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Cell phone use while driving: Does peer-reported use predict emerging adult use?

Neha Trivedi*, Denise Haynie, Joe Bible, Danping Liu, Bruce Simons-Morton

Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD, USA

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ABSTRACT

Secondary task engagement such as cell phone use while driving is a common behavior among adolescents and emerging adults. Texting and other distracting cell phone use in this population contributes to the high rate of fatal car crashes. Peer engagement in similar risky driving behaviors, such as texting, could socially influence driver phone use behavior. The present study investigates the prospective association between peer and emerging adult texting while driving the first year after high school. Surveys were conducted with a national sample of emerging adults and their nominated peers. Binomial logistic regression analyses, adjusting for gender, race/ethnicity, parental education, and family affluence, showed that participants (n = 212) with peers (n = 675) who reported frequently texting while driving, were significantly more likely to text while driving the following year (odds ratio, 3.01; 95% CI, 1.19–7.59; P = 0.05). The findings are consistent with the idea that peer texting behavior influences the prevalence of texting while driving among emerging adults.

1. Introduction

Motor vehicles crashes are the leading cause of death in teens and highest among 16–19 year olds (Anon, 2017a). Drivers who are 15–20 years of age constitute 6.4% of all drivers, but account for 10% of all motor vehicle deaths, and 14% of police-reported crashes (Anon, 2017b). In 2014, 3179 people were killed, and 431,000 were injured in motor vehicle crashes involving distracted drivers (Anon, 2017c). Distraction has been implicated in an estimated 10% of fatal crashes among drivers 15–20 years old, which is higher than for other age groups (Anon, 2017d). One prevalent form of distracted driving is secondary task engagement, such as eating, talking to passengers, tuning the radio, and using a cell phone or similar device. A range of distracting secondary tasks have been demonstrated to contribute to crash/near crash likelihood among teenagers and young adults (Klauer et al., 2014). Driving performance while engaging in secondary tasks may depend on factors such as driver experience, task demands, and the manner in which resources are allocated between the two tasks (Horrey and Wickens, 2004; Young et al., 2008). Hence, engaging in secondary tasks can distract the driver, deteriorate driving performance, and increase crash risk.

The likelihood of a crash or near miss increases when performing secondary tasks while driving largely to the extent they take the driver's eyes off the road so he/she cannot see and respond to unexpected hazards; additionally, secondary tasks can increase cognitive load and otherwise divert attention from the driving task (Horrey and Wickens, 2004; Young et al., 2008). Crash risk increases when the duration of eye glances > 2 s away from the roadway while engaged in a secondary task (Anon, 2017c, 2017d; Simons-Morton et al., 2014a). Given its ubiquity and nature, cell phone tasks have been of particular concern. Dialing, answering, texting, searching for, and possibly talking on a phone can all distract drivers. In one study, teen drivers using a cell phone (operating, talking, and listening) had eyes-off-road times as long as 4 s, with slower responses to hazards than drivers not engaged in potentially distracting behaviors (Carney et al., 2016). Another study with novice drivers found the association between eye glance duration and crash risk increased with duration of single longest glance during secondary tasks and was higher for wireless tasks such as cell phone use (talking, dialing, texting, and reaching for phone) than other tasks (Simons-Morton et al., 2014a).

In addition to taking the driver's eyes off the road, cell phone use can be cognitively demanding and distract the driver from devoting full attention to the road in front of them (Klauer et al., 2014). Notably, texting may be a particularly distracting secondary task. Hosking et al. (2005) found that young novice drivers spent up to 400% longer time looking away from the road when texting than when not texting. The magnitude of cognitive demands that non-driving tasks place on drivers is associated with the driver performance (Haigney et al., 2000;

* Corresponding author at: University of Maryland School of Public Health, 2242 Valley Drive, Room 2387, College Park, MD 20742-2611, USA. Tel.: +1 732 207 5756.
E-mail address: nehatriv@umd.edu (N. Trivedi).

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Matthews et al., 2003). While drivers may elect to engage in secondary tasks in relatively safer road conditions, a driving simulator study indicated that even when drivers increased their distance between them and the vehicle ahead of them while processing emails using a speech-based email system, braking for hazards were slow (Jamson et al., 2004).

According to the results of a 2015 US national survey, the percentages of drivers ages 19–24 reporting engaging in the following behaviors at least once while driving in the past 30 days were as follows: 59% read a text/email, 45% typed/sent a text/email, and 77% talked on a cell phone, all increased from results of the same survey conducted in 2014 (AAA Foundation for Traffic Safety, 2015). Nearly half of high school students aged 16 and older reported texting while driving during the past 30 days and were more likely than non-texting drivers to engage in additional risky driving behaviors (Olsen et al., 2013). In addition, one in three teens reported texting while driving, somewhat more than the 26% of all American teens who report texting while driving (Lenhart et al., 2010). One study among 4964 college students revealed that about 90% of participants talked on the phone and texted while driving (Hill et al., 2015). Another survey indicated that teens recognize that secondary task engagement, particularly cell phone use such as texting, and mobile application use (such as Twitter, Snapchat, Instagram) contribute to driver inattention; however, they and their peers often engage in these behaviors while driving (McDonald and Sommers, 2015a). Texting among young drivers may increase with age and experience and vary according to the age of passenger (LaVoie et al., 2016).

Young drivers have an inflated perception of positive driving skills (Carter et al., 2014), potentially overestimating their ability to safely accommodate their driving and the additional demand of using their phone. While there is a paucity of research on individual variability in secondary task engagement and their risks, one study found that greater perceived self-efficacy for multitasking while driving and observing distracted driving behaviors in others (social norms) increased the probability that college students report engaging in secondary tasks while driving (Hill et al., 2015). Driver inattention due to cell phone use among emerging adults is a recognized critical problem for novice drivers and a serious public health issue (CDC, 2016). Therefore, research is needed on factors associated with the prevalence of distracting cell phone use.

Peer influences are associated with many risky behaviors such as substance use/abuse among youth and may be associated with risky driving behaviors. Notably, 18–22-year-old study participants who drove a game console simulator took more risks, focussed more on the benefits than the costs of risky behavior, and made riskier decisions when in peer groups than alone (Gardner and Steinberg, 2005). It seems unlikely that drivers engage in secondary tasks as a purposeful form of risk taking, but these behaviors may be socially mediated. Walsh et al. (2009) found that group norms were associated with adolescents' mobile phone behaviors. A prospective survey that assessed constructs from the theory planned of behavior (TPB) showed that attitudes were associated with intentions to both send and read texts while driving, while subjective norms (how much a person feels social pressure to perform a behavior) and behavioral control (how easy or difficult a person perceives performing the behavior to be) among peers were associated with the prevalence of sending texts while driving (Nemme and White, 2010).

Previous research has shown that emerging adults select peers within their social networks similar to themselves based on parallel traits, characteristics, and behaviors, as well as conform to the norms of their peer group (Cialdini and Trost, 1998). Young adults often befriend peers with similar demographic, behavioral and social characteristics as well, such as drinking and substance use patterns (De la Haye et al., 2015). Similarly, research has shown that young drivers engage in risky driving behaviors when exposed to risk-accepting peers compared to risk-averse peers (Simons-Morton et al., 2014b). Hence, it is of interest to examine the relations between peer and emerging adult cell phone use behavior.

The research on the association of engaging in secondary tasks, such as cell phone while driving, among young adults and their peers is limited; therefore, the purpose of this research is to examine the prospective association of peer-reported secondary task engagement with emerging adult-reported secondary task engagement 1 year later. Analyses examined the association between survey data on cell phone use (made/answered call, read/sent text, read/sent email, checked websites) while driving reported by a sample of peers the year after high school with participant-reported cell phone use while driving a year later. This analysis fills a gap in the distracted driving research on peer-reported data associated with participant cell phone use while driving.

2. Methods

2.1. Participant and peer sample

The NEXT Generation Health Study is a longitudinal study of a cohort of 10th grade U.S. students using multistage sampling. Randomly selected schools and students within those schools agreed to participate in the study (Conway et al., 2013; Simons-Morton et al., 2016). Participants were surveyed annually, with a school-based assessment in the spring semester of 10th grade and web-based assessments in 11th and 12th grade, and the first 2 years after high school. At W4 (the first year after high school), we asked NEXT Plus participants (henceforth referred to as "participants") to recruit their romantic partner and up to 5 of their close friends who were at least 15 years old to complete a survey similar to the NEXT survey. Study participants received $25 for each nominated peer who completed the survey; participating peers received $25. Participants and peers over 18 years of age provided consent. Those under 18 provided assent and parents provided consent for participation, with consent being obtained from participants and peers upon their turning 18. At Wave 1, a subsample (n = 567) was established (NEXT Plus) to participate in additional annual measurements. Among the NEXT Plus sample, participation during the first 2 years after high school (Wave 4 in 2013 and Wave 5 in 2014) was 456 and 449, respectively. To be included in these analyses, participants (n = 212) had to have a permit allowing supervised or independent driving and have driven at least 1 day out of the past 30 days, in addition must have nominated at least one peer. NEXT Plus participants provided a total of 1128 peers, among which 130 aged over 35 and were eliminated from these analysis, resulting in 998 peers. A total of 675 peers were matched to the eligible participants. The data of interest for this research were collected on peers the year after high school (W4) and participants the first 2 years after high school (W4 and W5). See Fig. 1 for a detailed description of the sample. The protocol was approved by Institutional Review Board of the *Eunice Kennedy Shriver* National Institute of Child Health and Development.

3. Measures

3.1. Participant-reported cell phone use while driving at W5

The number of days in the last 30 days participants used their cell phone while driving at W5 was assessed with seven questions: (1) made a call, (2) answered a call, (3) read a text message, (4) sent a text message, (5) read an email, (6) sent an e-mail, and (7) checked a website, or social network such as Facebook or Twitter. In the peer survey, a single question was asked about each type of cell phone use. To make the measures consistent, we merged the paired questions into three outcomes: made/answered call, read/sent text, and read/sent email by taking the higher of the two responses. We chose to use the higher of the two values as it will more closely estimate the frequency