Erin M. McLaughlin, HOW LOCUS OF CONTROL, NEED FOR AFFILIATION, THE BIG FIVE FACTORS, AND PERCEIVED RISK RELATE TO TEXTING WHILE DRIVING (Under the direction of Dr. John Cope) Department of Psychology, March 2013.

The National Safety Council (2010) estimates that at least 100,000 car crashes every year involve drivers who are texting. However, 52 percent of US drivers ages 18-29 have reported texting or e-mailing while driving at least once in the last 30 days (Novelli, 2010). In order to effectively deter drivers from text messaging, it is imperative to understand why drivers engage in this behavior. This study surveyed college students regarding texting while driving behaviors (initiating texts, replying to texts, reading texts, or not texting while driving) and texting frequencies. The study measured participants' locus of control, need for affiliation, and Big Five Factor affinities, as well as their perceived risk of texting while driving. Locus of control orientation, extraversion, agreeableness, emotional stability, openness to experience, and perceived risk were found to be related to texting while driving.

HOW LOCUS OF CONTROL, NEED FOR AFFILIATION, THE BIG FIVE FACTORS, AND PERCEIVED RISK RELATE TO TEXTING WHILE DRIVING

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Chapter I: Introduction

On December 13, 2011, the National Transportation Safety Board (NTSB) met to discuss a highway accident that occurred in Gray Summit, Missouri, involving two school busses, a Bobtail, and a passenger vehicle. In this particular accident, the driver of the passenger vehicle caused the accident, which resulted in the death of two people and the injury of 38 others. Upon investigation, it was discovered that the driver who caused the accident had sent and received 11 text messages in the 11 minutes preceding the accident (National Transportation Safety Board, 2011). The NTSB found that this accident occurred because the driver was distracted by his cell phone, and that "a combination of enforceable state laws, high visibility enforcement, and supporting communication campaigns can reduce the number of accidents caused by drivers distracted by the use of portable electronic devices" (National Transportation Safety Board, 2012).

The Gray Summit accident is notable for several reasons. As a result of this accident, the NTSB called for a ban on all cellphone use by drivers. This recommendation is the most far-reaching one to date. The National Transportation Safety Board stated their decision was based on "a decade of investigations into distraction-related accidents, as well as growing concerns that powerful mobile devices are giving drivers even more reason to look away from the road" (Richtel, 2011). The NTSB reported that, in 2008, driver distraction caused 16 percent of all fatal crashes, and 21 percent of crashes resulting in an injury (Genachowski, 2009). This equates to 5,800 deaths and 515,000 injuries in 2008 alone. These numbers are a huge increase from previous years, and mobile communications are linked to this increase in distracted driving (Genachowski, 2009).

As a result of the increase in distracted driving, the NTSB specifically recommended that "all 50 states and the District of Columbia ban the nonemergency use of portable electronic devices (other than those designed to support the driving task) for all drivers" (National Transportation Safety Board, 2011). The NTSB also recommended that the National Highway Traffic Safety Administration (NHTSA) use their model of high visibility enforcement to support these bans, and that communication campaigns that inform motorists of the new laws and enforcement, and of the dangers associated with the nonemergency use of portable electronic devices, be implemented. The NTSB stated that the Wireless Association and the Consumer Electronics Association should "encourage the development of technology features that disable the functions of portable electronic devices within reach of the driver when a vehicle is in motion" (National Transportation Safety Board, 2012). The NTSB suggested that these new technology features include the ability to allow emergency use of a device while the vehicle is in motion. The NTSB also noted that new portable electronic devices should have the ability to identify the occupant's seating position in the vehicle so passengers can use their devices freely (National Transportation Safety Board, 2012).

The NTSB's recommendation to ban all portable electronic device use as a means of reducing distracted driving was based on evidence from the agency's investigation in which electronic distraction was a major contributing factor to dangerous accidents (Richtel, 2011). A study by the Virginia Tech Transportation Institute (2009) involving commercial drivers found that a safety-critical event is 163 times more likely if a driver is text messaging, emailing, or accessing the internet on a portable electronic device. Furthermore, the distractions associated with mobile phone usage while driving have been shown to be equally or more incapacitating than driving legally drunk (Kneavel, 2008).

In addition to a ban on all portable electronic device use by drivers, the NTSB's recommendation called for legal enforcement of this ban, and for nationwide campaigns informing drivers of the safety and legal dangers of using personal electronic devices (PEDs) while driving (National Transportation Safety Board, 2012). However, campaigns similar to those described by the NTSB already exist, as do several (previously-mentioned) laws against PED usage. Despite widely spread information on the dangers and legal ramifications of texting while driving, this behavior has not been reduced. For example, a study that looked at phone use among teen drivers both before and after a ban on this usage in the state of North Carolina found that mobile phone use while driving did not decrease (Nelson, Atchley, & Little, 2009). Several other studies have found that the majority of drivers who admit to using PEDs behind the wheel also report that they consider this behavior to be extremely dangerous (Richtel, 2011). This research indicates that state laws, more enforcement, and communication campaigns may not be enough to stop PED use while driving as the NTSB recommendation suggests.

In order to establish the best way to prevent portable electronic device use on the road, we need to establish what motivates people to text while driving even when in some cases, they realize the behavior is both dangerous and illegal. One possible way to study this behavior is to examine the personality traits of individuals who admit to engaging in PED use while they're driving. The question of interest in this study is whether or not certain personality traits are related to texting while driving. This study examined the reported frequency at which individuals read, reply to, and initiate mobile text messages while driving. Understanding the personality composition of those who text and drive may lead to the insight necessary for developing methods of prevention. It is especially important to focus specifically on texting while driving because this behavior has been found to be more dangerous than talking on a mobile phone while

driving (Atchley, Atwood, & Boulton, 2011). Texting while driving requires drivers to take their eyes off the road four times as long as talking on the phone does, and leads to problems such as incorrect lane changes and lane position variability, increased variations in speed, and decreased reaction time (Atchley et al., 2011).

The personality traits included in this study are locus of control, need for affiliation and the Big Five Factors- extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. The relationship between perceived risk (including both legal and safety risks) and texting while driving was also explored.

Perceived Risk

Legal risk. Previous research examining the relationship between perceived risk and texting while driving has found perception of legal risk to be a weak predictor of texting while driving. A study by Braitman and McCartt (2010) found no significant relationship between state law and frequency of texting while driving among all drivers. In 2006 the state of North Carolina banned teenagers from using cell phones while driving. Furthermore, if teens are caught using a cell phone while driving, they lose their driver's license for six months (Foss et al., 2009). In 2009, Foss et al. conducted a study to determine the effectiveness of the 2006 North Carolina law. The study showed that teenagers were aware of the ban on cell phone use while driving, and that cell phone use among teenagers did not decrease after the law was enacted (Foss et al., 2009).

Safety risk. A study by Zuckerman and Kuhlman (2000) explored the relationships between personality and risk-taking in several areas, one of which was driving. This study found that once an individual decides to engage in a risky behavior, if the individual receives some reward as a result of this behavior, he or she will not reinstitute the decision-making process

unless the behavior leads to a punishment (Zuckerman & Kuhlman, 2000). In other words, if an individual sends a text message while driving and is rewarded in some way, he or she will continue to text while driving until receiving a punishment as a result of the behavior.

Atchley, Atwood, and Boulton (2011) found that the choice to text while driving changed individuals' perceptions of the risks involved in the behavior. Specifically, choosing to initiate a text message while driving led the driver to perceive road conditions as being more safe than if they had chosen to read or reply to a text while driving (Atchley et al., 2011).

Similar to previously conducted research, the current study examines the relationship between perceived risk and texting while driving. However, this study goes further by also examining the relationships between several personality traits and texting while driving in an attempt to discover why many individuals choose to text while driving in the first place.

Locus of Control

Individuals are selective in determining which of their behaviors are repeated and strengthened and which are not (Rotter, 1966). This decision is dependent upon the individual's perception of the nature or causality of the relationship between the reinforcement and the preceding behavior. Locus of control refers to the degree to which a person believes a reinforcement or an outcome of their behavior is contingent upon his or her personal characteristics (internal locus of control) versus the degree to which they feel the outcome is a function of chance, luck, fate, is under the control of others, or is simply unpredictable (external locus of control) (Rotter, 1990). In other words, locus of control is a personality trait that reflects the degree to which a person generally perceives events to be under his or her own control, or under the control of other individuals or outside forces (Hunter & Stewart, 2012).

Locus of control was derived from social learning theory, which was developed by Rotter (1954). In social learning theory, behavior potential is defined as a function of expectancy and reinforcement value. Social learning theory defines expectancy as the subjective probability that a certain behavior will lead to a particular outcome (Hunter & Stewart, 2012). Reinforcement value is the desirability of that outcome. Rotter (1966) developed locus of control to measure generalized expectancy. An early study by Rotter (1966) hypothesized that locus of control is significant in understanding learning processes in different kinds of learning situations. Rotter also hypothesized that individuals differ in the degree to which they will attribute personal control to reward in the same situation. This work resulted in support for Rotter's hypotheses. Rotter discovered that if an individual perceives reinforcement as contingent upon his or her own behavior, the resulting incidence of either a positive or negative reinforcement will strengthen or weaken the recurrence of that behavior in the same or similar situation (1966). If individuals view the reinforcement as being outside their control, the preceding behavior will not be strengthened or weakened (Rotter, 1966). Knowing an individual's locus of control orientation is important in predicting the person's behavior because it provides a general idea regarding the individual's thoughts, beliefs, and perception of various events (Kneavel, 2008).

Overall, people with an internal locus of control tend to believe they are the masters of their own fate, and they trust in their ability to influence their surrounding environment. These individuals see themselves as active agents. In terms of dealing with their environment, they are proactive, goal-oriented, persistent, emotionally stable, and stress-resistant. Internals feel comfortable in uncertain situations, tend to take calculated risks, and plan for the future (Boone & Hendriks, 2009). An internal locus of control has also been found to be negatively related to

anxiety and stress, and positively related to achievement orientation and high motivation (Elanain, 2010).

Contrary to internals, individuals with an external locus of control, or externals, see themselves as passive agents. Externals largely believe that the events in their lives are caused by uncontrollable forces. These individuals are more reactive than proactive, and are passive, anxious, and risk averse. Individuals with an external locus of control orientation are comfortable in highly structured situations, and are less emotionally stable than their internally oriented counterparts (Boone & Hendricks, 2009). These individuals are also less likely to become leaders than those with an internal locus of control orientation (Elanain, 2010).

Although there are differences between individuals who have an extreme internal locus of control orientation and those who have an extreme external locus of control orientation, it is important to note that locus of control is not a dichotomous trait. Locus of control typically varies along a continuum from extreme internality to extreme externality, with the majority of people somewhere in the middle range (Kneavel, 2008).

Locus of control and conformity. Individuals with an internal locus of control differ from those with an external locus of control in relation to their resistance to suggestion from others. Internals are more resistant to manipulation from outside forces if they are aware they are being manipulated. When internals perceive manipulation, they feel a loss of control of their environment. Because externals expect control from outside forces, they are less resistant to manipulation. Individuals who perceive a lack of control over what happens to them are more likely to conform or go along with suggestions. Internals will only conform when they choose to, and when they are given a conscious alternative. However, if an individual with an internal locus

of control believes the attempt at manipulation or to get them to conform is not in their best interest, this individual will react resistively (Rotter, 1966).

Locus of control and safety. Research on traffic safety has identified locus of control as a predictor of safe driving habits (Huang & Ford, 2012). Specifically, high-risk drivers are reported to be significantly more externally oriented than safe drivers. This is because internals typically attribute outcomes to factors they can control (Hoyt, 1973; Phares & Wilson, 1972), so they are more likely to take precautionary measures (Phares, 1978; Strickland, 1977; Strickland, 1978). For example, individuals high on internal locus of control are more likely to use a seatbelt regularly (Hoyt, 1973), be alert while driving (Lajunen & Summala, 1995), and to apply brakes quickly when perceiving potential danger while driving (Rudin-Brown & Parker, 2004).

A study by Huang and Ford (2012) tested whether a defensive driving training program that included observer feedback could influence driving locus of control beliefs regarding control of accidents and therefore effect driving behaviors. To test these hypotheses, Huang and Ford assessed participant's driving behaviors and scores on a driving locus of control measure two times; before and after a defensive driving training program and observer feedback. The study found that driving locus of control can be influenced by driving training and observer feedback, and that a change in driving locus of control can predict a change in driving behaviors. Specifically, the drivers in this study reported significantly lower externality and higher internality after the training as compared to before the interventions. Furthermore, decreased externality and increased internality predicted an improvement in safe driving behaviors.

Locus of control has also been identified as a predictor of non-traffic related safety. A study by Hunter and Stewart (2012) assessed the relationship between locus of control and accident involvement among U.S. Army aviators. This study found that locus of control

measures are significantly correlated with recent accident involvement among U.S. Army aviators (Hunter & Stewart, 2012). Specifically, aviators who were lower in perceived internal locus of control reported significantly more recent accidents than those who were higher in internal locus of control (Hunter & Stewart, 2012). In a variety of safety situations, individuals with higher internal orientations tend to have fewer accidents than individuals with higher external orientations (Jones & Wuebker, 1993; Montag & Comrey, 1987; Regis, 1990). This may be explained by several studies (Hoyt, 1973; Phares, 1976; Williams, 1972) which have found that external locus of control is related to a lack of caution, which may result in a failure to take the necessary actions to avoid danger (Omizo & Michael, 1982).

When analyzing an individual's texting while driving behavior, it is important to know his or her locus of control orientation because locus of control involves perceived behavioral control, which has been found to predict the decision to text and drive (Walsh, White, Hyde, & Watson, 2008). Locus of control orientation also provides a general idea of the individual's thoughts and behaviors. Knowing individuals' locus of control orientation provides insight into how they will perceive different situations (Kneavel, 2008). While locus of control is important in understanding and predicting texting while driving behavior, it may not provide a complete picture. For this reason, need for affiliation, extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience were also included in this research.

Need for Affiliation

Affiliation is a positive, sometimes intimate, personal relationship (Zimbardo & Formica, 1963). When people want to affiliate, they have a desire to be near, and interact with, others (Leary, 2010). The term need for affiliation describes an individual's need to feel a sense of belonging and involvement with others, and is considered to be a fundamental human trait (Hill,

1987). Need for affiliation relates to interpersonal connectedness, and involves characteristics such as warmth, sociability, sensitivity to others, and social closeness (Minbashian, Bright, & Bird, 2009). Need for affiliation is categorized by a desire to participate in cooperative, non-competitive activities with others (Klein & Pridemore, 1992). Individuals with a high need for affiliation prefer cooperative situations over individual ones, and have a desire for close, friendly relationships with others (Klein & Pridemore, 1992). Need for affiliation, or affiliation motivation, is an implicit motive that predicts long-term behavioral trends (Hill, 2009). The four primary desires of affiliation motivation are positive stimulation, emotional support, social comparison, and attention (Hill, 2009). Affiliation is measured on a continuum that ranges from high to low (Hill, 1987).

Individuals high in need for affiliation are more friendly, sociable, and cooperative than those low in need for affiliation (Klein & Pridemore, 1992). Despite this, however, individuals with high affiliation motivation, or need for affiliation, tend to be unpopular compared to those with lower affiliation motivation (Hill, 2009). This unpopularity is explained by findings that individuals high in need for affiliation experience greater social anxiety than those low in this motivation, and have been found to be quieter, more submissive, and less assertive than those lower in affiliation motivation (Hill, 2009). Individuals high in need for affiliation avoid conflict with others, tend to be dependent on others, are insecure, and have an overarching fear of not being liked (Hill, 2009).

Individuals high in need for affiliation are sensitive to the needs of others (Minbashian, Bright, & Bird, 2009). People high in affiliation motivation make interacting with others a primary concern (Klein & Pridemore, 1992). Individuals high in need for affiliation engage in

more social behaviors, including visiting friends, making phone calls, and writing letters to peers more frequently than those low in need for affiliation (Hill, 2009).

Need for affiliation and texting. Recently, texting has become one of the most preferred methods of contact among adolescents and young adults, and plays an important role in they way they communicate with each other (Skierkowski & Wood, 2012; Walsh et al., 2009). Adolescents and young adults report having their cell phones with them and turned on most of the time (Walsh et al., 2009). Because need for affiliation is satisfied through frequent social connections, texting has become important to individuals high in this need (Skierkowski & Wood, 2012). A study by Skierkowski and Wood (2012) placed a texting ban on participants aged 18-23 for a short period of time, and asked participants to report how their relationships with others had changed during the restricted time period. The study found that participants felt that their relationships with others worsened because they were not able to text message them (Skierkowski & Wood, 2012).

Need for affiliation may be related to texting while driving because individuals high in this need have a desire to interact with others (Leary, 2010), to have close, friendly relationships with others (Klein & Pridemore, 1992), and are sensitive to the needs of others (Minbashian, Bright, & Bird, 2009), which may cause these individuals to communicate with others while driving.

Big Five Factors

Decades of research on personality have produced a hierarchical organization of personality traits in terms of five dimensions: extraversion, agreeableness, conscientiousness, emotional stability (or neuroticism), and openness to experience (McCrae & John, 1992). These

five dimensions are referred to as the "Big Five," or the Five Factor Model (FFM) of personality (McCrae & Costa, 1987).

The development of this model began when different researchers found time after time that personality seemed to boil down to five broad dimensions (McCrae & Costa, 1987). For example, a 1963 study on personality by Norman found that there were five major dimensions of personality, and that these five dimensions provided an adequate taxonomy of personality attributes (Norman, 1963). Analysis of questionnaires led to the modern FFM (McCrae & John, 1992). This analysis began with Eysenck (1967) who identified extraversion and neuroticism as major components of nearly all psychological tests. Costa and McCrae (1980) added openness to experience, and later (1985, 1989) created scales to measure dimensions they called agreeableness and conscientiousness. This nomenclature was soon adopted by a number of publications (e.g., Borkenau & Ostendorf, 1990; Funder & Colvin, 1988; Wiggins & Pincus, 1989; Zuckerman et al., 1989).

Research found each of these five dimensions to be bipolar, and measured them on a continuum (Digman, 1990). One of the first inventories to measure the Big Five was developed by McCrae and Costa (1987). The Five Factor Model has been found to be present in the Eysenck Personality Inventory, the Jackson Personality Research Form, the Myers-Briggs Type Indicator, the California Q-Set, and the Minnesota Multiphasic Personality Inventory (Digman, 1990). The FFM has also been found to be robust not only across various studies and inventories, but across different languages as well. Studies finding evidence of the same dimensions included in the Big Five across various languages is significant because it implies that people everywhere may construe personality the same, regardless of language or culture (Digman, 1990).

Goldberg (1981) noted the robustness of the FFM, saying "it would be possible to argue the case that any model for structuring individual differences will have to encompass, at some level, something like these 'big five' dimensions." Since its inception, the Five Factor Model of personality has become widely accepted as the dominant model of personality traits (McMabe & Fleeson, 2012). For over two decades, support for the FFM including longitudinal (Roberts, Walton, & Viechtbauer, 2006) and cross-cultural (Saucier & Ostendorf, 1999) evidence has increased.

Extraversion. Extraverted individuals are gregarious, sociable, ambitious, talkative, assertive, bold, spontaneous, dominant, and active (Digman, 1990; McMabe & Fleeson, 2012). Extraversion includes venturesomeness, affiliation, positive affectivity, energy, ascendance, and ambition (McCrae & John, 1992). In addition to sociability, extraverts tend to exhibit liveliness and assertiveness, and have the need for activity, excitement, and stimulation (Costa & McCrae, 1992). High extraversion is associated with impulsivity and low self-control (Eysenck & Eysenck, 1985). Individuals low on extraversion, or introverts, tend to prefer spending time alone, while extraverts prefer to be around others (John & Srivastava, 1999).

Agreeableness. Agreeableness represents the extent to which one is kind, considerate, and soft-hearted (Bowling, Burns, Stewart, & Gruys, 2011). Agreeableness has been found to be the personality trait that reflects an individual's desire to get along with others (Blickle et al., 2008). Agreeableness also reflects the ability to consider the mental states of others (Nettle & Liddle, 2008). Some research has even argued that agreeableness is the primary concept to consider when assessing differences between individuals' personalities (Witt, Burke, Barrick & Mount, 2002). It has been argued that agreeableness stems from the temperamental self-

regulatory system, which involves control abilities such as anger regulation and cognitive inhibition (Blickle et al., 2008).

People high in agreeableness (determined using Costa and McCrae's agreeableness assessment) are considered to be warm, likable, friendly, good-natured, cooperative, softhearted, kind, and helpful (Costa & McCrae, 1992). Agreeable individuals have high levels of interpersonal skills and work well with others (Elanain, 2010). People who are high in agreeableness have a desire to avoid hurting others and are submissive to rules (Bowling et al., 2011). People who are high on agreeableness are typically described as sympathetic, kind, altruistic, generous, fair, and eager to help others (Blickle et al., 2008). High agreeableness is uniquely predictive of social support and harmonious relationships (Nettle & Liddle, 2008). Individuals high in agreeableness also prefer cooperation over competition, and tend to be treated with courtesy from others (Van Kleef, Homan, Beersma, & van Knippenberg, 2010).

Low agreeableness is correlated with anger, aggression, and interpersonal arguments (Nettle & Liddle, 2008). Individuals considered to be low in agreeableness tend to be cold, oppositional, hostile, and antagonistic toward others (Elanain, 2010). People low in agreeableness are prone to get into arguments, are skeptical of the intentions of others, and welcome conflict (Nettle & Liddle, 2008). These individuals are fairly insensitive to inconsiderate behavior, and they do not expect courtesy from other people. Because individuals low in agreeableness are not concerned with protecting social harmony, they are more tolerant of anger than their agreeable counterparts (Van Kleefet al., 2010).

Conscientiousness. An individual high in conscientiousness is dependable, industrious, efficient, and achievement oriented (Digman, 1990). These individuals are thorough, neat, and organized (McCrae & Costa, 1987). Individuals high in conscientiousness are viewed as people

who hold back and control tendencies toward impulsive behavior (Tellegen, 1982). Conscientiousness has come to describe either individuals who are governed by conscience or those who are diligent and thorough (McCrae & John, 1992).

Emotional stability. Someone who is emotionally stable is calm, steady, self-confident, and secure (Digman, 1990). Emotional stability represents individual differences in the tendency to experience stress (McCrae & John, 1992). Individuals low in emotional stability, or high in neuroticism, experience chronic negative affects (Watson & Clark, 1984) and tend to develop a variety of psychiatric disorders (Zonderman, Stone, & Costa, 1989). These individuals think irrationally, have low self-esteem, poor control over impulses and cravings, and have ineffective coping mechanisms (McCrae & Costa, 1987). Individuals high in emotional stability are calm, relaxed, even-tempered, and unflappable (McCrae & John, 1992).

Openness to experience. The dimension openness to experience includes traits such as intelligence, imaginativeness, perceptiveness, and intellect (Digman, 1990; McCrae & John, 1992). Those high in openness to experience are cultured, intellectual, imaginative, and analytical (Digman, 1990). These individuals are creative and have differentiated emotions, aesthetic sensitivity, need for variety, and unconventional values (McCrae & John, 1992). This dimension is not a measure of intellectual ability, but rather describes intellect as including wide interests, originality, curiosity, wisdom, logic, and foresight (McCrae & John, 1992). Individuals low in openness to experience judge things in conventional terms, favor conservative values, and suppress anxiety (McCrae & Costa, 1987).

The Big Five factors in relation to risk. The Big Five factors have been found to be related to individuals' tendency to engage in risky behaviors (Gullone & Moore, 2000). Research by McGhee, Ehrler, Buckhalt, and Phillips (2012) found that high extraversion and openness to

experience and low conscientiousness were correlated with risk-taking. High conscientiousness correlated moderately and negatively with risk-taking (McGhee et al., 2012). These findings support previous research, which found that college students high in extraversion exhibit indecisiveness in their decision-making (Kelly & Lee, 2005), and engage in riskier decisions (Kreitler, Dansereau, Barth, & Ito, 2009; Rim, 1982). College students high on extraversion are more likely to engage in excessive drinking and drunk driving (Cook, Young, Taylor, & Bedford, 1998; Kjaerheim, Mykletun, & Halvorsen, 1996; Martsh & Miller, 1997), smoking (Arai, Hosokawa, Fukao, Izumi, & Hisamichi, 1997; Pritchard & Kay, 1993), cheating on exams (Singh & Akhtar, 1972) and risky sexual practices (Cooper, Agocha, & Sheldon, 2000). Introverted individuals tend to lead a more conservative lifestyle (Helgason, Fredrickson, Dyba, & Steineck, 1995).

A study by Gullone and Moore (2000) investigated the relationship between risk-taking behaviors in adolescents aged 11-18 and the Big Five personality factors. The risk-taking behaviors in this study included thrill-seeking, reckless, rebellious, and antisocial risk behaviors (Gullone & Moore, 2000). When asked whether or not they perceived various negative behaviors to be risky, adolescents high in extraversion and agreeableness reported that they did not perceive most negative behaviors to be risky, while adolescents high in conscientiousness perceived the negative behaviors to be risky (Gullone & Moore, 2000). Conscientiousness predicted less engagement in rebellious and reckless risks, while extraversion predicted higher engagement in all risky behaviors, and agreeableness predicted high engagement in thrill-seeking and reckless risk behaviors (Gullone & Moore, 2000).

Purpose of this Research

It is clear from the extremely high percentages of drivers who admit to texting while driving that current methods of preventing this behavior are ineffective (National Transportation Safety Board, 2011). So far, little research has been conducted on the personality traits that influence an individual's decision to text while driving. Having an understanding of which personality traits are most highly correlated with this decision will enable campaigns against texting while driving to be more successful.

The primary goal of the present study is to determine whether or not an understanding of the personality substructure (as measured here by locus of control, need for affiliation, the Big Five factors, and perceived risk) can be used to predict an individual's likeliness to either initiate, reply to, or read a text while driving, or not to text while driving under any circumstances. It is predicted that each of these factors will be meaningfully related to texting while driving.

Hypotheses 1: There is a meaningful (|rho| >= .1) relationship between perceived risk and texting while driving.

A study by Nelson, Atchley, and Little (2009) looked at whether perceived risk or perceived importance of the phone call influenced driver's decisions to use their mobile phones while driving. The study found that laws banning phone use while driving do not significantly decrease the behavior, especially in young drivers who have the highest rates of cell phone use. Participants in Nelson, Atchley, and Little's (2009) study were surveyed on the types of calls they make or answer, their perceived risk, and motivations for mobile phone use while driving. The relationship between perceived risk of the behavior, emotionality of the call, perceived importance of the call, and how often calls were answered versus initiated were then examined. Of the individuals included in Nelson, Atchley, and Little's (2009) study, 81 percent reported using a cell phone while driving. Participants also reported a low perceived risk and high-

perceived prevalence of phone use while driving. Overall, the study found that perceived importance of a phone call is a better predictor of answering, initiating, and talking on a cell phone while driving than the perceived risk of the behavior. However, the study also found that participants who did not use their mobile phones while driving refrained from doing so because of the perceived risk involved. Evidence suggests that, for the majority of individuals, perception of risk causes a mental struggle, but does not predict a behavioral outcome (Nelson et al., 2009). Although this study did not specifically look at texting while driving, but rather phone use as a whole, the results of this study may predict the results of a similar study analyzing only texting behavior.

Another study that focused solely on texting while driving in young adults found that 70 percent of these drivers initiate texts, 81 percent reply to texts, and 92 percent read texts while driving (Atchley et al., 2011). The study also found that some drivers only text while stopped in traffic, and that only two percent of young drivers never text and drive. Consistent with similar research, this study found that a majority of participants perceived texting while driving to be at least somewhat risky, but that risk was generally a weak predictor of initiating texts, or had virtually no effect on behavior in terms of reading and replying to texts (Atchley et al., 2011). This research has led to the hypothesis that there is a meaningful relationship between perceived risk and texting while driving.

Hypothesis 2: Need for affiliation, as measured by the Interpersonal Orientation Scale (Hill, 1987), is meaningfully (|rho| >= .1) related to texting while driving.

Individuals high in need for affiliation have a desire to interact with others (Leary, 2010), to have close, friendly relationships with others (Klein & Pridemore, 1992), and are sensitive to the needs of others (Minbashian, Bright, & Bird, 2009). Text messaging is used as a primary

method to frequently interact with others by adolescents and young adults (Walsh et al., 2009; Skierkowski & Wood, 2012), and these individuals report having their cell phones with them and turned on most of the time (Walsh et al., 2009). Because texting is used to satisfy the need for affiliation (Skierkowski & Wood, 2012), it is hypothesized the need for affiliation is meaningfully related to texting while driving.

Hypotheses 3: Locus of control orientation, as measured by the Work Locus of Control Scale (Spector, 1988), is meaningfully (|rho| >= .1) related to texting while driving.

Locus of control orientation has been found to be a predictor of safe driving habits (Huang & Ford, 2012). High-risk drivers are reported to be significantly more externally oriented than safe drivers (Jones & Foreman, 1984) because internals typically attribute driving outcomes to factors they can control (Hoyt, 1973; Phares & Wilson, 1972), and are more likely to take precautionary measures while driving (Phares, 1978; Strickland, 1977, 1978). Locus of control orientation is hypothesized to be meaningfully related to texting while driving because locus of control involves perceived behavioral control, which has been found to predict the decision to text and drive (Walsh, White, Hyde, & Watson, 2008).

Hypothesis 4: Extraversion, as measured by an abbreviated version of the Unipolar Big-Five Markers test (Saucier, 1994), is meaningfully (|rho| >= .1) related to texting while driving.

Extraversion incorporates the propensity for sensation seeking and risk taking behaviors (McCrae & Costa, 1990). Individuals high on extraversion have been found exhibit indecisiveness in their decision-making (Kelly & Lee, 2005), and engage in riskier decisions (Kreitler, Dansereau, Barth, & Ito, 2009; Rim, 1982), while individuals low on extraversion have been found to lead a more conservative lifestyle (Helgason, Fredrickson, Dyba, & Steineck,

1995). Because extraversion is related to risk-taking behaviors (Helgason et al., 1995; Kreitler, Dansereau, Barth, & Ito, 2009; Rim, 1982), it is hypothesized that extraversion is meaningfully related to texting while driving.

Hypotheses 5: Agreeableness, as measured by an abbreviated version of the Unipolar Big-Five Markers test (Saucier, 1994), is meaningfully (|rho| >= .1) related to texting while driving.

Research by White, Hyde, Walsh, and Watson (2010) found that, although many participants perceived phone use while driving to be at least somewhat risky, they felt that the benefits outweighed the consequences. This suggests that certain personality factors, especially high agreeableness, will have a bigger influence on the decision to text while driving than perceived risk (White et al., 2010). Because individuals high in agreeableness often put others before themselves (McCrae & Costa, 1987), it is hypothesized that agreeableness is meaningfully related to texting while driving.

Hypothesis 6: Conscientiousness, as measured by an abbreviated version of the Unipolar Big-Five Markers test (Saucier, 1994), is meaningfully (|rho| >= .1) related to texting while driving.

Research by McGhee, Ehrler, Buckhalt, and Phillips (2012) found that low conscientiousness was correlated with risk-taking, and high conscientiousness correlated moderately and negatively with risk-taking. Individuals high in conscientiousness tend to perceive negative behaviors as risky (Gullone & Moore, 2000). Conscientiousness has also been found to predict engagement in rebellious and reckless risks (Gullone & Moore, 2000). Because conscientiousness is related to risk-taking behaviors (Gullone & Moore, 2000; McGhee et al., 2012), conscientiousness is hypothesized to be meaningfully related to texting while driving.

Hypothesis 7: Emotional stability, as measured by an abbreviated version of the Unipolar Big-Five Markers test (Saucier, 1994), is meaningfully (|rho| >= .1) related to texting while driving.

Emotional stability represents differences in the tendency to experience stress (McCrae & John, 1992), and the extent to which one is calm, steady, self-confident, and secure (Digman, 1990). Although previous research (Gullone & Moore, 2000; McGhee et al., 2012) has not found a significant relationship between emotional stability and risk-taking behaviors, the relationship is being explored in this study, and it is hypothesized that emotional stability will be meaningfully related to texting while driving.

Hypothesis 8: Openness to experience, as measured by an abbreviated version of the Unipolar Big-Five Markers test (Saucier, 1994), is meaningfully (|rho| >= .1) related to texting while driving.

The dimension openness to experience includes traits such as intelligence, imaginativeness, perceptiveness, and intellect (Digman, 1990; McCrae & John, 1992). Openness to experience has been found to be correlated with risk-taking (McGhee et al., 2012), and it is hypothesized that openness to experience will be meaningfully related to texting while driving. To test these hypotheses, participants completed a survey measuring their perceived risk regarding texting while driving, locus of control orientation, need for affiliation, and levels of the Big Five personality factors. Participants also reported how often they read, reply to, and initiate text messages while driving.

Chapter II: Methods

Participants

In order to test these hypotheses, undergraduate students at East Carolina University were given an 84-item online survey, and were able to earn course credit for participating in the survey. Of the 577 participants in this study, 43.2 percent were age 19, 62 percent were female, 76.8 percent were white, and 72.6 percent were freshmen in college. College students were chosen as participants because previous research has shown that young drivers tend to text while driving more frequently than any other age group (Atchley, Atwood, & Boulton, 2011). The survey items include demographic information, a texting behavior frequency measure, a measure of perceived risk (both legal and safety), a locus of control scale, a measure of need for affiliation, and a measure of the Big Five factors. The survey is presented in its entirety in Appenxix A.

Measures

Spector's Work Locus of Control Scale. A modified version of Spector's Work Locus of Control Scale (1988) was used to determine whether participants have an internal or external locus of control. The scale has been modified because many of the participants are not yet in a work environment, so items such as "Getting the job you want is mostly a matter of luck" have been adjusted to say "Getting what you want is mostly a matter of luck." Participants must indicate whether or not they disagree very much, disagree moderately, disagree slightly, agree slightly, agree moderately, or agree very much with the 16 statements included in the measure. Scores on this measure range from 16 to 96, with high scores representing extreme externality. The Work Locus of Control Scale was chosen because it has been shown to be a reliable measure for determining locus of control. Furthermore, the scale shows high validity in reliably determining locus of control not only in the workplace, but also in everyday life (Spector, 1988).

Hill's Interpersonal Orientation Scale. The Interpersonal Orientation scale measures need for affiliation using four dimensions: positive stimulation, attention or praise, emotional support, and social comparison (Hill, 1987). The measure includes 26 statements and a response format that consists of a five-point Likert Scale. Participants indicate whether they find each statement to be *not at all true*, *slightly true*, *somewhat true*, *mostly true*, or *completely true*. The instructions at the beginning of the measure ask participants to indicate how true each statement is for him or her. Scores on this measure range from 26 to 130, with higher scores representing a high need for affiliation.

Unipolar Big-Five Markers. An abbreviated version of Goldberg's Unipolar Big-Five Markers is included in the survey to determine participant's levels of extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience (Saucier, 1994). This measure, known as the Mini-Markers test, presents a list of 40 traits and asks respondents to use the list to describe themselves as accurately as possible. For example, an item testing agreeableness on the Mini-Marker test is "cooperative." Participants must then indicate whether they feel this description of themselves is *very inaccurate*, *inaccurate*, *somewhat inaccurate*, *neither*, *somewhat accurate*, *accurate*, or *very accurate*. Scores for each factor range from 8 to 56, with high scores indicating the individual is high on the trait being measured (i.e. a score of 50 on the agreeableness measure indicates a highly agreeable individual) (Saucier, 1994). The Mini-Markers test was chosen because it has been shown to be reliably correlated with the full version of the Unipolar Big-Five Markers, which has shown to be a valid measure of the Big Five personality traits (Saucier, 1994).

Perceived risk scale. Perceived risk was measured using a nine-item scale composed of two dimensions: perceived legal risk (three items) and perceived safety risk (six items). Each

item on this scale required participants to read a statement such as "In general, how safe do you feel texting while driving?" and indicate whether they feel *extremely safe*, *very safe*, *somewhat safe*, *not very safe*, or *extremely safe*. Scores on this scale range from nine to 45, with higher scores indicating a higher level of risk.

Frequency of overall texting measure. Participants were measured on how often they text message overall, not just while driving. The measure was composed of three items that were scored using a five point Likert scale. The possible scores on this scale ranged from three to 15, with higher scores indicating a higher frequency of text messaging.

Frequency of texting while driving measure. Participants in this study completed a three-item scale that asked them questions regarding how often they text while driving. Respondents read a statement and responded with their texting while driving frequency using a five-point Likert scale. Possible scores on this scale range from three to 15, with higher scores indicating a higher frequency of texting while driving.

Data Analysis

The measures included in this study were initially analyzed by studying their reliabilities and by using a factor analysis to determine the underlying structure of the variables included in each measure. Data from the study were used to examine the descriptive statistics. Descriptive statistics were broken into dimensions such as frequency of text messaging while driving and knowledge of the illegal nature of engaging in the behavior. Correlations were then analyzed to determine whether or not a relationship existed between perceived risk, locus of control, need for affiliation, or the Big Five personality traits and texting while driving.

Chapter III: Results

Scale Development

Means and coefficient alphas were found for each measure used. The possible scores on Spector's Work Locus of Control Scale range from 16 to 96, with high scores representing extreme externality. The mean score reported on the Work Locus of Control Scale was 40.37, and the scale had an alpha of .80. Scores on Hill's Interpersonal Orientation Scale, which measures need for affiliation, range from 26 to 130, with higher scores representing high need for affiliation. The mean reported score on Hill's scale was 77.89 and the scale had an alpha of .92. Hill's Interpersonal Orientation Scale measures need for affiliation using four dimensions: positive stimulation, attention or praise, emotional support, and social comparison. The alphas for each dimension were lower than that of the entire measure, but were still very high; positive stimulation had an alpha of .82, attention or praise had an alpha of .81, emotional support had an alpha of .85, and social comparison had an alpha of .76.

The Mini-Markers test measures each of the Big Five factors using eight items for each factor. The scores on this scale for each factor range from 8 to 56, with higher scores representing a high level of the trait being measured (i.e. a score of 56 on the extraversion scale means the participant is extremely extraverted). The mean score reported on the extraversion scale was 37.42, and alpha was .81. The mean score reported on the agreeableness scale was 44.57, and the alpha was .80. The mean score reported on the conscientiousness scale was 40.88, and the alpha was .77. The mean score reported on the emotional stability scale was 34.53, and the alpha was .75. The mean score reported on the openness to experience scale was 42.22, and the alpha was .75.

Perception of risk was measured using a three-item scale measuring perceived legal risk,

and a 6-item scale measuring perceived safety risk. Possible scores on the perceived risk scale range from 9 to 45, with higher scores indicating a higher perception of risk. The mean score reported on this scale was 37.32, and the alpha on this measure was .80. Possible scores on the perceived legal risk scale range from 3 to 15 (with higher scores indicating higher perception of risk). The mean score reported on this scale was 12.49, and the alpha was .91. Possible scores on the perceived safety risk scale range from 6 to 30 (with higher scores indicating higher perception of risk). The mean score reported on this scale was 24.83, and the alpha was .79.

Frequency of texting was measured using two scales with three items each; one scale measured texting frequency while driving, and one scale measured frequency of texting overall, not just while driving. Possible scores on both texting scales range from 3 to 15, with higher scores indicating a higher frequency of texting. The mean score reported on the frequency of texting while driving scale was 7.66, and the alpha on this scale was .92. The mean score reported on the frequency of overall texting scale was 9.75, and the alpha on this scale was .81.

Correlations

A Pearson correlation coefficient between texting while driving and each measured factor was calculated to determine whether or not each hypothesis was supported. These correlations can be found in Table 1. Frequency of texting while driving was significantly correlated with overall frequency of texting (texting not just while driving). This correlation shows that individuals who frequently text message in a variety of situations are more likely to text while driving. Correlations between sex, age, race, and texting while driving were not significant, meaning there was no difference between these demographic variables and frequency of texting while driving.

Perceived risk was significantly inversely correlated with frequency of texting while driving. The two dimensions on the perceived risk measure (perceived legal risk and perceived safety risk) were correlated with texting while driving separately. This analysis showed that perceived legal risk was not significantly correlated with frequency of texting while driving. Perceived safety risk was significantly inversely correlated with frequency of texting while driving. This means that individuals who perceive texting while driving to be a safety risk are less likely to text while driving. Thus, Hypothesis 1 was partially supported. Need for affiliation was significantly positively correlated with overall frequency of texting, but not with frequency of texting while driving. Therefore, Hypothesis 2 was not supported.

Extraversion was not significantly correlated with overall frequency of texting, but was significantly correlated with texting while driving. This means that individuals higher in extraversion are more likely to text while driving. Thus, Hypothesis 4 was supported. Agreeableness was significantly inversely correlated with overall frequency of texting and with frequency of texting while driving. This means that individuals high in agreeableness are less likely to text message, and to text while driving, than those low in agreeableness. Thus, Hypothesis 5 was supported. Conscientiousness was not significantly correlated with either overall frequency of texting or frequency of texting while driving, so Hypothesis 6 was not supported. Emotional stability was significantly inversely correlated with overall texting, and with frequency of texting while driving. This means that individuals high in emotional stability are less likely to text while driving than those low in emotional stability. Thus, Hypothesis 7 was supported. Openness to experience was not significantly correlated with overall frequency of texting, and was significantly inversely correlated with texting while driving. This means that

individuals high in openness to experience are less likely to text while driving. Thus, Hypothesis 8 was supported.

Sequential Multiple Regression Analyses Predicting Texting While Driving

A sequential multiple regression analysis was employed to further explore the relationships between the factors measured in this study and texting while driving. Frequency of texting was entered in the first step. In the second step the remaining predictors were added to the model.

This analysis showed that extraversion and openness to experience have significant unique effects. Frequency of texting while driving, holding constant frequency of texting, increases with extraversion (pr = .118, p = .005) and decreases with openness to experience (pr = -.157, p < .001). None of the other predictors had significant unique effects.

An additional series of sequential multiple regressions were performed. In each of these, frequency of texting was entered in the first step and one of the other predictors in the second step. Frequency of texting while driving increases with external locus of control (externality) (pr = .093, p = .026). This finding supports Hypothesis 3. The partial effects further supported Hypotheses 5, 7, and 8 by showing that frequency of texting while driving decreases with agreeableness (pr = -.145, p < .001), emotional stability (pr = -.093, p =.026), and openness to experience (pr = -.177, p < .001).

Chapter IV: Discussion

Although legal bans on cell phone use while driving exist in many states, many drivers continue to text while driving (Nelson, Atchley, & Little, 2009; Richtel, 2011). Young drivers make up a large percentage of drivers who text while driving (Atchley, Atwood, & Boulton, 2011), which is why college students were chosen as participants in this study. This study attempted to explore the role played by personality correlates of texting behaviors; specifically examining whether or not perceived risk, locus of control orientation, need for affiliation, and the Big Five Factors are related to texting while driving.

The data in this study found that individuals who text frequently in general also text while driving frequently. This indicates that many traits which predict overall frequency of texting may also be strong predictors of texting while driving. Perceived risk was significantly inversely correlated with overall frequency of texting and with texting while driving. This finding is inconsistent with many previous studies examining perceived risk and texting while driving. The reason for this discrepancy may stem from the fact that other studies have only measured perceived legal risk, and have largely ignored safety risk. When the perceived risk measure was broken down by its two factors: perceived legal risk and perceived safety risk, it was discovered that perceived legal risk is not significantly correlated with frequency of texting while driving. This indicates that legal bans on texting while driving may be ineffective at preventing the behavior. However, perceived safety risk is significantly inversely correlated with frequency of texting while driving. This means individuals who perceive texting to be risky or dangerous may be less likely to actually text while driving. These findings suggest that campaigns against texting while driving should focus more on educating the public about the safety risks involved in texting while driving and less on the threat of legal sanctions.

Need for affiliation is significantly positively correlated with overall frequency of texting, but not with frequency of texting while driving. This means that individuals high in need for affiliation are likely to text more frequently. These findings were unexpected, and indicate that there may be a moderator preventing individuals high in need for affiliation from texting while driving. Perceived safety risk may be a moderator between need for affiliation and texting while driving frequency. Individuals high in need for affiliation may perceive texting while driving to be a greater safety risk than those low in need for affiliation, which could explain why these individuals text frequently, but do not text while driving frequently. External locus of control (externality) was significantly correlated with high frequency of texting while driving when the sequential multiple regression analysis was employed. Individuals high in external locus of control do not feel that they have power over their safety (Jones & Foreman, 1984), which may explain why they engage in risky driving behaviors. Jones and Forman also suggest that these individuals may not be forward-thinking, or make decisions based on prior knowledge.

The study also found that individuals high in extraversion are more likely to text while driving than their introverted counterparts. This finding was expected, because highly extraverted individuals like to maintain constant communication with others (John & Srivastava, 1999), tend to be impulsive, and have low self-control (Eysenck & Eysenck, 1985). What is surprising about extraversion, however, is that it was not significantly correlated with overall texting frequency. So while extraverts and introverts do not text message at significantly different rates, extraverts do text while driving significantly more frequently that introverts. Extraverts have been shown to engage in more risky behavior, and it could be their propensity toward risk-taking that causes them to text while driving.

Individuals high in agreeableness are less likely to text message, and to text while driving, than those low in agreeableness. Van Kleef et al. (2010) found that individuals low in agreeableness are not concerned with the needs of others, with following rules, or with maintaining social harmony, which may explain why these individuals frequently text while driving. Individuals low in agreeableness are not concerned with how their risky actions will affect the safety of others. Individuals high in emotional stability text while driving significantly less frequently than those low in emotional stability. Individuals low in emotional stability tend to behave irrationally and do not control their impulses well (McCrae & Costa, 1989), which may explain why they reported frequent engagement in the dangerous behavior of texting while driving.

In addition, individuals high in openness to experience reported texting while driving significantly more infrequently than those low in openness to experience, but there was no significant correlation between openness to experience and overall texting frequency. Again there may be a moderator between texting while driving and openness to experience that causes individuals high in this trait to refrain from texting while driving. Individuals high in openness to experience use logic and have foresight (McCrae & John, 1992), so they are less likely to engage in risky behaviors. Perceived safety risk may be the moderator between texting while driving and openness to experience.

Perceived safety risk had the largest effect size of the measured factors included in this study in relation to texting while driving. Based on the rest of the findings, it appears that perceived safety risk may act as a moderator between each personality factor and texting while driving. Personality appears to explain some portion of texting while driving behavior, but not all

of it. There are other moderating factors between personality and propensity toward risk-taking that better explain why people text and drive.

Future Research

Texting while driving is relatively unexplored, and should be researched more in the future. Future research should focus on the interactions between perceived safety risk and personality traits in relation to texting while driving. Future research should also investigate why drivers feel a compulsion and urgency to text while driving, as opposed to pulling over or waiting until they reach their destination to read, reply to, or initiate a text message. Similarly, individuals with cell phones have become accustomed to being able to connect with others at all times, and often use their phones while they are bored. The relationship between texting while driving and boredom has not yet been studied, and boredom may provide insight as to why individuals text while driving. Social norms and social desirability of texting while driving should also be explored as a possible explanation for the frequency of texting while driving. The perception that texting while driving is the norm could influence the frequency of the behavior.

Research on texting while driving would benefit from studies on the subject that do not rely on self-report surveys. Studies that actually track drivers who text while driving would eliminate the possibility of participants underreporting how frequently they text while driving, as they may engage in the behavior more often than they realize.

Limitations

One of the limitations of the current study was the use of a sample of college students from one Southeastern university, which restricted the range of data. However, the age range of the participants is consistent with the age of drivers who text while driving most frequently (Atchley, Atwood, & Boulton, 2011). This study required participants to self-report how

frequently they text while driving, which could have caused error due to impression management. Furthermore, participants may have underreported the frequency at which they text while driving because they may not realize how often they actually engage in the behavior. The survey used in this study was conducted online, which could have been another limitation. Participants were able to complete the survey from any location, and may have been distracted. Participants who complete surveys while dealing with distractions are more likely to make mistakes than those who complete surveys in a controlled environment.

Conclusion

Overall, this study found that individuals who text while driving frequently also text message frequently while they are not driving. Furthermore, these individuals do not perceive texting while driving to be a risk to their safety. Individuals who frequently text while driving have an external locus of control, are highly extraverted, low in agreeableness, low in emotional stability, and low in openness to experience. Only perceived legal risk, need for affiliation, and conscientiousness were not significantly related to texting while driving.

References

Arai, Y., Hosokawa, T., Fukao, A., Izumi, Y., & Hisamichi, S. (1997). Smoking behavior and personality: A population-based study in Japan. *Addiction, 92,* 1023-1033.

Atchley, P., Atwood, S., & Boulton, A. (2011). The choice to text and drive in younger drivers: Behavior may shape attitude. *Accident Analysis and Prevention, 43*, 134-142.

Blickle, G., Meurs, J. A., Zettler, I., Solga, J., Noethen, D., Kramer, J., & Ferris, G. R. (2008). Personality, political skill, and job performance. *Journal of Vocational Behavior, 72*, 377-387.

Boone, C., & Hendriks, W. (2009). Top management team diversity and firm performance: Moderators of functional-background and locus-of-control diversity. *Management Science, 55*, 165-180.

Borkenau, P., & Ostendorf, F. (1990). Comparing exploratory and confirmatory factor analysis: A study on the 5-factor model of personality. *Personality and Individual Differences, 11,* 515-524.

Bowling, N. A., Burns, G. N., Stewart, S. M., & Gruys, M. L. (2011). Conscientiousness and agreeableness as moderators of the relationship between neuroticism and counterproductive work behaviors: A constructive replication. *International Journal of Selection and Assessment, 19*, 320-330.

Braitman, K., & McCartt, A. (2010). National reported patterns of driver cell phone use in the United States. *Traffic Injury Prevention, 11*, 543-548.

Cook, M., Young, A., Taylor, D., & Bedford, A. P. (1998). Personality correlates of alcohol consumption. *Personality and Individual Differences, 24,* 641-647.

Cooper, L., Agocha, B., & Sheldon, M. (2000). A motivational perspective on risky behaviors: The role of personality and affect regulatory processes. *Journal of Personality, 68,* 1059-1088.

Costa, P. T., & McCrae, R. R. (1980). Still stable after all these years: Personality as a key to some issues in adulthood and old age. In P. B. Baltes & O. G. Brim, Jr. (Eds.), *Life span development and behavior* (Vol. 3, pp. 65-102). New York, NY: Academic Press.

Costa, P. T., & McCrae, R. R. (1985). *The NEO Personality Inventory manual.* Odessa, FL: Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (1989). *The NEO-PI/NEO-FFI manual supplement.* Odessa, FL: Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The NEO personality inventory. *Psychological Assessment, 5,* 5-13.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41*, 417.

Elanain, H. M. A. (2010). Work locus of control and interactional justice as mediators of the relationship between openness to experience and organizational citizenship behavior. *Cross Cultural Management, 17*, 170-192.

Eysenck, H. J. (1967). *The biological basis of personality.* Springfield, IL: Charles C. Thomas.

Eysenck, H. J., & Eysenck, M. W. (Ed.). (1985). *Personality and individual differences: A natural science approach.* New York, NY: Plenum Press.

Foss, R. D., Goodwin, A. H., McCartt, A. T., & Hellinga, L. A. (2009). Short term effects of a teenage driver cell phone restriction. *Insurance Institute for Highway Safety, 41*, 419-424.

Funder, D. C., & Colvin, C. R. (1988). Friends and strangers: Acquaintanceship, agreement, and the accuracy of personality judgment. *Journal of Personality and Social Psychology, 55,* 149-158.

Genachowski, J. (2009). FCC Consumer Advisory: The Dangers of Texting While Driving. *Testimony to Subcommittees of the U.S. House of Representatives*, 4, Nov. 2009.

Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. *Review of Personality and Social Psychology, 2*, 141-165.

Gullone, E., & Moore, S. (2000). Adolescent risk-taking and the five-factor model of personality. *Journal of Adolescence, 23*, 393-407.

Helgason, A., Fredrickson, M., Dyba, T., & Steineck, G. (1995). Introverts give up smoking more often than extraverts. *Personality and Individual Differences, 18,* 559-560.

Hill, C. A. (1987). Affiliation motivation: People who need people… but in different ways. *Journal of Personality and Social Psychology, 52*, 1008-1018.

Hill, C. A. (2009). Affiliation motivation. In M. R. Leary, R. H. Hoyle, M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior,* 410-425. New York, NY: Guilford Press.

Hoyt, M. F. (1973). Internal-external control and beliefs about automobile travel. *Journal of Research in Personality, 7,* 288-293.

Huang, J. L., & Ford, J. K. (2012). Driving locus of control and driving behaviors: Inducing change through driver training. *Transportation Research Part F: Traffic Psychology and Behaviour, 15*, 358-368.

Hunter, D. R., & Stewart, J. E. (2012). Safety locus of control and accident involvement among army aviators. *The International Journal of Aviation Psychology, 22*, 144-163.

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.). *Handbook of personality: Theory and Research, 2,* 102-138. New York, NY: Guilford Press.

Jones, J. W. & Foreman, R. (1984). Relationship of the PSI-3S safety scale scores to motor vehicle reports. Technical report. St. Paul, MN: The St. Paul Fire and Marine.

Jones, J. W. & Wuebker, L. (1993). Safety locus of control and employees' accidents. *Journal of Business and Psychology, 7,* 449-457.

Kelly, K. R., & Lee, W. (2005). Relation of psychological type to career indecision among university students. *Journal of Psychological Type, 64,* 11-20.

Klein, J. D., & Pridemore, D. R. (1992). Effects of cooperative learning and need for affiliation on performance, time on task, and satisfaction. *Educational Technology Research and Development, 40*(4), 39-47.

Kjaerheim, K., Mykletun, R., & Halvorsen, T. (1996). Selection into the restaurant business based on personality characteristics and the risk of heavy drinking. *Personality and Individual Differences, 21,* 625-629.

Kneavel, T. C., Jr. (2008). *The effects of locus of control and skill-chance incentives on performance at three developmental levels.* ProQuest Information & Learning). *Dissertation Abstracts International: Section B: The Sciences and Engineering, 68*(7-) Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2008-99020-383&site=ehost-live. (2008-99020-383)

Kreitler, C. M., Dansereau, D. F., Barth, T. M., & Ito, S. (2009). Enhancing the decision-making of extraverted college students. *College Student Journal, 43*, 1171-1181.

Lajunen, T. & Summala, H. (1995). Driving experience, personality, and skill and safety-motive dimensions in drivers' self-assessments. *Personality and Individual Differences, 19,* 307-318.

Leary, M. R. (2010). Affiliation, acceptance, and belonging: The pursuit of interpersonal connection. In S. T. Fiske, D. T. Gilbert, G. Lindzey (Eds.), *Handbook of social psychology, 2*(5), 864-897. Hoboken, NJ: John Wiley & Sons, Inc.

Martsh, C. T., & Miller, W. R. (1997). Extroversion predicts heavy drinking in college students. *Personality and Individual Differences, 23,* 153-155.

McCrae, R.R., & Costa, P.T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.

McCrae, R.R., & Costa, P.T. (1990). *Personality in adulthood.* New York, NY: Guilford.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60*, 175-215.

McGhee, R. L., Ehrler, D. J., Buckhalt, J. A., & Phillips, C. (2012). The relation between five-factor personality traits and risk-taking behavior in preadolescents. *Scientific Research, 3*, 558-561.

McMabe, K. O., & Fleeson, W. (2012). What is extraversion for? Integrating trait and motivational perspectives and identifying the purpose of extraversion. *Psychological Science, 23*, 1498-1505.

Minbashian, A., Bright, J. E. H., & Bird, K. D. (2009). Complexity in the relationships among the subdimensions of extraversion and job performance in managerial occupations. *Journal of Occupational and Organizational Psychology, 82*, 537-549.

Montag, L. & Comrey, A. L. (1987). Internality and externality as correlates of involvement in fatal driving accidents. *Journal of Applied Psychology, 72,* 339-343.

National Transportation Safety Board. (2011, December 13). *No call, no text, no update behind the wheel: NTSB calls for nationwide ban on PEDs while driving* [Press Release]. Retrieved from http://www.ntsb.gov/news/2011/111213.html

National Transportation Safety Board. (2012, August 5). *Highway Accident Report: Gray Summit, MO: Collision Involving Two School Buses, a Bobtail and a Passenger Vehicle.* Retrieved from http://www.ntsb.gov/news/events/2011/gray_summit_mo/index.html

Nelson, E., Atchley, P., & Little, T. D. (2009). The effects of perception of risk and importance of answering and initiating a cellular phone call while driving. *Accident Analysis and Prevention, 41*, 438-444.

Nettle, D., & Liddle, B. (2008). Agreeableness is related to social-cognitive, but not social-perceptual, theory of mind. *European Journal of Personality, 22*, 323-335.

Norman, W.T. (1963). Toward and adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal Social Psychology, 66, 574-83.*

Omizo, M. B. & Michael, W. B. (1982). Biofeedback-induced relaxation training and impulsivity, attention to task, and locus of control among hyperactive boys. *Journal of Learning Disabilities, 15,* 414-416.

Phares, E. J. (1976). *Locus of control in personality.* Morristown, NJ: General Learning Press.

Phares, E. J. (1978). Locus of control. In H. London & J. Exner (Eds.), *Dimensions of personality* (pp. 263-304). New York, NY: Wiley-Interscience.

Phares, E. J. & Wilson, K. G. (1972). Responsibility attribution: Role of outcome severity, situational ambiguity, and internal-external control. *Journal of Personality, 40,* 392-406.

Pritchard, W. S., & Kay, D. L. C. (1993). Personality and smoking motivation of US smokers as measured by state-trait personality inventory, the Eysenck personality questionnaire, and Spielberger's smoking motivation questionnaire. *Personality and Individual Differences, 14,* 629-631.

Regis, D. (1990). *Self-concept and conformity in theories of health education* (Unpublished doctoral dissertation). University of Exeter, Exeter, UK.

Richtel, M. (2011, December 13). U.S. Safety Board Urges Cellphone Ban for Drivers. *The New York Times*. Retrieved from http://www.nytimes.com/2011/12/14/technology/federal-panel-urges-cellphone-ban-for-drivers.html

Rim, Y. (1982). Personality and risky shift in a passive audience. *Personality and Individual Differences, 5,* 465-467.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132,* 1-25.

Rotter, J. B. (1954). *Social learning and clinical psychology.* New York, NY: Prentice-Hall.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80*, 1-28.

Rotter, J. B. (1990). Internal versus external control of reinforcement: A case history of a variable. *American Psychologist, 45*, 489-493.

Rudin-Brown, C. M. & Parker, H. A. (2004). Behavioural adaptation to adaptive cruise control (ACC): Implications for preventative strategies. *Transportation Research Part F: Traffic Psychology and Behaviour, 7*(2), 59-76.

Saucier, G. (1994). Mini-Markers: A Brief Version of Goldberg's Unipolar Big-Five Markers. *Journal of Personality Assessment, 63,* 506-516.

Saucier, G., & Ostendorf, F. (1999). Hierarchical subcomponents of the Big Five personality factors: A cross-language replication. *Journal of Personality and Social Psychology, 76,* 613-627.

Singh, U., & Akhtar, S. N. (1972). Personality variables and cheating in examinations. *India: Tata Institute of Social Sciences, 32,* 423-428.

Skierkowski, D. & Wood, R. M. (2012). To text or not to text? The importance of text messaging among college-aged youth. *Computers In Human Behavior, 28*, 744-756.

Spector, P. E. (1988). Development of the work locus of control scale. *Journal of Occupational Psychology, 61*, 335-340.

Strickland, B. R. (1977). Internal versus external control of reinforcement. In T. Blass (Ed.), *Personality and social behavior* (pp. 219-279). Hillsdale, NJ: Erlbaum.

Strickland, B. R. (1978). Internal-external expectancies and health-related behaviors. *Journal of Consulting and Clinical Psychology, 46,* 1192-1211.

Tellegen, A. (1982). *Brief manual for the Differential Personality Questionnaire.* Unpublished manuscript, University of Minnesota.

Van Kleef, G. A., Homan, A. C., Beersma, B., & van Knippenberg, D. (2010). On angry leaders and agreeable followers: How leaders' emotions and followers' personalities shape motivation and team performance. *Psychological Science, 21*, 1827-1834.

Virginia Tech Transportation Institute. (2009). New data from VTTI provides insight into cell phone use and driver distraction. Retrieved from http://www.vtti.vt.edu/PDF/7-22-09-VTTI-Press_Release_Cell_Phones_and_driver_distraction.pdf

Walsh, S. P., White, K. M., Hyde, M. K., & Watson, B. (2008). Dialing and driving: Factors influencing intentions to use a mobile phone while driving. *Accident Analysis and Prevention, 40*, 1893-1900.

Walsh, S. P., White, K. M., & Young, R. D. (2009). The phone connection: A qualitative exploration of how belongingness and social identification relate to mobile phone use amongst Australian youth. *Journal of Community & Applied Social Psychology, 19*, 225-240.

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96,* 465-490.

White, K. M., Hyde, M. K., Walsh, S. P., & Watson, B. (2010). Mobile phone use while driving: An investigation of the beliefs influencing drivers' hands-free and hand-held mobile phone use. *Transportation Research Part F: Traffic Psychology and Behaviour, 13*(1), 9-20.

Williams, A. F. (1972). Factors associated with seat belt use in families. *Journal of Safety Research, 4,* 133-138.

Wiggins, J. S., & Pincus, A. L. (1989). Conceptions of personality disorders and dimensions of personality. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1,* 305-316.

Witt, L. A., Burke, L. A., Barrick, M. A., & Mount, M. K. (2002). The interactive effects of conscientiousness and agreeableness on job performance. *Journal of Applied Psychology, 87*, 164-169.

Zimbardo, P. & Formica, R. (1963). Emotional Comparison and Self-Esteem as Determinants of Affiliation. *Journal of Personality, 31*, 142 -162.

Zonderman, A. B., Stone, S. V., & Costa, P. T., Jr. (1989). *Age and neuroticism as risk factors for the incidence of diagnoses of psychotic and neurotic disorders.* Paper presented at the annual convention of the American Psychological Association, New Orleans, LA.

Zuckerman, M., Bernieri, F., Koestner, R., & Rosenthal, R. (1989). To predict some of the people some of the time: In search of moderators. *Journal of Personality and Social Psychology, 57,* 279-293.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality, 68*, 999-1029.

Appendix A: Texting While Driving Survey

Demographic Questions

What is your age in years?
- 18 or younger
- 19
- 20
- 21
- 22
- 23
- 24 or older

What is your race?
- White
- Black or African American
- American Indian or Alaska Native
- Asian (e.g., Asian Indian, Filipino, Japanese, Korean, Vietnamese, or other Asian)
- Pacific Islander (e.g. Native Hawaiian, Guamanian, Chamorro, or other Pacific Islander)

Are you of Hispanic, Latino or Spanish origin?
- No
- Yes, Mexican, Mexican-American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, other

What is your sex?
- Male
- Female

What is your marital status?
- Single
- Not married, in a relationship
- Married
- Widowed
- Divorced

What year are you in school currently?
- Freshman
- Sophomore
- Junior
- Senior
- Graduate student

What is your current enrollment status?
- Part time student
- Full time student

Are you currently employed?

- Yes
- No

If yes, how many hours per week do you work?

- Not employed
- Less than 10 hours
- 10-20 hours
- 20-30 hours
- 30-40 hours
- More than 40 hours

Texting While Driving Questions

While completing this survey, please consider texting or text messaging to include any typing while driving (text messages, email, web use, etc.). Only include information relevant to while you are driving, not what you do as a passenger.
Choose the response that *best* represents your texting while driving habits:

Never Rarely Sometimes Quite Often Very Often

How often do you initiate a text message while driving?

How often do you read but not respond to a text message while driving?

How often do you choose to call someone who texted you, rather than respond by texting while driving?

How often do you choose to ignore someone who texted you, rather than respond by texting because you are driving?

How often do you text while driving?

How often do you initiate text messages overall, including texting while driving?

How often do you reply to text messages overall, including texting while driving?

Overall how often do you just read an incoming message (text or e-mail), including while driving?

Please read the following statements and respond with your level of agreement to each:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

I am not concerned about initiating a text message while driving.

I am not concerned about responding to a text message while driving.

I am not concerned about reading a text while driving.

Current North Carolina law bans reading text messages while driving.

Current North Carolina law bans replying to text messages while driving.

Current North Carolina law bans initiating text messages while driving.

Please read the following statements and respond with your level of agreement to each:

Not at All Dangerous Less Dangerous Equally Dangerous More Dangerous Extremely Dangerous

Compared to talking on a cell phone, initiating a text while driving is….
Compared to talking on a cell phone, replying to a text while driving is….
Compared to talking on a cell phone, reading a text while driving is….
In general, how dangerous is it to text while driving?
How dangerous is it to type on a phone keyboard while driving?

In general, how safe do you feel texting while driving?

Extremely safe	Not very safe
Very safe	Extremely unsafe
Somewhat safe	

How likely are you to receive a citation for texting while driving?

Very unlikely	Likely
Unlikely	Very likely
Somewhat unlikely	

How effective is law enforcement overall in deterring texting while driving behavior?

Very ineffective	Effective
Ineffective	Very effective
Neither effective nor ineffective	

How long have you owned/driven your current vehicle?

Less than a month	More than 1 year
More than a month, less than 6 months	More than 2 years
More than 6 months, less than 1 year	I do not own/drive a vehicle

Appendix B: Correlation Matrix

Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1. Overall Texting	1											
2. Texting While Driving	.583**	1										
3. Need for Affiliation	.124**	.056	1									
4. Locus of Control	.000	.075	-.105*	1								
5. Agreeableness	-.104*	-.177**	.176**	-.259**	1							
6. Conscientiousness	-.001	-.059	-.016	-.236**	.323**	1						
7. Emotional Stability	-.110**	-.139**	-.210**	-.176**	.313**	.248**	1					
8. Extraversion	.046	.085*	.208**	-.123**	.111*	.086*	.029	1				
9. Openness to Experience	-.081	-.191**	.052	-.180**	.252**	.091*	.030	.133**	1			
10. Perceived Risk (Total)	-.237**	-.349**	.073	.030	.187**	.090*	-.048	-.047	.090*	1		
11. Perceived Risk (Safety)	-.266**	-.461**	.078	-.093*	.231**	.101*	.004	-.005	.145**	.728**	1	
12. Perceived Risk (Legal)	-.111**	-.103*	.037	0.124**	.069	.042	-.072	-.064	.004	.806**	.181**	1

Note: ** $p < .01$

Appendix C: Informed Consent Document

Researchers at East Carolina University study problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try and find ways to improve the lives of you and others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?

The purpose of this research is to explain texting while driving behaviors. The decision to take part in this research is yours to make. By doing this research, we hope to learn more about texting while driving behaviors.

Why am I being invited to take part in this research?

You are being invited to take part in this research because you are enrolled in a PSYC1000 or PSYC1060 course this semester. If you volunteer to take part in this research, you will be one of about 300 people to do so.

Are there reasons I should not take part in this research?

Those who are under 18 years of age should not participate in this research study.

What other choices do I have if I do not take part in this research?

You can choose not to participate.

Where is the research going to take place and how long will it last?

The research procedures will be conducted at East Carolina University via Experimentrak. The surveys should take approximately one hour to complete.

What will I be asked to do?

You are being asked to do the following: Participants will take four surveys: one measures levels of affiliation motivation, one measures locus of control, one is a five factor model of personality survey and the other describes the participants texting while driving behaviors.

What possible harms or discomforts might I experience if I take part in the research?

It has been determined that the risks associated with this research are no more than what you would experience in everyday life.

What are the possible benefits I may experience from taking part in this research?

We do not know if you will get any benefits by taking part in this study. This research might help us learn more about texting while driving behaviors. There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?

We will not pay you for the time you volunteer while being in this study.

What will it cost me to take part in this research?

It will not cost you any money to be part of the research.

Who will know that I took part in this research and learn personal information about me?

To do this research, ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:

Any agency of the federal, state, or local government that regulates human research. This includes the Department of Health and Human Services (DHHS), the North Carolina Department of Health, and the Office for Human Research Protections.

How will you keep the information you collect about me secure? How long will you keep it?

Printed Information will be kept in locked file cabinets; other information will be on Experimentrak only accessible by the researchers.

What if I decide I do not want to continue in this research?

If you decide you no longer want to be in this research after it has already started, you may stop at any time. You will not be penalized or criticized for stopping. You will not lose any benefits that you should normally receive.

Who should I contact if I have questions?

The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at (252) 328-6497.

If you have questions about your rights as someone taking part in research, you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971.

· I have read the above, and agree to participate in this research by completing the survey.

Appendix D: IRB Documentation

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · **www.ecu.edu/irb**

Notification of Exempt Certification

From: Social/Behavioral IRB

To: John Cope

Date: 3/4/2013

Re:
UMCIRB 12-002432
Perceived risk, locus of control, affiliation, Big Five factors, and texting while driving

I am pleased to inform you that your research submission has been certified as exempt on 3/4/2013. This study is eligible for Exempt Certification under category #4.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five-year period.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

Table 1. *Correlations between measured traits and the frequency of overall text messaging and texting while driving.*

	OT		TWD	
Variable	*r*	CI	*r*	CI
1. Texting While Driving	.583**	.527, .634	1.000	
2. Need for Affiliation	.124**	.043, .203	.056	-.136, .025
3. Locus of Control	.000	-.081, .081	.075	-.006, .155
4. Agreeableness	-.104*	-.184, -.023	-.177**	-.254, -.097
5. Conscientiousness	-.001	-.082, .080	-.059	-.139, .022
6. Emotional Stability	-.110**	-.189, -.029	-.139**	-.218, -.059
7. Extraversion	.046	-.035, .127	.085*	.004, .165
8. Openness to Experience	-.081	-.161, .000	-.191**	-.268, -.112
9. Perceived Risk (Total)			-.265**	-.339, -.188
10. Perceived Risk (Safety)			-.343**	-.413, -.269
11. Perceived Risk (Legal)			-.047	-.128, .034

Note: OT = Overall texting frequency; TWD = Texting while driving frequency

: * $p < .05$

: ** $p < .01$