
BLASST: Uncovering knowledge on how boredom, loneliness, social anxiety, social gratification, and social relationships fuel a driver's need to text

[Research in Progress]

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Abstract

Texting while driving is a growing problem, which has serious, and sometimes fatal, consequences. Despite laws being enacted to curb this behavior, the problem is not going away, but growing instead. Uncovering the knowledge about the factors that can reduce such risky behavior can provide significant contributions to research as well as saving lives and reduce property damage. This work-in-progress research seeks to develop a model to explore the motivations that cause a driver to type or read text messages. The proposed model evaluates the relationship that boredom, loneliness, social anxiety, social relationships, social gratification, and texting while driving (BLASST) have upon a driver's frequency of reading and typing text messages. In addition, perceived severity of consequences and the presence of a passenger will also be evaluated for any moderating effects on a driver's texting. Finally, a close family member will be questioned regarding the frequency of a driver's texting. This data will be compared to the driver's self-reported texting frequency. Additionally, knowledge visualization techniques are proposed as part of the data analysis in order to emphasize the significance of the findings. In this work-in-progress study we're also outlining a set of hypotheses to be tested and conclude with discussions about the anticipated results and study limitations.

Keywords: *Texting while driving, distracted driving, knowledge visualization, boredom, social anxiety, social gratification*

Introduction

From 2009 to 2010, texting while driving increased by 50% and has been shown to distract drivers significantly (Drews, Yazdani, Godfrey, Cooper, & Strayer, 2009; Hosking, Young, & Regan, 2009; U.S. Department of Transportation [USDOT], 2011). The texting driver is four times more likely not to look at the road, which leads to significantly erratic driving behavior (Garner, Fine, Franklin, Sattin, & Stavrinou, 2011; Hosking et al., 2009; Strayer, Watson, & Drews, 2011). Thus, this work-in-progress study addresses the problem of the increase in automobile accidents attributed to the driver's manipulation of hand-held devices for texting (USDOT, 2010; Wilson & Stimpson, 2010). The number of fatal crashes associated with texting drivers has been increasing (USDOT, 2010; Wilson & Stimpson, 2010). This number may actually be much higher, as there are significant inconsistencies in police reports across the country (Garner et al., 2011).

Given the relative newness of this problem, it is not surprising that there is not yet consensus on the motivations that lead drivers to text (Nemme & White, 2010). Viewing texting as an addiction may help provide some insight into this problem. An addiction can be described as

a process whereby a behavior, [*sic*] that can function both to produce pleasure and to provide escape from internal discomfort, [*sic*] is employed in a pattern characterized by (1) recurrent failure to control the behaviour [*sic*] (powerlessness) and (2) continuation of the behaviour [*sic*] despite significant negative consequences (unmanageability). (Goodman, 1990, p. 1407)

Although the majority of states have enacted legislation prohibiting texting while driving, there has not been a corresponding reduction in the number of crashes attributed to texting (Gostin & Jacobson, 2010; Smith, Benden, & Lee, 2012). Thus, the main goal of this work-in-progress research study is to develop and propose an empirical plan to validate the boredom, loneliness, social anxiety, social relationships, social gratification, and texting while driving (BLASST) model.

Theoretical Background

The actions of the texting driver can be viewed as a technological addiction (Bianchi & Phillips, 2005). Texting drivers may be attempting to maintain their social relationships to experience some level of social gratification or to avoid an increase in their social anxiety level (Liu, Cheung, & Lee, 2010; Stafford, Stafford, & Schkade, 2004). Mobile phone use has been shown to allow users to escape feelings of loneliness, feelings a driver may also be hoping to escape with texting (Leung, 2008; Reid & Reid, 2007). This loneliness may elevate social anxiety and boredom, discomforts the driver hopes to avoid (Reid & Reid, 2007). Regardless of the motive, texting drivers continue to text despite awareness of the legal liabilities and the potentially fatal consequences of their actions (Drews et al., 2009; Kircher, Patten, & Ahlstrom, 2011; O'Brien, Goodwin, & Foss, 2010).

Individuals create, develop, and maintain social relationships through their online and texting activities (McKenna, Green, & Gleason, 2002; Reid & Reid, 2005; Walsh, White, Hyde, & Watson, 2008). Social interaction that takes place through texting may increase drivers' social gratification (Liu et al., 2010; Stafford et al., 2004). According to Krishnatray, Singh, Raghavan, and Varma (2010), social gratification is the "gratification Internet users derive from chatting and interaction with friends and others" (p. 20). Besides increasing social gratification, texting may also help maintain social relationships, which may also reduce one's level of social anxiety (Lu et al., 2011). Social anxiety can be described as "a marked concern about the impression one makes on others" (Mansell, Clark, Ehlers, & Chen, 1999, p. 674). Socially anxious individuals have shown a preference towards using relatively low-risk communications, such as texting, to reduce their social anxiety and, when unable to text, have shown a marked increase in social anxiety (Caplan, 2007; Lu et al., 2011). Regardless of whether drivers are attempting to reduce their social anxiety or increase their social gratification, the distraction caused by texting are known to have serious consequences (USDOT, 2010).

In addition to using texting to maintain social relationships, drivers may also use it to deal with loneliness (Feldman, Greeson, Renna, & Robbins-Monteith, 2011; Skierkowski & Wood, 2012). Prior research have indicated that an individual addicted to texting is likely to develop loneliness

and increasing levels of social anxiety when prevented from texting (Kim, LaRose, & Peng, 2009; Skierkowski & Wood, 2012). This loneliness can be described as “isolation and lack of communication with other people” (Jin & Park, 2010, p. 613). The inability to use texting for social communications while driving may, therefore, lead to an increase in the anxiety level of the driver (Caplan, 2007; Lu et al., 2011). The boredom felt by the driver can be seen as “a state of relatively low arousal and dissatisfaction, which is attributed to an inadequately stimulating situation” (Mikulas & Vodanovich, 1993, p. 3). The driver may be hoping to alleviate this state of discomfort through texting, regardless of the potential danger of their actions (Kircher et al., 2011; Leung, 2008).

Whether seeking pleasure through maintaining social relationships or hoping to avoid discomfort, individuals who compulsively text have been shown to exhibit patterns of an addiction (Rutland, Sheets, & Young, 2007). As uncovered by prior research, non-substance addiction, such as compulsive texting and compulsive use of the Internet, have been shown to have many similarities to substance abuse (Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009; Rutland et al., 2007; Shaw & Black, 2008; Young, 1998). Similar to symptoms of Internet addiction, Rutland et al. (2007) found that compulsive texters experienced withdrawal-like symptoms when they were not texting, used texting to relieve uncomfortable feelings, and were unsuccessful in repeated efforts to cut back or stop their messaging behavior. However, little attention has been given to texting addiction fueling the compulsive behavior of drivers who continue to text, despite evidence that the majority of drivers understand the serious, and possibly fatal, consequences of texting while driving (Ginsburg et al., 2008; Strayer et al., 2011).

The BLASST Model

The BLASST model (See Figure 1) seeks to empirically validate the influence of boredom, loneliness, social anxiety, social gratification, and social relationships on an individual's decision to text while driving. The BLASST model also seeks to explore the moderating influence that the presence of a passenger may have upon a driver's texting behavior. Moreover, the BLASST model will seek to investigate whether drivers' perceived severity of the potentially fatal consequences of texting while driving influences their texting behavior. In addition, the BLASST model will seek to compare a driver's self-reported texting behavior to what one or more of the driver's family members report about the driver's texting behavior. The need for this study is demonstrated by the studies of Drews et al. (2009), Hosking et al. (2009), as well as Wilson and Stimpson (2010). These studies showed the detrimental effect that texting has upon a driver's ability and established a strong relationship between texting while driving and fatal crashes.

This work-in-progress study builds on previous research by McKenna et al. (2002), Reid and Reid (2005), Skierkowski and Wood (2012), along with Kim et al. (2009). McKenna et al. (2002) established that individuals form strong and lasting social relationships on the Internet. McKenna et al. (2002) also reported that online interaction decreased an individual's loneliness. Reid and Reid (2005) then extended McKenna et al. (2002) to text messaging. Reid and Reid (2005) did not ascertain if the continual texting with one's social group would also apply to a driver's behavior. Skierkowski and Wood (2012) showed that the absence of texting would increase an individual's loneliness. Kim et al. (2009) determined that loneliness could lead to

compulsive use of online interaction and lead to negative behaviors. However, Kim et al. (2009) did not determine if this compulsive behavior would cause an individual to endanger themselves by texting while driving.

The specific hypotheses of this work-in-progress study are shown in Figure 1. Relationships formed and maintained via electronic communication tend to offer deep, meaningful relationships to the participants and are characterized by significant intimacy in the interactions (Liu et al., 2010; Weiser, 2001). This intimate interaction and chatting leads to greater social gratification (Krishnatray et al., 2010). The BLASST model will seek to investigate whether a driver's texting will further these deep, meaningful relationships and lead to a significant increase in the driver's social gratification. Therefore, the first hypothesis of this work-in-progress study (H1) is:

H1: Drivers who maintain social relationships while driving will significantly increase their social gratification.

Individuals use texting to maintain and enhance their social relationships, while staying connected to their social group (Liao & Wan, 2009; Skierkowski & Wood, 2012; Van Bel, Smolders, IJsselsteijn, & de Kort, 2009). The norms of one's social group may also influence the need to maintain these social relationships continually (Nemme & White, 2010). This need to be constantly connected to one's social group has been significantly linked to compulsive texting (Igarashi, Motoyoshi, Takai, & Yoshida, 2008). However, it appears that very limited attention has been provided in research to suggest that maintaining these social relationships would reduce a driver's social anxiety. Therefore, the second hypothesis (H2) of this work-in-progress study is:

H2: Drivers who maintain social relationships while driving will significantly decrease their social anxiety.

Frequent texting has also been shown to reduce one's level of loneliness (Takao, Takahashi, & Kitamura, 2009). Compulsive texters may use texting as a distraction from upsetting emotional states, such as loneliness, thereby reducing their level of social anxiety (Feldman et al., 2011). However, in the context of driving, it is still unclear if the loneliness felt by drivers increases their social anxiety when prevented from texting. Thus, the third hypothesis (H3) of this work-in-progress study is:

H3: The loneliness experienced while driving will significantly increase a driver's social anxiety.

Loneliness can also influence one's feelings of boredom (Farmer & Sundberg, 1986; Vodanovich & Kass, 1990). Texting has been shown to lower one's level of loneliness and subsequent boredom (Feldman et al., 2011). However, what has received little attention specifically in the context of texting while driving is whether a driver's loneliness will increase his boredom. Thus, the fourth hypothesis (H4) of this study is:

H4: The loneliness experienced while driving will significantly increase a driver's boredom.

Frequent texters use text messages to interact with friends and maintain social connections (Grellhesl & Punyanunt-Carter, 2012). Drivers use cell phones for voice calls, regardless of the

risk involved or if there are laws prohibiting it (Horrey, Lesch, & Garabet, 2008; Strayer et al., 2011). Drivers perceive that the gratification from these calls is greater than the risk, and then accept the risk by placing the calls (Nelson, Atchley, & Little, 2009). To extend this research to texting while driving, the fifth hypothesis (H5) of this study is:

H5: The pleasure from social gratification will significantly increase a driver's texting.

Anxious individuals use texting as a way of maintaining social contact and relieving their social anxiety (Reid & Reid, 2007). Rutland et al. (2007) found that compulsive texters frequently used texting to relieve their feelings of social anxiety. High levels of social anxiety have also been observed in individuals who are compulsive texters (Jenaro, Flores, Gómez-Vela, González-Gil, & Caballo, 2007; Takao et al., 2009). Texting affords non-driving individuals a way to maintain their social relationships and reduce their level of anxiousness (Reid & Reid, 2010). However, in the context of texting while driving, it appears that it hasn't been determined yet if texting while driving offers the same affordances to the driver. Therefore, the sixth hypothesis (H6) of this work-in-progress study is:

H6: The discomfort from social anxiety will significantly increase a driver's texting.

It is known from research that a common solution to boredom is frequent texting (Joshi & Lalbeg, 2011; Madden & Lenhart, 2009). In a similar response that the compulsive texter has to loneliness, texting is used as a distraction from boredom (Feldman et al., 2011). When bored, many individuals are confident that they will find at least one friend or relative who will instantly respond to a text message, thereby alleviating some of the boredom (Horstmanshof & Power, 2005). To extend these studies, the seventh hypothesis (H7) of this work-in-progress study is:

H7: The discomfort from boredom will significantly increase a driver's texting.

Passengers are uncomfortable riding with a texting driver (Beasley & Adamsen, 2011). Passengers are also likely to confront a texting driver when the driving behavior puts the passenger at risk (Madden & Lenhart, 2009). On the other hand, younger drivers have shown a significant increase in risky driving behavior when passengers are present (Ginsburg et al., 2008; Simons-Morton, Lerner, & Singer, 2005). Unable to delay their need for gratification, younger drivers see their risky behavior as one way to satisfy this need (Bingham & Hockanson, 2008). In addition, socially anxious individuals seek to leave a desirable impression of themselves (Leary, Knight, & Johnson, 1987). Though to our knowledge not previously researched, this desire may influence a driver's texting behavior when a passenger is present. Furthermore, conversing with a passenger has been shown to help a driver cope with boredom (Gershon, Shinar, Oron-Gilad, Parmet, & Ronen, 2011). However, the impact of a passenger on a driver's use of texting to reduce their boredom doesn't appear to be reported in literature. Given this inconsistency and gap in previous research, the eighth set of hypotheses (H8a to H8c) of this work-in-progress study is:

H8a: The presence of a passenger will have no significant impact on the relationship between social gratification and a driver's texting.

H8b: The presence of a passenger will have no significant impact on the relationship between social anxiety and a driver's texting.

H8c: The presence of a passenger will have no significant impact on the relationship between boredom and a driver's texting.

An individual's intention to misuse an information system is moderated by the perceived severity and the perceived certainty of sanctions (D'Arcy, Hovav, & Galletta, 2008). Most drivers recognize the potentially fatal consequences associated with texting while driving (Drews et al., 2009; Ginsburg et al., 2008; Kircher et al., 2011). However, one in four drivers report that texting has no impact on their driving performance (Tison, Chaudhary, & Cosgrove, 2011). Thus, the ninth set of hypotheses (H9a to H9c) of this work-in-progress study is:

- H9a: The perceived severity of the consequences of texting while driving will have no significant impact on the relationship between social gratification and a driver's texting.
- H9b: The perceived severity of the consequences of texting while driving will have no significant impact on the relationship between social anxiety and a driver's texting.
- H9c: The perceived severity of the consequences of texting while driving will have no significant impact on the relationship between boredom and a driver's texting.

To please family members and significant others, drivers either reduce their texting or develop strategies to minimize detection (White, Walsh, Hyde, Melissa, & Watson, 2010). However, it is still unclear if these strategies to minimize detection are successful. Consequently, the tenth hypothesis of this study is:

- H10: There will be no significant difference between family member reports on the frequency that a driver reads or types a text message and the driver's self-reported frequency of reading or typing text messages.

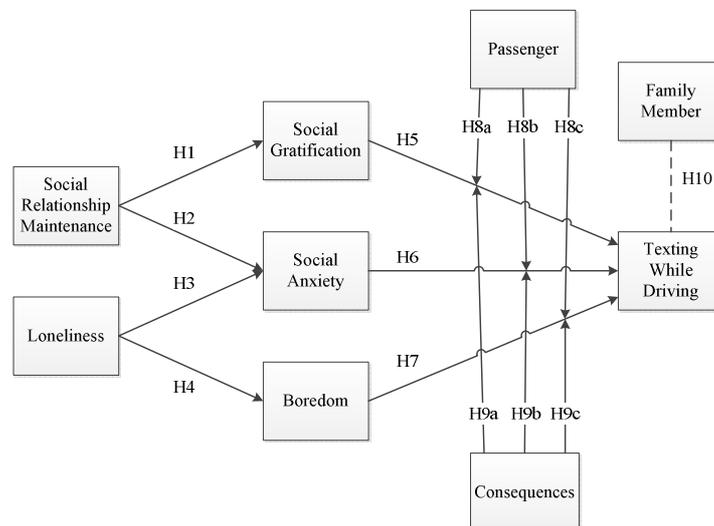


Figure 1. Conceptual research model for investigating the relationships of the BLASST model.

Data analytics and knowledge discovery techniques will also be used to analyze, visualize, as well as display the data collected in this work-in-progress study. Data analytics is exploratory in

nature and useful in the building and testing of theories (Fisher, DeLine, Czerwinski, & Drucker, 2012; Shmueli & Koppius, 2011). Visualization techniques associated with data analytics also helps the reader to better recognize patterns and relationships within a data set (Costagliola, Fuccella, Giordano, & Polese, 2009). Given that this type of research in the context of texting while driving appears to be new, this work-in-progress study will also seek to uncover some additional trends and findings from that data beyond the ones hypothesized here. As such, these knowledge discovery visualizations may also improve the interpretation of the data (Leventhal, 2010). Besides providing ways to quickly convey factual information, knowledge visualization techniques will also afford ways to express the insights and views developed during this research.

Discussion and Conclusions

This work-in-progress study addresses the problem of the increase in automobile accidents attributed to the driver's manipulation of hand-held devices for texting (USDOT, 2010; Wilson & Stimpson, 2010). This study introduces the BLASST model which is proposed to empirically validate the influence of boredom, loneliness, social anxiety, social gratification, and social relationships on an individual's decision to text while driving. In addition, the BLASST model will also seek to explore the moderating influence that the drivers' perceived severity of the potentially fatal consequences and the presence of a passenger has upon the driver's frequency of texting. Furthermore, the BLASST model will compare a driver's self-reported texting frequency to what one or more of the driver's family members report about the frequency of the driver's texting.

As any other research study, we anticipate to several limitations for this study as well. The observed limitations of this work-in-progress study will include the fact that all data will be collected from students, faculty, and staff at a small liberal arts university in the Midwestern region of the United States. Another limitation of this work-in-progress study will be the use of self-reported data from the drivers and their family members. A further limitation of this work-in-progress study is that it will only focus on the manipulation of a hand-held device for texting. The use of hand-held devices for other purposes (e.g., game play, navigation) will not be studied, even though those other purposes may also distract the driver.

It is anticipated that this work-in-progress study will make contributions to the Information Systems body of knowledge and practice. From the research standpoint, this study will contribute to the body of knowledge by extending previous research on the social and compulsive use of information systems to the motivations behind a driver's decision to text. From a practical perspective, the results from this work-in-progress study may also aid in the crafting of effective legislation that will deter drivers from texting or in educational efforts to reduce the frequency of texting by drivers. It is envisioned that knowledge visualization techniques will aid in these practical efforts as well as uncovering additional non-hypothesized trends from the data.

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