to those acquired in the field interviews. A complete list was compiled from all of the symbols,

and then organized according to categories defined as color, object, and condition (behavior). Each symbol was weighted according to frequency with which it occurred, revealed by the findings of the secondary source review. Those symbols ranking highest in frequency, products of an inductive process, served as independent variables in the current study while the typologies of fear and aggression, and their recognized sub-types served as the dependent variables.

Types of fear and aggression were selected based on those described in the literature to be characterized by neuro-psychological responses thought to be specific to each, and their subtypes were selected based on the idea that they were of the similar or same type, but representative of a variation in intensity. For example, Panic may be identified as an intensified subtype of anxiety based on shared neuropsychological processes, where terror may be identified as an intensified subtype of fear based on shared neuropsychological processes that may be different from those of anxiety and panic.

One particularly notable challenge occurred in operationalizing the word *president* among the independent variables. Much consideration was paid before the decision to include it in some form. Since the President of the United States symbolizes authority and is perceived to be empowered to negotiate symbolic values that may incite emotional responses among the population, consideration included the argument that affect synapse may be indirect rather than direct. Peculiarities among presidents also present some elements of confusion. Therefore, the word *president* was conceptualized as Obama, the current president, in order to limit confusion and establish a more direct

response.

3.3.4 Sample

In the second phase, implementation of the electronic instrument, the sample was a convenience sample. The criterion for the sampling frame was that the participant be at least 18 years of age. A primary sampling frame was drawn from the University of Texas, Arlington main campus population which is anticipated to be approximately 26,000 students, staff, faculty and administrators. The unit of analysis was the individual respondent.

3.3.5 Distribution and Data Collection

A pre-test of the electronic instrument was conducted from November 13 through November 14, 2009, during which time both the data and the instrument were tested for possible errors and malfunction. Both the researcher and the electronic format specialist completed the survey several times. Pre-test results indicated that no adjustments were necessary. Data from the pre-test was noted, the active URL was reset to reflect no responses, and the site was locked until the date of distribution.

The electronic questionnaire was circulated through available listserv data bases. Invitations to participate in the study by completing the survey questionnaire were delivered by email to listserv subscribers among those departments whose chairs agreed to the distribution. Those departments included the Department of Criminology and Criminal Justice in the College of Liberal Arts, the Psychology Department in the School of Natural Sciences, the Department of Business Economics in the College of Business Administration, and the School of Education.

In addition, a listserv was compiled from the University of Texas at Arlington public directory which included students, faculty, staff, and administrators outside the participating departments. That listserv was compiled by selecting all listings from the first two columns of each alphabetical category, then eliminating any listing associated with participant departments.

Selected email recipients were invited to participate, offered an active link to a standardized informed consent page, and an additional active link to the electronic survey instrument. The exact number of electronic invitations delivered is unknown. However, the estimated number of attempts is 1250, and the number of respondents completing the questionnaire was 113.

Each completed response provided data directly and anonymously to an electronically dedicated SPSS data base appropriate to statistical analysis, allowing access only to the primary investigator and those authorized by that person to format or process data. Departmental listservs remain confidential, and the listserv compiled from the public directory by the principal investigator remains a secure and undisclosed electronic file.

3.3.6 Survey Instrument

The instrument for the second phase of this study was the electronic questionnaire. Parts 1-A and 1-B were inspired by the Fear Survey Structure III (FSS III) (Wolpe & Lang, 1969, 1977). The FSS III is commonly recognized as an instrument designed to assess phobic behaviors, and has met with both praise and criticism. In review of the instrument, praise for its value and critique of its shortcomings, it provided

the best opportunity for modifications and provided a format for exploration of any relationships that may have occurred among a matrix of variables included in this study.

Original FSS III variables were replaced by those specific to symbolic representations (independent variables) and typologies of fear and aggression (dependent variables). Additionally, the original instrument was designed to section variables for examination in groups, a feature that was retained for the purposes of this study. However, independent variables were not sectioned in the distribution of the current questionnaire in attempt to prevent syntactic word association processes among the independent variables. Instead, the responses were coded in sections labeled color, object, and behavior prior to analysis.

Original design of the instrument included the delivery of the survey in a face-to-face structured interview conducted in a clinical environment. This application was necessary for researchers since they included a component that assessed physiological expressions as perceived by the investigator. For the purposes of the current study, that face-to-face structured interview process was modified to an electronic means of delivery, in order to conform as much as possible to the way symbolic information is received in a comfortable environment through modern technology, insure that the process is as private as possible, and avoid responses colored by spurious phenomenon.

The newly constructed survey was converted to electronic format for internet distribution by an electronic format specialist. The specialist agreed to insure anonymity and confidentiality, provide a private URL, convert the instrument to electronic format, and deliver secure data by email in SPSS format.

Respondents were provided an electronic invitation linked to an informed consent face sheet and instructions which will contain an active URL to connect the respondent to the interactive electronic instrument as well as an opportunity to exit the program. By clicking on the active URL respondents agreed to the terms of consent. If the respondent agreed to continue to the survey, they were connected to definitions and instructions for Part 1-A of the survey.

3.3.6.1 Part 1-A

In Part 1-A, a list of 60 textual symbols in the form of words represented colors, objects, and behaviors. The symbols were arranged in such a manner that colors, objects, and behaviors will be separated for the test in order to avoid word association among the symbols, situational inferences, or any impression of rank order. Each symbol was rated by the respondent according to the type of fear relationship it is perceived to elicit. The dependent variable *fear* is demonstrated in terms of typology and related sub-types. Rather than rating fear based on a scale or degree of fear, the choices represent distinct types of fear responses as distinguished in scholarly literature, with *0* representing *none*, and *9* representing *terror,* and measured as *nominal*. Respondents were informed that they may exit the program at any time, or choose not to answer any or all questions and proceed to definitions and instructions for the next part which was Part 1-B.

3.3.6.2 Part 1-B

Part 1-B also includes 60 possible responses and is arranged in the same manner as 1-A. The difference between the two is that the dependent variable in Part 1-B is *aggression* typology and sub-types rather than *fear*. In Part 1-B, many of the symbols

remain the same, while others vary in order to measure both similarities and differences in perceptions of fear and aggression emotional responses.

3.3.6.3 Part 2

At the end of Part 1-B, the respondent was given the instructions for part 2. Part 2 consists of demographic variables that provide data for controls. Among those were race and gender measured at the nominal level as well as a major field of interest write-in option. Age, income, and education were measured at the ordinal level to define risk group and socio-economic status.

Although not included in the original plan, review of the literature revealed a need to control for spuriousness that may occur through intervening variables. Those variables are included in Part 2. One question asked respondents to identify their general occupation category including a write-in *other* category. The other asked respondents whether they have ever been a member of the armed forces or a law enforcement agency, with a dichotomous response. Responses for each were measured on a nominal level.

3.3.6.4 Part 3

Finally, Part 3 was prefaced with its own brief instructions. Part 3 consisted of a list of words in paragraph format that are not intended to make sensible word strings, or represent form either syntactic or semantic. Instead, the paragraph form is comprised of two kinds of words; words considered to be emotionally charged and words considered to be neutral (Shaver, Schwartz, Kirkson, & O'Connor, 1987).

Part 3 was inspired by a similar test administered by Raine & Sanmartin (2001) to explore whether or not some respondents may be less able to distinguish between

emotional and neutral words. Raine found that some remembered many neutral words, but did not remember emotional words, indicating a lapse in ability to identify emotion. While Raine and Sanmartin's (2001) instrument may differ somewhat in application, the modified version provides the structure and content required for purposes of the current study.

The purpose Served by Part 3 was to examine whether such a component can be implemented as a control for high or low fear and aggression scores. It was administered last in order to separate it from the matrix questions and maximize the opportunity for response without influence of fear and aggression responses of Parts 1-A and 1-B. The instructions for this part of the survey note that the paragraph was comprised of unrelated words, and asked the respondent to read the paragraph carefully and then proceed to the next page for further instructions.

In the Part 3 group of words, it was important for the researcher to note whether any have been previously used in parts 1 or 2 of the questionnaire. When the respondent arrived at the next set of instructions, the respondent was asked to type in as many of the words as they remembered without looking back, and as quickly as possible, then proceed to the next page. The next page was the last page, thanking the respondent and providing contact information.

3.3.7 Instrument Analyses Design

Data collected using the current instrument could be subject to a variety of analyses. Processes included frequencies and cross-tabulation, as well as *Pearson's r* to analyze any correlations that may be revealed among the data collected. The instrument

design allowed for an adjustment to the original nominal measures by combining types of each of fear and aggression variables with their sub-type variables, totaling the number of response selections in each condensed category, and coding those totals in interval groups. Adjusted variables were then re-named and Pearson's r could be engaged to investigate the possibility of any relationships that may occur among response selections between fear and aggression variables.

Part 3 word memory responses could be analyzed through frequencies and cross-tabulation after a similar adjustment. Responses could be counted for each respondent and coded to an interval group based on the number of words the respondent provided. The interval groups could be labeled from lowest to highest respectively, and compared with the intervals of selected responses from among the adjusted fear and aggression variables.

The researcher also allowed for a matrix or index score, a sum of individual response selections for each variable, and for each matrix, providing for a broad comparison among the total scores between fear and aggression, their types and subtypes.

3.4 Timeline

Based on the design and sampling frame for this study, the target date for beginning the field interviews was Fall, 2009. It was important in sampling a university campus to keep in mind that enrollment may be larger in the fall semester and there are likely to be fewer weather delays. At the same time, the researcher must take into account the academic calendar since students, staff and faculty are preoccupied with term papers, final exams, and registration after the third week in November which could

reduce response rate.

The study proceeded in the step-by step fashion previously described, however, with a delay that extended into the second week of November. The instrument was made available for a period of three weeks, with a reminder notice at the end of the second week. Distribution began on November 16, 2009 and continued through December 6, 2009. Data analysis began the second week in December and continued through January with a target date of February 15, 2010 for preliminary reports. The final analysis was scheduled for March 30, 2010.

3.5 Limitations

The researcher realizes some limitations to the current study. First, the instrument design reflects an integrated approach to measuring types of fear and aggression and may seem unfamiliar to the reader. Second, validity depends on whether symbolic values are shared between the campus population completing the survey, and those participants among the greater public who provided emotionally charged symbolic values in informal interviews during the construction of the survey instrument. Third, construction of the sampling frame is limited to the population of a regionally-specific university campus. Fourth, a limitation is recognized in the number who agreed to provide responses.

In addition, because this is a non-experimental design, some argue that scientific value is limited. It is argued that the current study is subject to all confounding effects of non-experimental studies including endogenous change and history effect. In addition, little control exists over whether the person who receives the invitation to participate will be the same one who completes the electronic questionnaire.

The objective, however, is not to meet pretest post test experimental conditions, or to evaluate treatment, but rather to utilize the survey to explore responses to textualized symbols, in a format consistent with that of systematic exposure on a daily basis. The value exists in examining the typologically distinguished responses to textual symbols, and analyzing the data to reveal whether correlation occurs between fear and aggression variables, as well as whether typological distinction yields a different response pattern than that of fear and aggression measured on a scale of intensity.

In the following chapter, the researcher will review the findings of the analysis using illustrations and tables to demonstrate data. The researcher will discuss in Chapter 5 the interpretation of the analysis, implications and limitations of those findings, and include suggestions for opportunities to expand on current research through future studies.

CHAPTER 4

ANALYSIS

In this chapter, the researcher provides a review of the research data organized in tables, matrices, and figures. Tables 1 through 5 include Part 2 demographic data which reflects race/ethnicity, gender, age, income, and occupation of respondents. In Table 6, the researcher illustrates most and least frequent responses to textual symbols in Parts 1-A (Fear) and 1-B (Aggression) of the survey. In Table 7 the researcher expands most and least frequent responses to textual symbols in Parts 1-A and 1-B to illustrate differences in most and least frequent responses between Non-White and White respondents. Tables 4.8, 4.9, and 4.10 represent the researcher's comparison of the frequencies with which answer groups in Parts 1-A and 1-B were selected by respondents, and then an expansion of the data to further illustrate difference in responses between non-white and white respondents.

The researcher utilizes a series of matrices to demonstrate correlations among answer groups from Parts 1-A and 1-B, and compare correlations between non-white and white respondents. Table 4.11 represents correlations from Parts 1-A and 1-B data of all survey respondents, while Tables 4.12 and 4.13 represent correlations from Parts 1-A and 1-B data of non-white and white respondents respectively.

Finally, in Figures 1 and 2, the researcher compares data groups from Parts 1-A and 1-B to data from Part 3 (word memory).

4.1 Part 2 Demographics

Table 4.1 Part 2 Question 2 Race/Ethnicity of Responses (in percentages)

Race/ Ethnicity	Percent
Asian	1
Black	8
Hispanic/Latino	11
Native American/American Eskimo	4
White	76

n=113

In Table 4.1 the researcher shows that 24% of survey respondents identified their race/ethnicity as Non-White, including 1% Asian, 8% Black, Hispanic/ Latino, as well as 4% Native American/American Eskimo. 76% of respondents identified their race/ethnicity to be White. The greatest percentage of respondents identified as White, while the smallest percentage of respondents identified as Asian.

Percentages were rounded to the nearest whole number. The total number of respondents who provided a response was 113.

Table 4.2 Part 2 Questions 2 & 3 Non White and White Respondents by Gender (in percentages)

	Female	Male	Total
Non White	17	7	24
White	47	29	76
Total	64	36	100

*Totals may exceed 100% due to rounding
n=113

The researcher provides data in Table 4.2 that defines Non White and White respondents according to gender. About 17% of respondents who identified as Non white also identified as Female, and about 7% identified as Male. About 47% of white respondents identified as Female, while about 29% identified as Male.

Respondents who identified as White responded more than three times as often as those who identified as Non-White, and Females responded about 56% more often than Males. The largest percentage of respondents identified as both White and Female, while the smallest percentage of respondents identified as both Non-White and Male.

Percentages were rounded to the nearest whole number. The total number of respondents who provided a response was 113.

Table 4.3 Part 2 Questions 1 & 2 Respondents' Age by Race/Ethnicity (in percentages)

Age	Non White	White	Total
18-26	9	13	22
27-35	4	17	21
36-44	4	19	23
45-53	4	12	16
54-62	3	13	16
63 and over	0	3	3

*Totals may exceed 100% due to rounding
n = 112
missing = 1

The age of the respondents is reflected in percentages according to race/ethnicity in Table 4.3. Among those who claimed to be age 18-26, about 9% identified as Non White, and about 13% as White, for a total of 22% in that age category. Among those who claimed to be 27-35, about 4% identified as Non White, while about 17% identified as White, for a total of 21% in that age category. About 4% of those who identified as Non White claimed to be between the ages of 36 and 44, 4% between the ages of 45 and 53, 3% between the ages of 54 and 62, and none claimed to be 63 and over.

About 19% of respondents who identified as White claimed to be between the ages of 36 and 44, 12% between the ages of 45 and 53, 13% between the ages 54 and 62,

and 3% claimed to be 63 or older. Overall, about 23% of respondents claimed to be between the ages of 36 and 44, 16% between the ages of 45 and 53, 16% between the ages of 54 and 62, and 3% 63 and over. Each age category is inclusive of the ages representing *from* and *to*.

The largest percentage of Non White respondents claimed an age category of 18-26. The largest percentage of White respondents claimed and age category of 36-44. The largest percentage of the combined groups occurs in the age category of 36-44.

Percentages were rounded to the nearest whole number. The total number of respondents who provided a response was 112, missing 1 from the total survey response of 113.

Table 4.4 Part 2 Questions 7 & 2 Occupations of Respondents by Race/Ethnicity (in percentages)

Occupation	Non White	White	Total
Student	6	20	26
Labor	0	1	1
Public Service Worker	1	1	2
Educator/Ed. Advisor	4	23	27
Researcher	0	6	6
Management Professional	1	9	10
Administrative Professional	6	6	12
Health Care Professional	0	1	1
Unemployed	2	0	2
Other	2	1	3

*Totals may exceed 100% due to rounding
n=111
missing=2

In Table 4.4 the researcher illustrates respondents' occupations by race/ethnicity in percentages. About 26% of respondents identified themselves as Students including 6% who also identified themselves as Non White, and 20% who identified as White. No

Non White respondents claimed to be Laborers, while about 1% of White respondents claimed to work as Laborers, totaling about 1% of respondents. About 1% of each Non White and White respondents identified themselves as Public Service Workers totaling about 2% of respondents, and 6% of each identified themselves as Administrative Professionals totaling 12% of respondents. Among 27% of respondents who identified as Educator/Ed. Advisor, 4% identified as Non White, while 23% identified as White. No Non White respondent claimed an occupation as a researcher or a health care professional. Among White respondents 6% claimed an occupation as a researcher and about 1% claimed health care professional, for a total of 6% and about 1% respectively.

While about 1% of Non White respondents claimed an occupation of Management Professional, 9% of White respondents claimed that occupation for a total of about 10%. About 2% of Non White respondents identified as Unemployed, and no White respondents identified as Unemployed, for a total of about 2% of respondents identifying their occupation as Unemployed. Finally, about 2% of Non White respondents claimed occupations other than the choices offered, as did about 1% of White respondents for a total of about 3%.

Public Service Worker and Administrative Professional occupations were about the same percentages between White respondents and Non-White respondents, and only Non-White respondents identified themselves as unemployed. The majority of respondents identified themselves as educator/ed.advisor, including the greater percentage of White respondents, followed closely by those who identified as students of which 20% out of 26% also identified their race/ethnicity as White.

Percentages were rounded to the nearest whole number. The total number of respondents who provided a response was 111, missing 2 from the total number of survey respondents.

Table 4.5 Questions 7 & 2 Income of Respondents by Race/Ethnicity (in percentages)

Income	Non White	White	Total
$ 0-12,000	4	9	13
$12,001-19,000	0	6	6
$19,001-26,000	2	1	3
$26,001-39,000	7	7	14
$39,001-62,000	4	21	25
$62,001-96,000	4	20	24
Over $96,000	2	13	15

*Total may exceed 100% due to rounding
n=112
missing =1

Income levels of respondents by race/ethnicity are demonstrated by the researcher using percentages in Table 4.5. Among 13% of respondents who claimed an annual income level of $0-12,000, about 4% identified themselves as Non White while about 9% identified themselves as White. In the range of $12,001-19,000, no respondent identified as Non White and 6% identified as White. About 2% of respondents identified as Non White and about 1% as White in the income range of $19001-26,000, while 7% identified as Non White and 7% identified as White in the $26,001-39,000 income range. In the income range of $39,000-62,000, about 4% of respondents identified as Non White while 21% of respondents identified as White.

About 4% of respondents also identified as Non White in the income range of $62,001-96,000, and 20% identified as White. The percentage of respondents claiming an annual income of over $96,000 was 15%, including 2% who identified as Non White and 13% who identified as White.

The largest percentage of respondents claimed an annual income range of $39,001-62,000, followed closely buy those who claimed an annual income range of $62,001-96,000. In both income ranges, respondents were about five times more often identified as White. In the income range of over $96,000, respondents were about six times more often identified as White. Respondents who claimed an annual income range of $19,001-26,000 identified as Non White about twice as often as respondents identified as White. Among the 14% of respondents who claimed an annual income range of $26,001-39,000, the percentage was even between those who identified as Non White and those who identified as White. Percentages were rounded to the nearest whole number. The total number of respondents who provided a response was 112, missing 1 from the total number of survey respondents.

4.2 Part 1-A and Part 1-B Frequencies

Table 4.6 Part 1-A & Part 1-B Most and Least Often Responses Overall

Fear Types				Aggression Types			
Q	Symbol	Most	Least	Q	Symbol	Most	Least
	Color				**Color**		
11	Red	N	F	10	Red	N	H
16	Brown	N	FT	17	Brown	N	A
31	Yellow	N	F	31	Yellow	N	A
37	White	N	FA	36	White	N	HAD
41	Green	N	FA	40	Green	N	HAD
45	Grey	N	FAT	44	Grey	N	HAD
50	Orange	N	F	49	Orange	N	A
	Object				**Object**		
9	Gun	NT	F	8	Gun	N	H
14	Confederate Flag	N	F	13	Confederate Flag	N	A
21	Unattended Packages	N	F	20	Unattended Packages	D	H
24	Knife	N	F	*			
*				24	Weapon	D	H
27	Swastika	T	F	27	Swastika	D	H
36	Tattoos	N	F	35	Tattoos	N	A
	Conditions				**Conditions**		
3	Pickpocket	T	F	2	Pickpocket	D	N
5	Noose	N	F	4	Noose	N	H
8	Dead People	T	F	7	Dead People	N	H
12	Intruder	T	N	11	Intruder	D	N
13	Reckless Driver	T	N	12	Reckless Driver	D	N
15	Falling	T	F	*			
32	Rape	T	N	31	Rape	A	N
35	Obama	N	A	34	Obama	N	H
44	Al Qaeda	T	F	43	Al Qaeda	A	H
46	Bad Odors	T	F	45	Bad Odors	D	A
47	Osama bin Laden	T	FA	46	Osama bin Laden	A	H
48	Loud Noises	T	F	48	Loud Noises	N	A
54	Airplanes	N	F	*			
55	Spiders	N	F	*			
*				56	Cheating	D	N
*				57	Stupid People	H	A
60	Fire	T	F	60	Fire	D	H

*No equivalent symbol offered

Values do not represent statistical significance

Key: Part 1-A (Fear) N=None T=Tension A= Anxiety F=Fear
Part 1-B (Aggression) N=None D=Defensive A=Anger H=Hostility

In Table 4.6 the researcher compares the frequency with which survey participants responded to symbolic questions between Parts 1-A (Fear) and 1-B (Aggression) organized to distinguish between most frequent and least frequent responses among three categories including *color, object,* and *conditions*. Among the *color* category, *none* was the most frequent response for each color symbol in both Part 1-A and Part 1-B, with *none* indicating the respondent claimed no emotional response among those offered.

The least frequent response to color symbols was *fear* in Part 1-A. Also in Part 1-A, *brown* and *grey* reflect a low frequency of *tension*, while *white* , *green*, and *grey* indicate a low frequency of *anxiety*. The least frequent response to color symbols in Part 1-B was *anger* with the exception of *red* to which the least frequent response was *hostility*. In Part 1-B, a low frequency of *hostility* and *defensive* responses also occur among *white*, *green*, and *grey*.

Responses in the *object* category do not reflect a single most frequent response. In Part 1-A the most frequent response may be "*none*" with the exception of the object symbol *swastika* for which the most frequent response was *tension*, and the object symbol *gun* for which "tension" tied with *none*.

In Part 1-B, the most frequent responses were split between *none* and *defensive*. Responses to the object symbols *gun*, *confederate flag*, and *tattoos* were most frequently "none", while responses to object symbols *unattended packages*, *weapon*, and *swastika* were most frequently *defensive*.

The single least frequent response to object symbols in Part 1-A was *fe*ar. In Part 1-B, least frequent responses to object symbols included *hostility* for *gun*, *unattended packages*, *weapon*, and s*wastika*, as well as *anger* for *confederate flag* and *tattoos*.

Among the categories, the *condition* category appears to be the most varied among most and least frequent responses. In Part 1-A, the most frequent response to condition symbols is *tension* except for *noose, Obama, airplanes*, and *spiders*, for which the most frequent response is *none*. In Part 1-B, the most frequent response was *none* for *noose, dead people*, *Obama*, and *loud noises*. The most frequent response was *defensive* for *pick pocket, intruder, reckless driver, bad odors*, c*heating*, and f*ire*. *Anger* was the most frequent response for *rape, al Qaeda*" and *Osama bin Laden*.

Least frequent response to condition symbols in Part 1-A was *fear*, with the exceptions of *intruder*, *reckless driver,* and *rape* for which the least frequent response was *none*, as well as *Obama* for which the least frequent response was *anxiety*. Least frequent response for *Osama bin Laden* was split between *none* and *anxiety*. Least frequent responses to condition symbols in Part 1-B included *none* for *pick pocket*, *intruder*, *reckless driver*, *rape,* and *cheating*. Least frequent responses to condition symbols in Part 1-B also included *hostility* for *noose*", *dead people*, *Obama*, *al Qaeda*, *Osama bin Laden,* and *fire,* as well as *anger* for *bad odors*, *loud noises*, and *stupid people*.

The color symbol *grey* shows little or no emotional response from either Part 1-A or Part 1-B. Color symbols *white* or *green* show little or no emotional responses from Part 1-B. Most respondents indicate they feel *tension* over the object symbol *swastika* and

at the same time they indicate they feel *defensive*.

Rape, *intruder*, and *reckless driver* are three condition symbols that consistently show a pattern of response. For those condition symbols responses indicate that most claim emotional responses in both Part 1-A and Part 1-B. Overall, most respondents indicate that they feel *hostile* toward *stupid people*, and they feel *angry* toward *Osama bin Laden*, *al Qaeda*, and *rape*. Most feel *defensive* against *pickpocket*, *intruder*, and *reckless driver*. *Stupid people* is the only symbol where most frequently respondents indicate they feel *hostile*.

4.3 Part 1-A and Part 1-B Cross-tabulations

Table 4.7 Part 1-A and Part 1-B Most and Least Frequent Responses by Race/Ethnicity

Fear Types						Aggression Types					
Q	**Symbol**	**NW**	**W**	**NW**	**W**	**Q**	**Symbol**	**NW**	**W**	**NW**	**W**
		Most	**Most**	**Least**	**Least**			**Most**	**Most**	**Least**	**Least**
2	Open Wounds	**	**	**	**	1	Open Wounds	ND	D	**	**
3	Pick Pocket	**	**	**	**	2	Pickpocket	**	**	A	N
5	Noose	T	N	**	**	4	Noose	**	**	**	**
8	Dead People	N	T	**	**	7	Dead People	**	**	**	**
9	Gun	N	T	**	**	8	Gun	D	N	**	**
12	Intruder	A	T	N	N	11	Intruder	**	**	**	**
13	Reckless Driver	A	T	N	N	12	Reckless Driver	**	**	**	**
*						14	Failure	N	D	**	**
15	Falling	N	T	**	**	*					
18	Deformities	**	**	**	**	17	Deformities	**	**	D	HA
19	Caucasian Males	**	**	A	F	19	Caucasian Males	**	**	**	**
21	Unattended Packages	N	T	**	**	20	Unattended Packages	**	**	**	**
24	Knife	TN	N	**	**	*					
27	Swastika	**	**	**	**	27	Swastika	**	**	A	H

Table 4.7 *continued*

31	Yellow	**	**	**	**	30	Yellow	**	**	HAD	A
32	Rape	A	T	N	N	31	Rape	A	D	**	**
33	Large Open Spaces	**	**	**	**	32	Large Open Spaces	**	**	A	H
34	Being Watched	**	**	**	**	33	Being Watched	NA	D	**	**
35	Obama	**	**	F	A	34	Obama	**	**	HD	H
43	Confinement	**	**	**	**	42	Confinement	**	**	A	H
44	Al Qaeda	NAT	T	F	FA	43	Al Qaeda	N	A	HD	N
46	Bad Odors	NT	T	**	**	45	Bad Odors	**	**	A	H
47	Osama	**	**	F	N	46	Osama	NA	A	D	H
48	Loud Noises	N	T	**	**	47	Loud Noises	N	D	**	**
51	Fighting	**	**	**	**	50	Fighting	**	**	A	H
*						54	Mistakes	**	**	A	H
*						56	Cheating	**	**	A	N
*						57	Stupid People	N	D	**	**

*No equivalent offered
**Response showed little or no difference
Values do not represent statistical significance

Key: NW=Non-White W=White

Part 1-A (Fear)	N=None	T=Tension	A= Anxiety	F=Fear
Part 1-B (Aggression)	N=None	D=Defensive	A=Anger	H=Hostility

In Table 4.7 the researcher expands the analysis of the frequency with which survey participants responded to symbolic questions of Parts 1-A (*fear*) and 1-B (*aggression*) organizing responses to distinguish between most frequent and least frequent among race/ethnicity. Race/ethnicity is characterized as Non-White (NW) or White (W) based on whether respondents identified themselves as Asian, Black, Hispanic/Latino, American Indian/American Eskimo, White, or other. No respondent claimed *other*. Respondents who identified as White are represented as such. Respondents who identified as Asian, Black, Hispanic/Latino or American Indian/American Eskimo, are represented as Non-White. Only those symbols which indicate distinguishably different responses or distinguishably similar responses among both Non-Whites and Whites are included.

Non-White and White respondents provided similar responses to *open wounds* in Part 1-A; however, in Part 1-B White respondents most often indicated that they felt *defensive*, whereas Non-White respondents were most frequently split between feeling *defensive* and feeling none of the choices offered. Non-Whites and Whites also provided similar responses to *pick pocket* in Part 1-A, yet in Part 1-B Non-White respondents least frequently responded that they felt *anger*, while White respondents least frequently responded that they felt none of the choices offered.

In Part 1-A, the most frequent response among Non-White respondents to the symbol *noose* was *tension*, while the most frequent response to the same symbol among White respondents was *none*. For *dead people*, the most frequent response among Non-White respondents was *none*, while the most frequent response among White respondents

was *tension*. Non-White respondents most frequently responded *none* to the symbol *gun*, and White respondents most frequently responded *tension*. However, In Part 1-B Non-White respondents most frequently responded *defensive* while White respondents most often responded *none*.

In Part 1-B, Non-White respondents and White respondents most frequently responded similarly to the symbols *intruder*, *reckless driver*, and *rape*. In Part 1-A, least frequent responses of Non-White and White respondents were also similar, those being *none*. Most frequent responses differed between the groups with Non-White respondents most frequently responding with "*anger*" and White respondents most frequently responding with "*tension*".

For the symbol "*Obama*", In Part 1-A, Non White respondents least frequently responded "*fear*" while Whites least frequently responded "*anxiety*". In Part 1-B, Non-White respondents least frequently responded "*hostility*" or *defensive*".

For *al-Qaeda*, in Part 1-A, Non-Whites were evenly split in most frequent responses between *none*, *anxiety*, and *tension*, while White respondents most frequently responded *tension*. In Part 1-B, Non-White respondents most frequently provided the answer *none* and least frequently provided the answer *hostile* or *defensive*. White respondents most often provided the answer *anger* for *al Qaeda* in Part 1-B, and least often provided the answer *none*.

Non-White respondents least often responded *fear* to *Osama bin Laden* in Part 1-A; White respondents least often responded *none*. In Part 1-B, Non-White respondents most frequently responded *none*" or *anger* to *Osama bin Laden*, and White respondents

most often responded *anger*. Least frequently, Non-White respondents provided the answer *defensive*, while White respondents least frequently provided the answer *hostile* to *Osama bin Laden* in Part 1-B.

Responses for "*loud noises*" also varied between Non-White and White respondents. In Part 1-A, Non-White respondents most frequently answered *none*; White respondents answered *tension*. In Part 1-B, Non-White respondents most frequently answered *none*, and White respondents most frequently answered *defensive*.

Finally, in Part 1-B, Non-White respondents most frequently responded *none* to *stupid people*. White respondents most often responded *defensive*.

4.4 Part 1-A and Part 1-B Comparisons

Table 4.8 Part 1-A and Part 1-B Comparison of Frequencies between Fear and Aggression (in percentages)

Number of Times Responded	A-NON	TENS	ANX	FEA	B-NON	DEF	ANG	HOS
0	0	0	8	**50**	1	2	18	18
1-10	0	18	**79**	**49**	0	16	**74**	**77**
11-20	5	**66**	12	1	2	**58**	9	5
21-30	15	17	1	1	20	23	0	0
31-40	**45**	0	0	0	**60**	1	0	0
41-50	31	0	0	0	16	0	0	0
51-60	**4**	0	0	0	**2**	0	0	0

*Totals may exceed 100% due to rounding
n=113
Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fear
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

Table 4.8 reflects the frequencies with which respondents selected each possible option illustrated in percentages. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX

(*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

About 45% of Respondents selected the option A-NON 31-40 times, while 4% selected the same option 51-60 times. About 66% of respondents selected the option TENS 11-20 times, about 79% of respondents selected ANX 1-10 times, and about 49% of respondents selected FEA 1-10 times.

About 50% of respondents selected FEA 0 times. None selected A-NON or TENS 0 times. About 8% selected ANX 0 times. 1% selected B-NON 0 time, 2% selected DEF 0 times, 18% selected ANG 0 times and 18% selected HOS 0 times.

B-NON was selected by about 60% of respondents 31-40 times, and by 2% of respondents 51-60 times. About 58% of respondents selected DEF 11-20 times, 74% selected ANG 1-10 times, and 77% selected HOS 1-10 times.

About 2% of respondents selected B-NON 51-60 times as compared to about 4% of respondents who selected A-NON 51-60 times. No respondents selected any other options 51-60 times.

Table 4.9 Part 1-A and Part 1-B Comparison of Frequencies between Fear and Aggression by Race/Ethnicity (in percentages) -- Non White

Number of Times Responded	A-NON	TENS	ANX	FEA	B-NON	DEF	ANG	HOS
0	0	0	7	41	0	**4**	7	15
1-10	0	19	**74**	**56**	0	22	**93**	**74**
11-20	4	**67**	19	4	0	**59**	0	11
21-30	11	15	0	0	15	15	0	0
31-40	**56**	0	0	0	**59**	0	0	0
41-50	26	0	0	0	19	0	0	0
51-60	**4**	0	0	0	**7**	0	0	0

*Totals may exceed 100% due to rounding
n=27
Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fear
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

Table 4.9 is an expansion of the reflections of frequencies in Table 4.8. In Table 4.9 the researcher reveals frequencies by race/ethnicity with which respondents who identified as Non-White selected each possible option illustrated in percentages. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX (*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

About 56% of Non-White respondents selected the option A-NON 31-40 times, while 4% selected the same option 51-60 times. About 67% of Non-White respondents selected the option TENS 11-20 times, 74% of Non-White respondents selected ANX 1-10 times, and 56% of Non-White respondents selected FEA 1-10 times.

About 41% of Non-White respondents selected FEA 0 times. None selected A-NON or TENS 0 times. About 7% selected ANX 0 times. None of Non-White

respondents selected B-NON 0 times, 4% selected DEF 0 times, 7% selected ANG 0 times and 15% selected HOS 0 times.

B-NON was selected by about 59% of respondents 31-40 times, and by 7% of respondents 51-60 times. About 59% of respondents selected DEF 11-20 times, 93% selected ANG 1-10 times, and 74% selected HOS 1-10 times.

About 4% of respondents selected B-NON 51-60 times as compared to about 7% of respondents who selected A-NON 51-60 times. No respondents selected any other options 51-60 times.

Table 4.10 Part 1-A and Part 1-B Comparison of Frequencies between Fear and Aggression by Race/Ethnicity (in percentages) --White

Number of Times Responded	A-NON	TENS	ANX	FEA	B-NON	DEF	ANG	HOS
0	0	0	8	**52**	**1**	**1**	21	19
1-10	0	17	**80**	47	0	14	**64**	**78**
11-20	6	**65**	11	1	2	**58**	12	4
21-30	16	17	1	0	21	26	0	0
31-40	**42**	0	0	0	**61**	**1**	0	0
41-50	33	0	0	0	15	0	0	0
51-60	**4**	0	0	0	**0**	0	0	0

*Totals may exceed 100% due to rounding
n=86

Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fear
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

Similar to Table 4.9, Table 4.10 is also an expansion of the reflections of frequencies in Table 4.8. In Table 4.10 the researcher reveals frequencies by race/ethnicity with which respondents who identified as White selected each possible option illustrated in percentages. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-

60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX (*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

About 42% of White respondents selected the option A-NON 31-40 times, while 4% selected the same option 51-60 times. About 65% of White respondents selected the option TENS 11-20 times, 80% of White respondents selected ANX 1-10 times, and 47% of White respondents selected FEA 1-10 times.

About 52% of White respondents selected FEA 0 times. None selected A-NON or TENS 0 times. About 8% selected ANX 0 times. About 1% of White respondents selected B-NON 0 times, 1% selected DEF 0 times, 21% selected ANG 0 times and 19% selected HOS 0 times.

B-NON was selected by about 61% of White respondents 31-40 times, and by 7% of White respondents 51-60 times. About 59% of White respondents selected DEF 11-20 times, 93% selected ANG 1-10 times, and 74% selected HOS 1-10 times.

None of White respondents selected B-NON 51-60 times as compared to about 4% of White respondents who selected A-NON 51-60 times. No respondents selected any other options 51-60 times.

4.5 Part 1-A and Part 1-B Correlations

Table 4.11 Part 1-A and Part 1-B Correlations among Number of Times Responded Overall

Groups	B-NON	DEF	ANG	HOS
A-NON	.448**	-.264**	-.249**	-.134
TENS	-.153	.237*	.086	.191*
ANX	-.379**	.224*	.310**	.074
FEA	-.290**	.221*	.318**	.015

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fear
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

In Table 4.11 the researcher uses a matrix to demonstrate relationships among adjusted variables. Adjusted variables represent the numbers of times respondents selected each possible option. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX (*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

A correlation between A-NON and B-NON is significant at the .01 level. A correlation between ANX and ANG is significant at the .01 level. A correlation between FEA and ANG is significant at the .01 level.

An inverse correlation between A-NON and DEF is significant at the .01 level. An inverse correlation between A-NON and ANG is significant at the .01 level. An inverse correlation between A-NON and ANG is significant at the .01 level. A

correlation between TENS and DEF is significant at the .05 level. A correlation between ANX and DEF is significant at the .05 level. A correlation between FEA and DEF is significant at the .05 level. A correlation between TENS and HOS is significant at the .05 level.

Table 4.12 Part 1-A and Part 1-B Correlations among Number of Times Responded By Race – Non White

Groups	B-NON	DEF	ANG	HOS
A-NON	.673**	-.681**	-.124	-.077
TENS	-.401*	.534**	-.018	.248
ANX	-.537**	.470*	.063	.163
FEA	-.532**	.428*	.321	-.180

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fea
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

Like Table 4.11, in Table 4.12 the researcher demonstrates relationships among adjusted variables; however, Table 4.12 reflects relationships according to race/ethnicity. In Table 4.12, adjusted variables represent the numbers of times Non-White respondents selected each possible option. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX (*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

A correlation between A-NON and B-NON is significant at the .01 level. A correlation between TENS and DEF is significant at the .01 level. A correlation between FEA and DEF is significant at the .01 level.

An inverse correlation between A-NON and DEF is significant at the .01 level. An inverse correlation between ANX and B-NON is significant at the .01 level. An inverse correlation between FEA and B-NON is significant at the .01 level

A correlation between TENS and B-NON is significant at the .05 level. A correlation between ANX and DEF is significant at the .05 level.

Table 4.13 Part 1-A and Part 1-B Correlations among Number of Times Responded By Race – White

Groups	B-NON	DEF	ANG	HOS
A-NON	.394**	-.150	-.271*	-.156
TENS	-.075	.143	.105	.177
ANX	-.352**	.159	.360**	.033
FEA	-.249*	.209	.329**	.069

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Key: Part 1-A (Fear) A-NON =None TENS=Tension ANX= Anxiety FEA=Fea
Part 1-B (Aggression) B-NON=None DEF=Defensive ANG=Anger HOS=Hostility

Like Table 4.12, Table 4.13 reflects relationships among adjusted variables by race/ethnicity; however, in Table 4.13, adjusted variables reflect the numbers of times White respondents selected each possible option. The number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A A-NON (*none*), TENS (*tension*), ANX (*anxiety*), FEA (*fear*), and Part 1-B B-NON (*none*) , DEF (*defensive*), ANG (*anger*), and HOS (*hostility*).

A correlation between A-NON and B-NON is significant at the .01 level. A correlation between ANX and ANG is significant at the .01 level. A correlation between FEA and ANG is significant at the .01 level.

An inverse correlation between ANX and B-NON is significant at the .01 level. An inverse correlation between FEA and B-NON is significant at the .05 level. An inverse correlation between A-NON and ANG is significant at the .05 level.

4.6 Part 3 Cross-tabulations

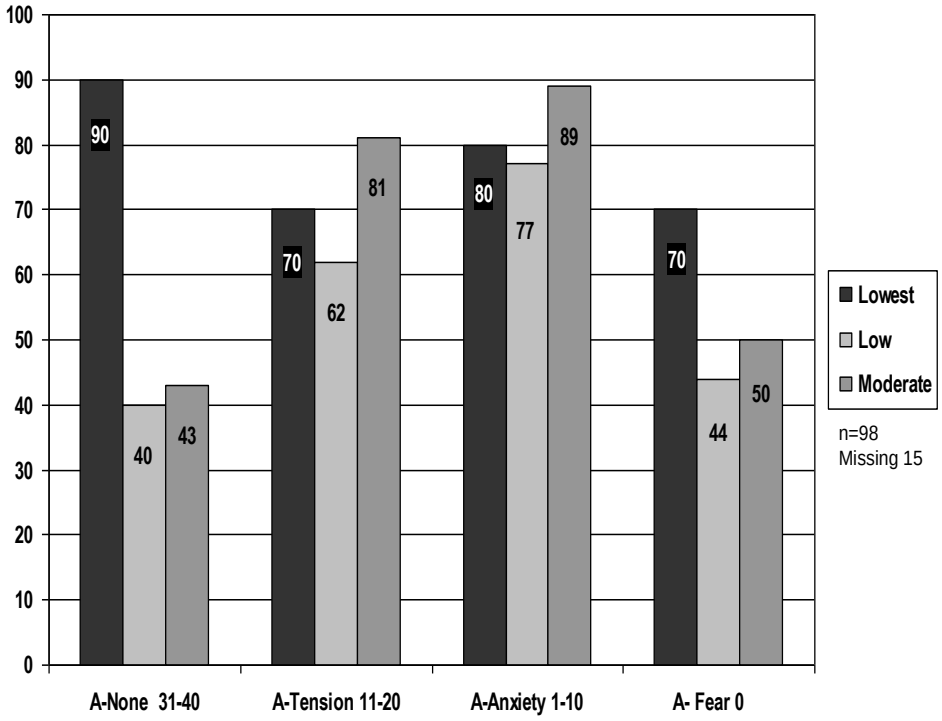

Figure 4.1 Part 3 Responses by Highest Percentage of Part 1-A Responses (in percentages)

In figure 4.1 the researcher illustrates Part 3 responses to memory of emotionally charged words compared to the highest number of Part 1-A responses for each of the adjusted variables. For the adjusted variables, the number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50, and 51-60. All possible response options include Part 1-A *none*, *tension*, *anxiety*, and *fear*. Only the interval of the most frequent responses was selected.

For the word responses, the numbers of words have been grouped into 4 intervals beginning with 0-1 as *lowest* and 8-9 as *highest*. The bars show the percentages of respondents who provided responses in the most frequent interval for each variable by the word memory intervals. No respondent provided enough emotionally charged words in their response to rank in the *highest* interval, and only one respondent provided enough words in the response to rank in the *high* interval. Because those words appeared to be copied, rather than memorized, that response was excluded. The number of respondents who provided responses to the Part 3 word memory section was 98, missing 15 of the total number of survey respondents.

About 90% of those respondents who ranked in the *lowest* interval for memory of emotionally charged words selected *none* 31-40 times in Part 1-A, about 70% selected *tension* 11-20 times, about 80% selected *anxiety* 1-10 times, and about 70% selected *fear* 0 times.

Of those respondents who ranked in the *low* interval for memory of emotionally charged words, about 40% selected *none* 31-40 times, about 62% selected *tension* 11-20 times, about 77% selected *anxiety* 1-10 times, and about 44% selected *fear* 0 times.

Respondents ranking in the *moderate* interval for memory of emotionally charged words varied from those in the *lowest* and *low* intervals. About 43% selected *none* 31-40 times, 81% selected *tension* 11-20 times, 89% selected *anxiety* 1-10 times, and about 50% selected *fear* 0 times.

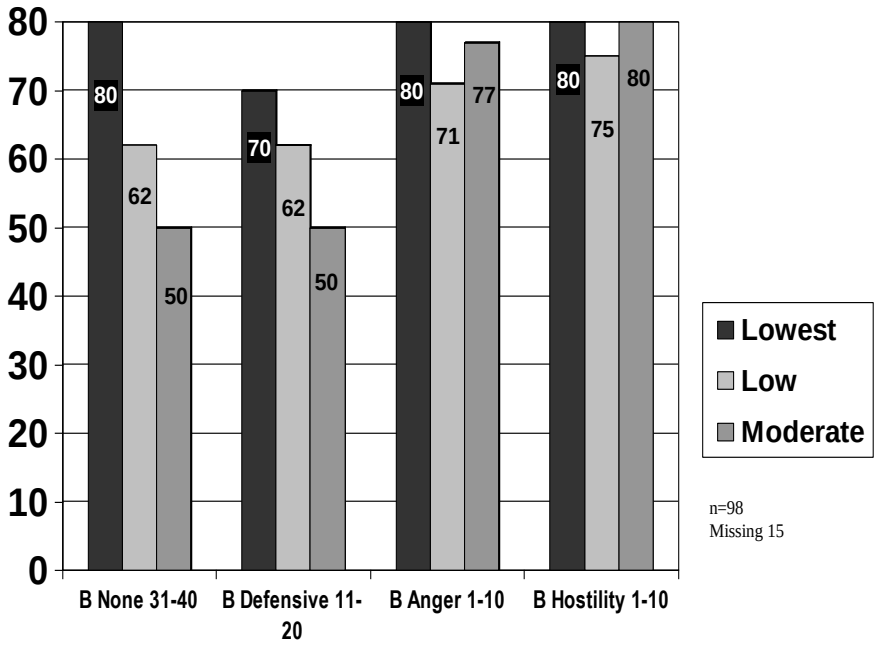

Figure 4.2 Part 3 Responses by Highest Percentage of Part 1-B Responses

In figure 4.2 the researcher illustrates Part 3 responses to memory of emotionally charged words compared to the highest number of Part 1-B responses for each of the adjusted variables. For the adjusted variables, the number of times responded have been grouped in intervals beginning with 0, and proceeding 1-10, 11-20, 21-30, 31-40, 41-50,

and 51-60. All possible response options include Part 1-A *none*, *tension*, *anxiety*, and *fear*. Only the intervals of the most frequent responses were selected for each.

For the word responses, the numbers of words have been grouped into 4 intervals beginning with 0-1 as *lowest* and 8-9 as *highest*. The bars show the percentages of respondents who provided responses in the most frequent interval for each variable by the word memory intervals. No respondent provided enough emotionally charged words in their response to rank in the *highest* interval, and only one respondent provided enough words in the response to rank in the *high* interval. Because those words appeared to be copied, rather than memorized, that response was excluded. The number of respondents who provided responses to the Part 3 word memory section was 98, missing 15 of the total number of survey respondents.

About 80% of those respondents who ranked in the *lowest* interval for memory of emotionally charged words selected *none* 31-40 times in Part 1-B, about 70% selected *defensive* 11-20 times, about 80% selected *anger* 1-10 times, and about 80% selected *hostility* 1-10 times.

Of those respondents who ranked in the *low* interval for memory of emotionally charged words, about 62% selected *none* 31-40 times, about 62% selected *defensive* 11-20 times, 71% selected *anger* 1-10 times, and about 75% selected *hostility* 1-10 times.

Respondents ranking in the "*moderate"* interval for memory of emotionally charged words varied from those in the *lowest* and *low* intervals. About 50% selected *none* 31-40 times, 50% selected *defensive* 11-20 times, 77% selected *anger* 1-10 times, and about 80% selected *hostility* 1-10 times.

Neither values nor intervals represented in Figures 1 and 2 are intended to infer statistical significance, but rather to illustrate comparisons of data between Parts 1 A and B and Part 3. Further, illustrations are intended to represent real value rather than expected value. Accordingly the researcher is justified in electing not to re-assign interval values to compensate for invalid or absent responses in the *highest* and *high* intervals, and to exclude those intervals from the illustration.

The researcher will interpret findings in the following chapter as well as offer suggestions for implications and limitations of those findings, and include suggestions for opportunities to expand on current research through future studies. Chapter 5 will also include the conclusion to this study.

CHAPTER 5

FINDINGS

In this chapter, the researcher will review the data from chapter 4 and provide an interpretation of tables, matrices, and figures. The researcher will also discuss limitations of the study, as well as policy implications and possibilities for public impact. Finally, the researcher will offer recommendations for future studies and draw the study to conclusion.

5.1 Interpretation of Data

5.1.1 Demographics

In the current study, conducted on the University of Texas at Arlington campus in North Texas, demographic data collected from students, staff, faculty, and administrators, suggested that most respondents could be characterized as middle to upper middle class white female under the age of 44, claiming an occupation of either educator/ed. advisor or student. The same data suggested that respondents may be least likely to be characterized as non-white, particularly Asian or *other*, under-class male 63 years of age or older, claiming an occupation of labor, researcher, or health care professional.

Most respondents identified as non-white may be Hispanic/Latino female claiming an occupation of student or administrative professional, and an annual income under $39,001 per year. Additionally, only non-white respondents claimed to be unemployed, while whites claimed poverty-level income more often than non-whites.

Demographic data suggested that the majority of responses are likely to reflect perceptions of females who are predominantly middle-class white children or grandchildren of the *baby boomer* generation. Such characterization is important because *boomers* are often defined by social values peculiar to their generation in which perceptions of fear and aggression may have been propagated and reinforced by mass media through symbolic realities rather than experiential realities. The effects of symbolic reality were introduced in the review of the literature chastising the industry for neglecting to use fear appeal in mass marketing strategies, as the boomer generation was approaching a peak era of consumerism.

The second greatest number of responses was likely to reflect perspectives among white upper class males of various ages and occupations, and the third greatest number reflected Hispanic/Latino female perspectives. Asian, Black, and Native American/American Eskimo perspectives were also represented, each as a clear minority, and more likely to be female than male.

Based on the characterizations, demographic data indicated that the current study reflects to some degree the stereotypical notions of diversity in the larger American society. White females may be characteristically neither very rich nor very poor, and they may outnumber their male counterparts. White men may be characterized across age categories as elitist. Hispanic/Latina females may be characterized as working hard and working cheap to achieve American middle-class status. Black women may be more predominant than black men, and black men may be characterized as low-participant. Asian groups may be characterized as few, and isolated, while the American

Indian/Eskimo population may actually be depleted or diluted to the point that very few are necessary to represent the perspectives of their ethnic majority. Therefore, it may be argued that the sample for the current study should be representative of the perspectives of the greater University of Texas at Arlington campus population.

5.1.1.1 Validity

The goal of the current research was not, however, to challenge stereotypical characterizations of any particular group. The goal was to explore emotive responses commonly understood as fear and aggression, and to examine research data to discover whether a relationship might be revealed between specific types of fear and aggression when confronted with emotionally charged symbols. This was an important step in the process of investigating the possibility that perceptions may validate the idea that neuro-biological processes presented in the literature defining variations in emotional responses, measured in conjunction with cognitive or learned emotive values attached to symbols, may serve as predictors of violent criminal behavior or, conversely, predictors of non-violent or non-criminal behavior. Moreover, the researcher expanded the goal to include distinctions between non-white and white respondents in order to reveal whether differences are evident in perceptions of types of emotive responses or whether relationships between fear and aggression types vary – if any relationships are apparent -- between non-white and white respondents.

Survey data from the current research suggested that overall, the target population is able to differentiate between types of emotive responses commonly collected under the broader term of fear, as well as those commonly collected under the term of aggression,

after reading the simple definitions provided in the instructions for each of parts 1-A and 1-B of the survey. The definitions were constructed from a simplification of those provided in the current review of the literature (see Appendix 1).

5.2 Patterns of Fear and Aggression

5.2.1 Symbols

Overall, data in Table 4.6 suggested that respondents were not fearful, but were rather tense or anxious, and they were not often hostile or angry, but rather defensive when presented with emotionally charged symbols. Data further suggested that, overall, most respondents shared perceptions of color and object symbols more than they did condition symbols, except in the case of conditions that represented a personal and local threat.

5.2.1.1 Color Symbols

Evidence of the ability to understand and differentiate fear and aggression types was indicated in some particularly interesting patterns revealed by both non-whites and whites in their responses to color symbols, object symbols, and condition symbols. For example, the color *grey* was the only color symbol for which respondents were most likely to indicate that they felt no emotional response at all, neither among fear types nor aggression types. Some respondents indicated, however, that among *red, yellow, and orange* color symbols, they felt some tension or anxiety among fear types, and some indicated that they felt defensive or felt anger or hostility among aggression types.

5.2.1.2 Object Symbols

Among the object symbols, responses to the *swastika* symbol indicated that although most claimed to feel tension, some also claimed to feel anxiety among the fear types, and among aggression types most claimed to feel defensive, while some felt anger. It was important to notice that among object symbols listed in Table 4.6, most frequent and least frequent responses provided some interesting information, but the from responses to those symbols a more important picture begins to develop around those types that are neither most or least frequent, but lie at the heart of the study. Among object symbols in fear types, *none* and *fear* were the most and least frequent responses, respectively. What lay between were the responses that revealed tension and anxiety among some respondents.

5.2.1.3 Condition Symbols

More varied claims of emotional responses appeared among the condition symbols in both fear and aggression types. Respondents were more likely to answer condition symbols with tension among the fear types, and claim feeling defensive or angry among the aggression types. An example of the beginning of a pattern among condition symbols was revealed by responses to *intruder, reckless driver, and rape*. To all three condition symbols, the least frequent response was *none* among both fear types and aggression types, which means that most claimed to perceive some emotional response to all three.

The only other condition symbols to which respondents least frequently selected *none* were the *pickpocket* symbol and the *cheating* symbol, and in both cases *none* was

among the aggression types. This meant that respondents claimed to associate some aggressive emotion with the symbol.

5.2.2 Controlling for Race/Ethnicity

5.2.2.1 Frequencies

When data was examined controlling for race/ethnicity, patterns begin to emerge that suggest differences in emotional responses between non-white and white respondents as illustrated in Table 4.7. While both groups most often claimed an emotional response among both fear types and aggression types when presented with the condition symbols *intruder, reckless driver, and rape*, non-white respondents were more likely to claim they felt anxiety, while white respondents were more likely to claim they felt tension. In addition, non-white respondents were likely to claim they felt angry about rape, whereas white respondents were more likely to claim they felt defensive. According to current literature, that should reveal that non-white respondents were more likely to claim a passionate response (*anger*) that is only loosely interpreted as a reactive type of aggression, while white respondents were more likely to claim a type of aggression interpreted as strictly reactive to perceptions of threat.

Non-white respondents were likely to be split between no emotional response, anxiety, and tension when confronted with *al Qaeda*, and were most likely to claim no feelings of aggression. In contrast, white respondents were likely to claim tension and anger. When presented with *Osama bin Laden*, non-white respondents were least likely to be fearful, and split between no aggressive response and anger, while white respondents were likely to claim a range of emotional responses and feelings of anger. *Loud noises*,

lazy people, and stupid people did not seem to elicit an emotional response from non-white respondents, but most white respondents claim to feel tension and defensive.

Distinctions between perceptions of non-white and white respondents were also revealed among fear type responses to a variety of other symbols such as *noose, gun, unattended packages, Obama, bad odors and Caucasian males*. Additionally, distinctions were revealed among aggression type responses to symbols such as *open wounds, pickpocket, gun, failure, people with deformities, swastika, the color yellow, large open spaces, fighting, cheating, mistakes, confinement, and being watched.*

5.2.2.2 Cross-tabulations

Differences in responses between non-white and white respondents were further supported in Tables 4.8, 4.9, and 4.10. Overall, the patterns seemed similar: the highest percentages of respondents responded less often as perceptions of emotional intensity increased. The same pattern emerges for both fear types and aggression types. Among the types, the greatest percentage of respondents who claimed no emotional response in Parts 1A and 1-B did so 31-40 times in each. Among types, the greatest percentage of respondents claiming *fear* did so 1-10 times, the same as the greatest percentage of those who claimed *anger* as well as those who claimed *hostility*.

5.2.2.3 Comparisons

The differences were reflected in the size of the percentages of respondents that represented the greatest percentage of those who claimed the particular type. For example, in Table 4.9, 93% of non-white respondents who claimed *anger* did so 1-10 times while in Table 4.10, 64% of whites who claimed *anger* did so 1-10 times. The

question then becomes, if a smaller percentage of white respondents claimed *anger* 1-10 times than did non-white respondents, where is the difference; did other white respondents answer *anger* more times or fewer times than non-white respondents? According to the data in table 4.10, the difference in the percentage can be found in 0 number of times responded which means that more white respondents were likely to claim *anger* 0 times than non-whites, and less often claimed *anger* 1-10 times.

On the other end of the measure, 4% of each non-white and white respondents claimed no emotional response among fear types 51-60 times. However, 7% of non-white claimed no emotional response among aggression types 51-60 times as compared to 0% of white respondents.

5.2.2.4 Correlations

Findings from frequencies, cross-tabulations, and comparisons already discussed were further supported by correlations. Relationships between Part1-A variables and Part1-B variables differed when controlled for race/ethnicity. As the researcher demonstrates in Table 4.11, overall data indicates that a strong correlation seemed to occur between *none* in both Parts 1-A and 1-B. Strong correlations were also suggested between *anxiety* in Part 1-A and *anger* in Part 1-B, as well as *fear* in Part 1-A and *anger* in Part 1-B. Strong inverse correlations seemed to occur between *none* in Part 1-A and *defensive* I Part 1-B, as well as *none* in Part 1-A and *anger* in Part 1-B.

In light of demographic data, it was not surprising that correlations for white respondents reported in Table 4.13 followed closely those reported in Table 4.11 considering the larger percentage of white respondents when compared to percentages of

non-white respondents. One difference that stood out among those identified as white was that while positive correlations remain unchanged, the only strong inverse correlation seemed to occur between *anxiety* in Part 1-A and *none* in Part 1-B.

Correlations of responses among non-white respondents indicated little in common with the others. The three shared the correlation that seemed to occur between *none* I Part 1-A and *none* in Part 1-B. Non-white and white respondents shared an inverse correlation that seemed to occur between *anxiety* in Part 1-A and *none* in Part 1-B. For non-white responses, strong correlation seemed to occur between *fear* in Part 1-A and *none* in Part 1-B as well as between *tension*, *anxiety*, and *fear* in Part 1-A, and *defensive* in Part 1-B.

For respondents overall, non-white and white, analysis of the data suggested it may be likely that when respondents do not experience a fear type response they do not experience an aggression type response. For non-whites and whites, perhaps low percentages of *anxiety* responses in Part 1-A accounted for higher percentages of *none* responses in Part 1-B.

More important, however, were those relationships that were not shared; those different correlations that occurred between non-white and white responses that may be helpful in understanding differing emotive responses and the ways specific relationships between types of fear and types of aggression may predict differences in violent behavior in non-white and white groups. In Table 4.13, strong correlations suggested that those who identified as non-white may be more likely to feel defensive when they experience tension, anxiety, or fear, while those who identified as white may be more likely to feel

anger when they experience anxiety or fear.

The difference in the way non-white groups and white groups responded to fear type stimuli is important. The literature revealed that neuro-physiological processes are different for defensive aggression than they are for angry aggression. Similarly, the cycle of the emotional process varies among aggression types as does the pattern of involvement among the organs of the human brain.

5.2.3 Structural Control

One area where race/ethnicity was not a consideration was in the analyses of Part 3 data. Part 3 data was constructed to serve as a structural control. According to the literature, some individuals are unable to process the concept of emotion. Fearful or aggressive behavior among such individuals is thought to be instrumental, a learned or predetermined non-affective behavior for which symbolic triggers are not a function.

As illustrated in Figure 4.1, among fear types the largest percentage of those who scored among the *lowest* in the word memory exercise, also selected *none* in Part 1-A 31-40 times. From the same group, the largest percentage also selected *fear* 0 times. Among aggression types as illustrated in Figure 4.2, the largest percentage of those who scored among the *lowest* in the word memory exercise also selected "*none* in Part 1-B 31-40 times, a percentage 20 points higher than those who scored among *low*, and 40 percentage points higher than those who scored "*moderate* in the Part 3 word memory exercise. However, contrary to the results in Part 1-A, the greatest percentage of those who scored among the l*owest* in the Part 3 word memory exercise also selected *defensive* 11-20 times, *anger* 1-10 times, and *hostility* 1-10 times.

The large percentage of those who scored among the *lowest* in the Part 3 word memory exercise who also selected *none* in each of Parts 1-A and 1-B 31-40 times, as well as selecting *fear* in Part 1-A 0 times, suggested a possibility that *none* responses and 0 *fear* responses may be due to some respondents' neuro-biological inability to process the concept of emotion, and more definitively, failure to respond to symbolic stimuli. It is unclear whether the possibility was supported in part 1-B since the largest percentage of those who scored among the lowest in the Part 3 word memory exercise also selected emotional aggression.

5.3 Policy Implications

5.3.1 Current Assumptions

Arguably, biological theories of criminal aggression present challenges to the American criminal justice system. The American system is founded on the three part assumption the researcher refers to as the *three pronged fork of damnation*. The *three pronged fork of damnation* refers to the classical theories of criminology in assuming that most humans are endowed with the capability to make rational choices, exercise free will in their decision-making processes, and abide by those choices over time as in consent to contractual agreements.

Biological theories of criminal behavior attempt to chip away at that assumption, slowly revealing ways in which humans are separated from rational choice, free will, or the ability to comprehend agreements or consequences over time. Currently, mental illness, mental retardation, and youthful age categories are recognized in the American justice system as conditions likely to interrupt any one or all three of the processes.

Crimes of passion are judged based on their likelihood of interrupting the process of weighing the consequences, and defensive crimes are mitigated according to the circumstances of the necessity to defend one's self, one's family, one's property, or an innocent other who might be in jeopardy of great harm or loss of life, because some understanding is accepted that defense is an autonomic function of fear.

5.3.1.1 Weakening Assumptions

Biological theories of innocence have gained acceptance over the past 2 decades in death penalty cases where genetic evidence in the form of deoxyribonucleic acid (DNA) is tested to support or reject evidence of a crime, and substantiate or exonerate the conviction of the accused. Utilization of DNA testing changed death penalty perceptions among the public and within the justice system, as well as both conviction and sentencing procedures in many areas of the United States.

Criminological research is not yet at the point where biological evidence predicts conclusively that some particular physiological variable causes criminal aggression. However, current literature appears to support the argument that some biological processes may affect criminal behavior.

5.3.2. Call for Reform

Explanations for criminal behavior that are neuro-genetic, neuro-psychological ,or even neuro-philosophical threaten to call for reform to the current system, suggesting that the current crime control model supported by the *three pronged fork of damnation* be abandoned in favor of revival of a new and modern rehabilitation model. Ideally, rehabilitation could benefit the justice system and its agencies, as well as the offender.

Appropriate medical, psychological and social strategies, combined with pharmaceutical intervention may serve to successfully treat symptoms of aggressive behavior, and allow offenders to remain in their familiar social environments under the care of rehabilitation professionals rather than in prisons. They may live in the care of their friend or relatives, or they may be self-sufficient, participate in meaningful work, and achieve status in their communities, ultimately relieving taxpayers of retributive as well as financial burdens imposed in a punishment model.

5.3.3 Deterrence

This researcher would be remiss not to mention that biological causation could dispel any proposition that punishment serves as a general or specific deterrent if death as punishment is excluded. Although deterrence is commonly a subject of debate, an offender for whom criminal behavior is a biological symptom may not be deterred by means other than medical, psychiatric, or pharmaceutical intervention, and may require rehabilitative social conditioning to overcome negative affect biological impulses.

5.4 Public Impact

The current literature supports the possibility that policy implications may be less rehabilitation-friendly if the social climate is unforgiving. The danger lies in the possibility that if biological causes of criminal behavior could be proven, offenders could be permanently removed from the public, abused, mutilated, or executed. Worse, ostracization, abuse, mutilation, or legal homicide could become measures to prevent those who are diagnosed with symptoms defined as causal to criminal behavior from committing crimes in the future. Worst of all, preventative practices could extend to

relatives and unborn children, implemented as preemptive measures against anyone who may be diagnosed with a pre-disposition to criminal behavior.

Imposing biological pre-disposition to crime as a means of crime control could have the effect of increasing the number of inmates serving extended sentences at an increased cost to taxpayers, increasing demands on law enforcement and justice agencies by charging practitioners with the responsibility to identify possible biological symptoms, and implementation of *pre-emptive* strategies. Moreover, a diagnosis of biological pre-disposition to criminal behavior could have the opposite effect of biological proof of actual innocence. Innocent members of society could be pre-emptively deprived of liberty, or even life, convicted without ever being accused of committing a criminal act.

Additional negative policy implications could attach to variations in biological evidence by race or ethnicity. One could argue against controlling for race or ethnicity in pursuit of evidence of biological causes of criminal behavior, and indeed, the current literature does not review such controls. Allegations of disparity with regard to race and ethnicity among the various agencies and processes of the American justice system remain widespread in the first decade of the millennium, even though guarantees against discrimination have been in place in America since the 1960s. Arguably, evidence of biological causality of criminal behavior, especially violent aggression, among one race/ethnicity or another, could trigger acts of mass containment, exile, neglect, or even genocide against the at risk group.

5.5 Suggestions for Future Studies

The current research did not expand to analyze the relationship between fear and aggression type responses and word memory responses controlling for race/ethnicity. Future research could benefit from expanding on current data for that purpose or collecting new data to explore whether differences occur in responses between the groups.

Another capability of the instrument design is that a total matrix fear score and a total matrix aggression score may be summed for comparison among the Parts. That process was not completed for this study; perhaps it would be interesting to provide that analysis in the future.

Much could also be learned from an analysis of the current data controlling for gender, to learn whether responses among groups of females and groups of males indicate consistency with current perceptions of female fear and aggression, as well as male fear and aggression. Additionally, controlling for age could render suggestions about whether fear and aggression types may be prevalent at one age or another, and controlling for socio-economic status could reveal suggestions about types of fear and aggression among groups in various income levels that could lead either to environmental inferences or negative affect impact on status.

In the future, the survey could be distributed to a larger population, a general population, or a different specific population. It may be of interest to distribute the survey to a prison population and a justice system agency population in order to compare the results. It may also be of interest to distribute the current instrument simultaneously with

one substituting a likert-type scale for the fear and aggression types in order to compare results.

5.6 Conclusion

In conclusion, it can be argued that the current research supported the need expressed in current literature to measure fear and aggression in terms of their respective types, rather than across the broader concept. Further, responses indicated that typologies were not unfamiliar to respondents and they were able to identify their perceptions based on a brief definition. They also appeared to be capable of differentiating between perceptions associated with fear types and those associated with aggression types.

More specifically, the current research reflects important perceptions of symbolic triggers for fear and aggression types. Fear, as a type, was virtually ignored meaning that overall, respondents claimed they were not afraid when confronted with symbolic triggers previously thought to elicit a fear response. Respondents did feel tension and they felt defensive, meaning they felt worried, apprehensive or tense, and a need may arise to prepare to defend themselves against the possibility of threat they perceived from the symbolic trigger.

Perhaps even more important, responses reflected more pronounced variations when the data was controlled for race/ethnicity. Feelings of anxiety and anger emerged, in definable patterns. Those variations reflected a marked difference in the way non-white and white groups perceive symbolic triggers, and their reactions when confronted with threat. Moreover, differences were not isolated to those symbols considered to be racially charged.

It is unlikely that findings such as those presented in the current research could be replicated without typologies, or without symbolic triggers. Further, the likert-type scales common to perceptual data collection among socio-criminological researchers is unlikely to provide a concise measurement of negative affect response when typologies are condensed into one generalized concept such as occurs when utilizing the terms *fear* or *aggression*. Further, if, as the literature suggests, a possibility exists that that some humans are incapable of experiencing or identifying emotion, typologies and symbolic triggers are key to structural control in order to consider which types some may or may not recognize, and the percentages of those who cannot.

That is not to say that the general terms are void of value, or that likert-type scales are obsolete or invalid. Rather, that the general terms as well as the likert-type scale serve an important purpose, but should not be implemented as a staple package because it is familiar or popular. Over use could be like continually trying to force the ears of Mills' (2000) proverbial elephant onto its rear end and not understanding why the part doesn't quite fit.

If humans experience a typolologically distinct negative affect response to emotionally charged stimuli, and if those responses vary among races/ethnicities as the current research reflects, then perhaps social science has arrived at the door step of a new paradigm in criminological research, one that may facilitate a revelation about the long unanswered question posed in the introduction to this study, why some humans commit crimes while others do not.

APPENDIX A

PRELIMINARY INFORMAL PERSONAL INTERVIEW QUESTIONNAIRE

Preliminary Informal Personal Interview Questionnaire

1. What symbol, if any, is most likely to incite feelings related to fear or anxiety?
2. What behavior, if any, is most likely to incite feelings related to fear or anxiety?
3. What color, if any, is most likely to incite feelings related to fear or anxiety?
4. What symbol, if any, is most likely to incite feelings related to anger or violence?
5. What behavior, if any, is most likely to incite feelings related to anger or violence?
6. What color, if any, is most likely to incite feelings related to anger or violence?

APPENDIX B

FEAR AND AGGRESSION TYPOLOGICAL SURVEY INSTRUMENT

Dear Respondent,

You are invited to participate in a research project that will explore perceptions of emotional reference symbols. This study is conducted by a University of Texas, Arlington graduate student as a required component of a thesis Master of Arts degree in the Department of Criminology and Criminal Justice.

The information gathered in this study will provide the framework for a series of analyses. First, the data from the surveys will be analyzed to reveal whether a relationship occurs between any of the several variables. Second, the data set will be examined to learn whether a correlation is evidenced between the fear and aggression variables. Third, the overall fear and aggression scores will be compared in order to assess whether one is more heavily weighted than another. In final analysis, data will be reviewed controlling for age, gender, race/ethnicity, and socioeconomic status in order to determine whether results are consistent with contemporary ideology.

Should you choose to participate, my hope is that I will be able to include your responses in order to better understand perceptions of reference symbols as they pertain to types of fear and aggression. Findings may be published as part of a thesis, included in scholarly journals, and posted on the World Wide Web.

There are no known risks to you if you participate in this study. Responses to this questionnaire are anonymous. The survey will in no way be identified with you personally, nor will the survey personally identify you with any other respondent. In order to assure your anonymity, you should not enter your name or email address on the questionnaire.

Your participation is voluntary. We hope you will choose to take a few minutes to complete the survey. There is no penalty if you choose not to participate. You may exit the survey at any time by closing the window.

If you would like information regarding the general results of this study, or if you have questions or concerns, please contact:

Donna Salazar
donna.salazar@mavs.uta.edu

A. del Carmen, PhD
adelcarmen@uta.edu

or contact

IRB, UT Arlington at 817-272-3729.

This project has been approved by the University of Texas at Arlington Institutional Review Board.

By following this link,
you are providing your implied consent
to participate in this survey.
(Link Here)

Thank you for your willingness to participate.

This study involves no known risk to you as a participant

Responses to this questionnaire are anonymous.

The survey will in no way be identified with you personally, nor will the survey personally identify you with any other respondent. In order to assure your anonymity, you should not enter your name or email address on the questionnaire.

Your participation is voluntary.

There is no penalty if you choose not to participate. Should you choose to participate, you have the option not answer any question that makes you feel uncomfortable, or to quit at any time during the questionnaire without any consequence to you by simply closing the window.

It is our hope that we will be able to include your responses in order to better serve the UT Arlington community. Findings will be made public and published in UTAPD annual reports.

This questionnaire should take approximately 20 minutes to complete. A link to the survey form has been activated for your convenience. If you are at least 18 years of age, and choose to participate, please click on the link below. Clicking on the link will initiate the voluntary survey form.

If you have any questions or concerns regarding this survey please contact:

Donna Salazar
donna.salazar@mavs.uta.edu

A. del Carmen, PhD
adelcarmen@uta.edu

Or contact
IRB, UT Arlington at 817-272-3729.

This project has been approved by
The University of Texas at Arlington Institutional Review Board

(Participants must be at least 18 years old to participate in this survey)

By following this link
you are providing your implied consent to participate.

(link here)

Self Administered Electronic Questionnaire
Fear and Aggression: Typological Emotive Responses to Textual Symbols

Instructions for Part 1 -A:

Please read the following definitions:

0. **None**-none of the available responses
1. **Interest**- you would like to know more about it
2. **Concern**- it bothers you
3. **Worry**-it bothers you a lot and it bothers you often
4. **Apprehension**- something bad might happen
5. **Tension**-your face or body feels tight when you think about it
6. **Anxiety**-you feel that you must defend yourself or escape
7. **Fear**-your heart races, you may have a cold sweat, you seem paralyzed
8. **Panic**- your heart races, you may have a cold sweat, you seem paralyzed, you feel you cannot defend yourself or escape
9. **Terror**- your heart races, you may have a cold sweat, paralysis, cannot recover clear thought process

Please read the following words or phrases. Then fill in the bubble that best represents the way you feel about that word or phrase. Please choose only one answer for each.
Please do not spend too much time on any one response. It is important that you answer quickly, not spending more than 10 seconds on each.

Example:

101. Dog ○ ✹ ○ ○ ○ ○ ○ ○ ○ ○

Part 1-A

	None	*Interest*	*Concern*	*Worry*	*Apprehension*	*Tension*	*Anxiety*	*Fear*	*Panic*	*Terror*
1. Open wounds	○	○	○	○	○	○	○	○	○	○
2. Pick-pocket	○	○	○	○	○	○	○	○	○	○
3. Being alone	○	○	○	○	○	○	○	○	○	○
4. Noose	○	○	○	○	○	○	○	○	○	○
5. Hispanic Males	○	○	○	○	○	○	○	○	○	○
6. Purple	○	○	○	○	○	○	○	○	○	○
7. Dead people	○	○	○	○	○	○	○	○	○	○
8. Gun	○	○	○	○	○	○	○	○	○	○
9. Caucasian Females	○	○	○	○	○	○	○	○	○	○
10. Red	○	○	○	○	○	○	○	○	○	○
11. Intruder	○	○	○	○	○	○	○	○	○	○
12. Reckless Driver	○	○	○	○	○	○	○	○	○	○
13. Confederate Flag	○	○	○	○	○	○	○	○	○	○
14. Falling	○	○	○	○	○	○	○	○	○	○
15. African American Males	○	○	○	○	○	○	○	○	○	○
16. Brown	○	○	○	○	○	○	○	○	○	○
17. People with deformities	○	○	○	○	○	○	○	○	○	○
18. Caucasian Males	○	○	○	○	○	○	○	○	○	○
19. War	○	○	○	○	○	○	○	○	○	○

20. Unattended packages	○	○	○	○	○	○	○	○	○	○
21. Native American Males	○	○	○	○	○	○	○	○	○	○
22. Blue	○	○	○	○	○	○	○	○	○	○
	None	***Interest***	***Concern***	***Worry***	***Apprehension***	***Tension***	***Anxiety***	***Fear***	***Panic***	***Terror***
23. Profanity	○	○	○	○	○	○	○	○	○	○
24. Knife	○	○	○	○	○	○	○	○	○	○
25. Darkness	○	○	○	○	○	○	○	○	○	○
26. Asian Females	○	○	○	○	○	○	○	○	○	○
27. Swastika	○	○	○	○	○	○	○	○	○	○
28. Failure	○	○	○	○	○	○	○	○	○	○
29. Strangers	○	○	○	○	○	○	○	○	○	○
30. Sword	○	○	○	○	○	○	○	○	○	○
31. Yellow	○	○	○	○	○	○	○	○	○	○
32. Rape	○	○	○	○	○	○	○	○	○	○
33. Large open spaces	○	○	○	○	○	○	○	○	○	○
34. Being watched	○	○	○	○	○	○	○	○	○	○
35. Obama	○	○	○	○	○	○	○	○	○	○
36. Tattoos	○	○	○	○	○	○	○	○	○	○
37. White	○	○	○	○	○	○	○	○	○	○
38. Hispanic Females	○	○	○	○	○	○	○	○	○	○
39. Strange shapes	○	○	○	○	○	○	○	○	○	○

40. Police Officers	○	○	○	○	○	○	○	○	○	○
41. Green	○	○	○	○	○	○	○	○	○	○
42. Mice	○	○	○	○	○	○	○	○	○	○
43. Confinement	○	○	○	○	○	○	○	○	○	○
44. Al Qaeda	○	○	○	○	○	○	○	○	○	○
	None	***Interest***	***Concern***	***Worry***	***Apprehension***	***Tension***	***Anxiety***	***Fear***	***Panic***	***Terror***
45. Grey	○	○	○	○	○	○	○	○	○	○
46. Bad odors	○	○	○	○	○	○	○	○	○	○
47. Osama Bin Laden	○	○	○	○	○	○	○	○	○	○
48. Loud noises	○	○	○	○	○	○	○	○	○	○
49. African American Females	○	○	○	○	○	○	○	○	○	○
50. Orange	○	○	○	○	○	○	○	○	○	○
51. Fighting	○	○	○	○	○	○	○	○	○	○
52. Humiliation	○	○	○	○	○	○	○	○	○	○
53. Asian Males	○	○	○	○	○	○	○	○	○	○
54. Airplanes	○	○	○	○	○	○	○	○	○	○
55. Spiders	○	○	○	○	○	○	○	○	○	○
56. Embarrassment	○	○	○	○	○	○	○	○	○	○
57. White powder	○	○	○	○	○	○	○	○	○	○
58. Black	○	○	○	○	○	○	○	○	○	○
59. Axe	○	○	○	○	○	○	○	○	○	○
60. Fire	○	○	○	○	○	○	○	○	○	○

Please continue to Part 1-B

Instructions for Part 1 -B:

Please read the following definitions:

0. **None**-None of the available responses
1. **Sorrow-** you feel sad
2. **Avoidance**- you want to stay away from it
3. **Irritability**- you feel agitated
4. **Tension**-your face or body feels tight when you think about it
5. **Aversion**-You want to turn away and put distance between you and it
6. **Confrontation**-you want to say or do something about it
7. **Anger-**increased blood flow, face or body tightens, want to yell or curse
8. **Hostility**-You feel the need to cause harm
9. **Violence-**you feel the need to strike out, inflict injury or kill

Please read the following words or phrases. Then fill in the bubble that best represents the way you feel about that word or phrase. Please choose only one answer for each.
Please do not spend too much time on any one response. It is important that you answer quickly, not spending more than 10 seconds on each.

Example:

99. Dog ○ ✹ ○ ○ ○ ○ ○ ○ ○ ○

Part 1-B

	None	**Sorrow**	*Avoidance*	*Irritability*	*Tension*	*Aversion*	*Confrontation*	*Anger*	*Hostility*	*Violence*
1. Open wounds	○	○	○	○	○	○	○	○	○	○
2. Pick-pocket	○	○	○	○	○	○	○	○	○	○
3. Being alone	○	○	○	○	○	○	○	○	○	○
4. Noose	○	○	○	○	○	○	○	○	○	○
5. Hispanic males	○	○	○	○	○	○	○	○	○	○
6. Purple	○	○	○	○	○	○	○	○	○	○
7. Dead people	○	○	○	○	○	○	○	○	○	○
8. Gun	○	○	○	○	○	○	○	○	○	○
9. Caucasian females	○	○	○	○	○	○	○	○	○	○
10. Red	○	○	○	○	○	○	○	○	○	○
11. Intruder	○	○	○	○	○	○	○	○	○	○
12. Reckless drivers	○	○	○	○	○	○	○	○	○	○
13. Confederate Flag	○	○	○	○	○	○	○	○	○	○
14. Failure	○	○	○	○	○	○	○	○	○	○
15. African American males	○	○	○	○	○	○	○	○	○	○
16. Brown	○	○	○	○	○	○	○	○	○	○
17. People with deformities	○	○	○	○	○	○	○	○	○	○
18. Caucasian males	○	○	○	○	○	○	○	○	○	○
19. War	○	○	○	○	○	○	○	○	○	○
20. Unattended packages	○	○	○	○	○	○	○	○	○	○

21. Native American Males	○	○	○	○	○	○	○	○	○	○
	None	**Sorrow**	***Avoidance***	***Irritability***	***Tension***	***Aversion***	***Confrontation***	***Anger***	***Hostility***	***Violence***
22. Blue	○	○	○	○	○	○	○	○	○	○
23. Profanity	○	○	○	○	○	○	○	○	○	○
24. Weapon	○	○	○	○	○	○	○	○	○	○
25. Darkness	○	○	○	○	○	○	○	○	○	○
26. Asian Females	○	○	○	○	○	○	○	○	○	○
27. Swastika	○	○	○	○	○	○	○	○	○	○
28. Strangers	○	○	○	○	○	○	○	○	○	○
29. Lazy people	○	○	○	○	○	○	○	○	○	○
30. Yellow	○	○	○	○	○	○	○	○	○	○
31. Rape	○	○	○	○	○	○	○	○	○	○
32. Large open spaces	○	○	○	○	○	○	○	○	○	○
33. Being watched	○	○	○	○	○	○	○	○	○	○
34. Obama	○	○	○	○	○	○	○	○	○	○
35. Tattoos	○	○	○	○	○	○	○	○	○	○
36. White	○	○	○	○	○	○	○	○	○	○
37. Hispanic females	○	○	○	○	○	○	○	○	○	○
38. Strange shapes	○	○	○	○	○	○	○	○	○	○
39. Police Officers	○	○	○	○	○	○	○	○	○	○
40. Green	○	○	○	○	○	○	○	○	○	○
41. Disrespect	○	○	○	○	○	○	○	○	○	○

42. Confinement	○	○	○	○	○	○	○	○	○	○
43. Al Qaeda	○	○	○	○	○	○	○	○	○	○
	None	**Sorrow**	***Avoidance***	***Irritability***	***Tension***	***Aversion***	***Confrontation***	***Anger***	***Hostility***	***Violence***
44. Grey	○	○	○	○	○	○	○	○	○	○
45. Bad odors	○	○	○	○	○	○	○	○	○	○
46. Osama Bin Laden	○	○	○	○	○	○	○	○	○	○
47. Loud noises	○	○	○	○	○	○	○	○	○	○
48. African American Females	○	○	○	○	○	○	○	○	○	○
49. Orange	○	○	○	○	○	○	○	○	○	○
50. Fighting	○	○	○	○	○	○	○	○	○	○
51. Humiliation	○	○	○	○	○	○	○	○	○	○
52. Asian Males	○	○	○	○	○	○	○	○	○	○
53. Cop	○	○	○	○	○	○	○	○	○	○
54. Mistakes	○	○	○	○	○	○	○	○	○	○
55. Black	○	○	○	○	○	○	○	○	○	○
56. Cheating	○	○	○	○	○	○	○	○	○	○
57. Stupid people	○	○	○	○	○	○	○	○	○	○
58. Arrogance	○	○	○	○	○	○	○	○	○	○
59. Pink	○	○	○	○	○	○	○	○	○	○
60. Fire	○	○	○	○	○	○	○	○	○	○

Please continue to Part 2

Instructions for Part 2:

Please read question. Then fill in the bubble that best describes you. Please choose only one answer for each question.

Part 2

1. What is your age group?
   - ○ 18-26
   - ○ 27-35
   - ○ 36-44
   - ○ 45-53
   - ○ 54-62
   - ○ Over 63

2. Which of the following best describes your race/ethnicity?
   - ○ Asian
   - ○ Black
   - ○ Hispanic/Latino
   - ○ Native American/American Eskimo
   - ○ White
   - ○ Other (please specify)_____

3. What is your gender?
   - ○ Female
   - ○ Male

4. Which of the following best describes your annual gross income?
   - ○ 0-$12,000
   - ○ $12,001-$19,000
   - ○ $19,001-$26,000
   - ○ $26,001-$39,000
   - ○ $39,001-$62,000
   - ○ $62,001-$96,000
   - ○ over $96,000

5. Which of the following includes the highest grade or degree you completed in school?
   - ○ 0-8th grade
   - ○ 9th -12th grade
   - ○ Associates Degree
   - ○ Bachelors Degree
   - ○ Masters Degree
   - ○ Terminal Degree (such as PhD, JD, MD, etc.)

6. What is your major field of interest?

   (please specify)_____

7. Which of the following best describes your current occupation?

   - ○ Student
   - ○ Unemployed
   - ○ Laborer
   - ○ Service Worker
   - ○ Public Service Worker
   - ○ Educator
   - ○ Researcher
   - ○ Management Professional
   - ○ Administrative Professional
   - ○ Other (Please Specify)_____

8. Are you now, or have you ever been a member of the armed forces or any law enforcement agency?

   - ○ Yes
   - ○ No

Please continue to Part 3

Instructions for Part 3:

Please read the following words very carefully. They are not intended to make sense. They are a list of words displayed in paragraph format.

After you have read the words, follow the instructions at the bottom of the page.

Part 3

envy table anguish homesick despair shopping marker vault thrill delight basket apple love deer freedom nail marshal maid pencil insecure adoration neglect vibrancy market farm fervor discomfort wiretap electronic zeal mad travel shoe woe pilot power tree sheep car euphoria ocean keyboard virtue insult liking obsession trail very carpet discomfort tenderness shock pants carpet grouchy desire infatuation spite grass pity belt house remorse sweater happiness podium grief the bliss manners gloom ring bank rage anguish loathing ceiling sidewalk learn speak guilt fury passion court sports hope block lounge misery guilt lust sign vegetable sprint twist sympathy rejection utensil frenzy anguish

Please continue to Instructions

Instructions for completing Part 3

Once you have reached this page, please do not go back and reread the words in the previous exercise. In the space provided below, please write as many words as you can remember from the paragraph.

Please do not refer back to the paragraph.

There is no right or wrong word and there is no right or wrong number of words. You are encouraged to write as many words as you think you may have read.

(Please type words here)

Please continue to FINISH

Your survey is now complete!

Thank you for taking the time to participate. Your responses are very important to us.

Should you have any questions or concerns about this survey or the information it will provide, please do not hesitate to contact us at:

Donna Salazar
donna.salazar@mavs.uta.edu

A. del Carmen, PhD
adelcarmen@uta.edu

or contact
IRB, UT Arlington at 817-272-3729.

You may exit this survey by closing this window

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